Chapter One: Research background

1.1 Mediated interaction in the online learning environment

The recent explosive growth of online courses has transformed higher education, requiring teachers to have a new understanding of the present learning environment and to make adjustments to different styles of teaching in our changing context (Boling et al., 2012; Rubin et al., 2013; Stickler and Shi, 2013). Online courses are different from traditional campus courses in that learners interact with peers and teachers in a mediated way and the interaction mediated by technology produces a great challenge in addition to opportunities of a different kind. McInnerney and Roberts (2004: 73) describe the problems posed by online mediated interaction:

> for students studying in an online environment, social interaction with peers and educators can often be an exercise in frustration. If such frustration is to be minimised, much thought needs to be given to the methods of communication that will be utilized, so that the online environment fulfils the human desire for social interaction.

The challenge of mediated interaction has been researched with findings about isolation of students which led to high dropouts in online courses (Rovai, 2002; Rovai, 2003; Shield, 2000). Technological advances with various new modes for interaction are offered to counteract the challenges (Hampel & de los Arcos, 2013) by shortening the psychological distance between students when they remain physically detached. Desai et al. (2009: 333) suggest that one remedy for the separation of students and getting them connected is to

> provide a sense of community with constructive feedback and provide open forthcoming communication as well as recognizing membership and feelings of friendship, cohesion, and satisfaction among learners.

As the online learning environment becomes complicated with various modes of mediated interaction, "innovations in technology and practice" require theories to guide the practical use of technological tools for online learning courses (White, 2009: 97). The situation drives researchers to re-evaluate old theories or build new theories to cope with the rapidly changing practice.

Social presence theory was originally borrowed from media studies as a lens to observe the mediated interaction with regard to the social aspect which is essential in the online learning environment. However, this theory was developed at a time when text-based interaction was the main medium of mediated communication. The truth is that theory often falls behind the practical world. As new theories especially adapted for assessing the quality of multimodal interaction have not yet been sufficient, some researchers have begun to use social presence theory to research multimodal interaction with regard to how well learners connect and react to each other (Borup et al., 2012; King and Ellis, 2009; Traphagan et al., 2010). For example, King and Ellis (2009) employed the theory to compare voice-based and text-based interaction in order to decide which medium suits learners better in terms of interactive enhancement, expression of affection and group cohesive devices, which are considered important social presence categories. Traphagan et al. (2010) conducted a study comparing these categories of social presence in text-based interaction and in the virtual world in order

to search for guidance for the use of new technology in mediated interaction in a practical world.

1.2 The theory of social presence

Social presence was studied in the 1970s by a group of scientists at the University of London as an important indicator in media studies to predict the communication quality of media channels. The concept was defined in the earlier study as the "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships …" (Short et al., 1976: 65). This means that in a communication process how much those involved perceive others is important and this will be decisive in the building of participant relationships and communication quality will result in order to realise a communicative goal. When people have direct face-to-face communication in daily life situations, they hear words and see the facial expressions, body language, and dress of their counterparts in the communicative process and they therefore perceive much of each other and enjoy a high social presence in the interaction. In other words, the visual cues are essential in establishing social presence and thus greatly improve the quality of the interaction so that a communicative task can be accomplished. When we utilise a technological tool for communication we do not have the same degree of perception in comparison with face-to-face communicative situations. Although we intend to transmit our verbal and non-verbal messages as much as possible in technology-mediated interaction, the communication media vary in their capacity for information transmission and therefore

we may experience, to a greater or less satisfying extent, the sense of recognising others in the process of communicative interaction. In other words, social presence is altered using various technological tools and in different modes of interaction. Media with more visual cues provide more opportunities to establish a higher social presence and thus the communication quality is thought to be raised to reach a higher level, suitable for a communicative task that involves a complexity of relationship building (Short et al., 1976).

When the concept of social presence was used to research the effectiveness of the communication tools, the medium's capacity of carrying participant information in the communication process was stressed. In other words, if a technological tool carries more information about the people involved in the communication, it will make a better tool for quality interaction in which participants feel comfortably connected and at ease in reaching a communication goal (Short et al., 1976). For example, when a conference room with audio only and the audio plus video were used for communication, participants using the latter tool saw more of the other participants in the process and it was thus considered to have more social presence and therefore the tool with the audio plus video was a more efficient medium for communication. Applying the same principle, an audio tool is likely to enable participants to perceive more of the other participants than a text-based tool and thus the former is more effective than the latter in connecting people with regard to a communication goal.

In online learning, as the students and the teachers are mostly separate in space and time and feelings of loneliness is often a complaint (Rovai, 2002), searching for social presence is crucial for connecting participants so that they feel a sense of community in the online learning environment (Roberts & McInnerney, 2007; Shea et al., 2012). Social presence is a critical issue and thought to be a key element that can improve the effectiveness of online interaction (Garrison, Anderson & Archer, 2000; Gunawardena, 1995; Ko, 2012; Ubon & Kimble, 2003). A positive correlation has been identified between perceived social presence and enhanced online interaction, better teacher and student relationship, satisfying learning experiences and perceived learning (Gunawardena and Zittle, 1997; Picciano, 2002; Richardson and Swan, 2003; Swan and Shih, 2005). Students with a higher social presence tend to participate more in learning activities (Gunawardena and Zittle, 1997; Richardson and Swan, 2003) and they are more likely to be involved in critical thinking (Rourke, Anderson Garrison & Archer, 2001). However, a lack of social presence can cause frustrating learning experiences and learning enthusiasm is greatly reduced (Ubon & Kimble, 2003; Yamada, 2009).

In the meantime, the concept of social presence is also very useful for language learning. As social presence is a key issue in the mediated interaction, environments with a high social presence are seen as positive to encourage learners to practise more target language with a wider audience and thus improve language fluency (Kötter, 2001). Moreover, in an online environment, social presence contributes to enhanced

interaction which is likely to be beneficial for language input, output and self-reflection, all of which are advantageous to language learning. The values of interpersonal interaction lie in the negotiation of meaning, co-constructing meaning and prompting learners' attention to language forms (Chapelle, 2003).

When social presence is used in researching online learning, the conceptualisation has changed as the context and the goal of communication vary from the early studies of communication media. The focus of the media study was on the effectiveness of the tool for realising a particular communicative task while online learning shifted the focus to establishing personal relationships for educational activities. The signs of positive affection, interactive features and group cohesion in the interaction are recognised as important to establish social presence in online learning. Rourke et al. (2001: 10) developed a template which provides a framework for researchers to recognise social presence in online interaction in distance education.

Categories	Indicators
Affective	Expression of emotions
	Use of humor
	Self-Disclosure
Interactive	Continuing a thread
	Quoting from other messages
	Referring explicitly to other messages
	Asking questions
	Complimenting, expressing appreciation, expressing agreement
Cohesive	Vocatives
	Addresses or refers to the group using inclusive pronouns
	Phatics / Salutations

Table 1-1: Categories and indicators of Social Presence (Rourke et al, 2001: 10)

When this framework is employed, the interaction data have to be recorded and coded with the indicators listed in the above table. The language in the interaction has been analysed to search for social presence. Although there are other methods to measure social presence, this template has been widely used. However, this template was originally developed at a time when text-based interaction was the mainstream method for online interaction. When this framework is applied to research text-based interaction, a consistent conclusion can be made about social presence. As multimodal interaction is investigated with the same theory, conflicting eidence seems to emerge.

1.3 Conflicting evidence of social presence in multimodal interaction

When audio, video and the virtual world were added for online interaction, researchers

began to employ social presence theory to assess the multimodal interaction. Audio and visual interaction have been transcribed with language searching for the social presence indicators that are supposed to contribute to successful online interaction. This raises a question.

In the existing literature, conflicting evidence has been found with some studies claiming that voice-based interaction is less interactive and effective than text-based interaction and thus unlikely to increase social presence (King and Ellis, 2009) while other studies state that voice, with its capacity to carry nonverbal cues, has the potential to enhance social presence (LaPointe et al., 2004; McIntosh et al., 2003). Studies into video and the virtual world have encountered a similar situation with different conclusions about what video can do for social presence (Borup et al., 2012; Homer et al., 2008; Traphagan et al., 2010). If there is no consensus of ideas, the research is not particularly helpful in providing guidance for future research and the practical use of technology in mediated interaction. A study is needed to explore the reasons behind the conflicting views or perhaps produce suggestions for the modification of the social presence framework should be provided in order to elicit more harmonious guidance.

As noted above, the existing literature concerning the comparison of social presence in text-based and voice-based interaction seems to have produced conflicting findings. King and Ellis (2009) conducted a study which compared the density of social

presence density in text-based and voice-based interaction. The two types of messages from actual interaction were measured in terms of Rourke et al's (2001) social presence categories during a course discussion in a 15-week term. The conclusion was that text messages had a higher level of social presence with more interactive and affective categories and the voice messages were found to have more cohesive features but not at a significant level. They suggested that voice-based interaction did not necessarily improve social presence for students and therefore voice-based technology might not be a better tool for learners to communicate with each other compared with text-based conferencing.

Other researchers went even further regarding voice-based technology. In a case study Marriot and Hiscock (2002) found that students felt frustrated with the voice tool because the voice technology had a higher demand for computer specifications which was a stress maker especially for those who were not confident in dealing with technology. Moreover, carrying out a conversation with asynchronous voice interaction was difficult, as no feedback was given at the time of the conversation or immediately after it, perception of fellow learners was hard to imagine. This could cause frustration for a continuous communication. In this case study, students even abandoned the voice tool. These studies have produced negative evidence for the use of voice-based interaction for online learning.

Positive evidence for voice-based interaction is claimed by practitioners who have

suggested that it has the potential to increase social presence because nonverbal cues such as intonation, pace, timing and pause not only increase expressiveness but also enhance understanding other participants in the interaction (Mayer et al., 2003). If these features are best utilised, a conversation online becomes meaningful and hospitable, and makes learning easier. McIntosh et al. (2003) found that a voice tool is particularly useful for improving listening skills and spoken competency in a foreign language. If the task is properly designed, use of an asynchronous voice in language instruction can improve student enthusiasm, comfort levels, and attitudes. Synchronous voice conferencing in another case study encouraged the sharing of intimate personal experiences between teachers and students and consequently "the relationships that have grown out of these conversations have developed more rapidly and more deeply, and have been sustained longer, because of the voice capability" (LaPointe et al., 2004: 2-3). Hew and Cheung (2012) conducted a study comparing text-based interaction and voice-based interaction and found the latter to be more spontaneous and to initiate more original ideas. When students expressed more ideas and emotions they were perceived as more real in oneline interaction and therefore this motivated students to engage in further discussion. Voice-based interaction was particularly useful for students who had poor typing skills and did not have confidence in writing skills. It was also liked because of the novelty element since the voice technology was new, the usual discussions online interaction having been conducted through the text-based forum.

Such diverging views on voice-based interaction are worth exploring from both a theoretical and practical point of view. On the theoretical side, it is necessary to examine the theoretical framework on which these studies are based to discover how social presence is conceptualised and measured. It is possible that the existing framework is unable to recognise the texture of the new voice-based tool accurately so that it needs to expand. On the practical side, practitioners need to identify specific situations where voice-based interaction is used for various purposes. It is possible that if learners are in different situations, they may have different ways of using the same tool to produce an impact on social presence. There is a need to explore more uses of various tools to make a generalisation about social presence.

1.4 Practical situation and motivation for the study

In the Chinese online learning context, the text-based forum and the voice-based chat room are the most common tools for the two-way communication between learners and their teachers. Besides the two institutional tools, social media devices like QQ and WeChat are the most popular channels for online learners to maintain interaction. MSN used to be a well-known device for online contact in China, but it stopped its service in 2014 and thus disappeared in the Chinese online learning context. The following table shows the tools that Chinese online learners frequently use in recent years and their functions (Please see Table 2-1).

Communication form	Electronic hardware that supports it	Functions enabled
Text-based forum	Computers	Broadcast text messaging, sharing of photos and videos
Voice-based chat room	Computers	Instant talk, text messaging
MSN	Computers	Instant text messaging,
QQ	Computers, cell phones, personal digital assistants (PDAs)	Text messaging, hold-to-talk voice messaging, broadcast messaging, sharing of photos and videos
WeChat	Computers, cell phones, personal digital assistants (PDAs)	Text messaging, hold-to-talk voice messaging, broadcast messaging, sharing of photos and videos

Table 1-2: Technological tools of computer-mediated communication for Chinese online learners

The text-based forum is usually located in an enclosed platform of a learning institution. Learners have to log onto the forum with their user names and passwords. The text-based forum is a convenient channel of communication because participants can access it in their own time. When a message is posted on the forum, it reaches every one of the learning mates once they are connected to the internet. It is also a great place to share digital information in audio and video form. The text-based forum provides a communication channel that allows participants to take time to respond, which is particularly useful for modern part-time students. Their schedules are so tight and it allows them to produce a delayed response to course requirements. It should be precious to make proper arrangements for their spare time juggling. This asynchronous nature of communication is also recommended as beneficial for reflections and deep thoughts for the online interaction (Paulus, 2007).

The voice-based chat room is a particularly useful tool for language students. The voice facility provides a chance for them to practise listening and speaking, which is difficult in the text-based environment. The synchronous nature of the communication with the voice-based chat room is also a great tool which is likely to more effective for building a community online. This thesis will be exploring whether students feel about social presence more than they do in an asynchronous text-based forum.

When multimodal interaction including audio and video are emerging as important methods of communication in online courses, and they surely affect different sensory channels of participants and may change interaction quality in many ways (Zhao et al., 2004). The modes of interaction would be employed to express meaning and emotion and time effect of synchronous and asnychronous will have a strong impact on both sides of the communication. A crucial issue regarding how the new modes of communication and time element affect social presence is certainly an area worth exploring.

As the majority of the social presence research has been conducted with text-based interactions (see Rourke et al., 2001; Tu, 2002 b; Tu & McIsaac, 2002; Walther, 1992), important measurement frameworks for social presence were developed in the text-based environment and also for measuring social presence with text-based communication. For example, apart from the social presence categories (Rourke et al., 2001), the social presence questionnaires devised by Gunawardena and Zittle (1997)

and Swan and Shih (2005) were also developed to evaluate social presence in the text-based interaction. When audio and video are integrated into online interaction, research has been conducted with the multimodal interaction adopting the existing theory of social presence (Borup et al., 2012; Dean et al., 2009; Homer et al., 2008; King and Ellis, 2009; Traphagan et al., 2010). It is true that in the online learning field, mediated interaction with audio and video share some common ground with text-based interaction. The computer environment is the background for all types of interaction and the participants are engaged in the mediated interaction for a learning purpose. Social presence theory investigates online mediated interaction with regard to the quality of the communication medium (Short et al., 1976) and how online participants adapt their behaviours and develop a new type of interpersonal relationship (Borup et al., 2012; Kehrwald, 2008; Kim, 2011; So and Brush, 2008). If there is common ground between text-based and multimodal interaction, research theories developed in earlier research with text-based interaction should be somewhat useful for other types of mediated interaction.

However, when voice or visual features are added in online interaction, the old framework may be insufficient to work. For example, nonverbal cues including intonation, pace, timing and pauses (Mayer et al., 2003), in voice-based interaction, or visual cues in video-based interaction, are likely to produce communicative effects that do not occur in text-based interaction. The pre-existing participant relationship may also influence what type of tools they want to choose for online interaction and it will

probably affect their perception of social presence in the communication process (Xie, 2008). A reasonable approach to studying voice-based or video-based interaction is to adopt the existing framework from text-based interaction to find about what the theory affords with some modifications or adding a new perspective to look at the new features of the media. As a result it will be possible to explore in more depth the aspects of the multimodal interaction that the theory finds it difficult to tackle.

In the online school where the researcher works, text-based interaction has been the main form of online communication. In 2006, a voice-based chatroom was added to improve the quality of mediated communication in order that student learning experiences were enriched. As voice-based interaction is introduced as novel, what are the effects of the new tool on students' willingness to form community and enhance interaction? Are students more aware of each other than they are in text-based interaction? If they have one more new tool, do they have more chances to practise laguage with peers? Is the distinctive feature of sound connected with the specific tool a reason for them to choose the voice-based chat room to have more discussion online? All these questions drive the researcher to find answers in order to better understand the tools and learning context.

The study of online interaction with regard to social presence may answer the questions mentioned above. Firstly, the framework was used to identify how students perceive other fellow students through the media in online interaction. Secondly, social

presence also focuses on the medium itself and explores how participants use the medium's characteristics to benefit communication. As the two tools, the text-based forum and the voice-based chat room, constitute the major channel of mediated interaction, the researcher decided to focus on these two types of interaction, and exclude video in the research. Moreover, as online courses usually enrol large number of students, student-student interaction becomes the focal attention of the research and this study.

The practical motivation for this study was also initiated because the researcher had changed his career to a new field and it was crucial for him to learn about his new teaching conext. Before beginning an online teaching career in Beijing, China in 2001, the researcher taught English on campus at a provincial university for thirteen years. The first few years of these online teaching experiences in an online school were a constant struggle with adjustments to the new teaching environment. The particular difficulty was that the researcher met his students once every two weeks and in this belnded learning environment most of the interpersonal communication depended on computer-mediated interaction using the text-based forum and the voice-based chat room.

The students were similarly bemused in the same situation. Although the online school provided face-to-face tutorials once every two weeks, most of the time students were detached from teachers and fellow students. A strong sense of loneliness prevailed and

there was a high dropout rate. How could the online interaction link the teacher and the students so that they could get connected for learning? It was assumed that the text-based forum and the voice-based chat room could function in a way as a common room in campus education so that they could get connected to form a community of learning.

1.5 The purpose of the study

This study aims to conduct a comparison of social presence in a voice-based chat room with a text-based forum where learners are using them for learning an online course in a foreign language degree programme. It explores how students employ the two technological tools for online interaction and how the two tools make an impact on student social presence and thus influence their interaction and learning experiences.

Guided by the theory of social presence in the existing literature, the present study adopted a mixed-method approach to measure learner perception of social presence and the level of their projected social presence in the voice-based chat room as well as in the text-based forum. Previous research has mostly been conducted in text-based interaction in which the theoretical frameworks have been formed. The results of this research will contribute to the theory of social presence by broadening the investigation into voice-based interaction which is emerging as an important type of communication in the field of online education, particularly with foreign language learning, but which has rarely been studied in the existing research literature. The

significance of the study may also lie in the fact that it provides some insights for social presence research as well as practical guidance for the application of voice-based interaction in online learning institutions.

1.6 The structure of the thesis

The thesis comprises eight chapters. Chapter One is an introduction which describes the theoretical background of social presence research, the practical teaching context and the researcher's motivation for this study, and his purpose to conduct the study. Chapter Two is a literature review which presents the theoretical foundation for this study. Theories of interactive learning are introduced, the evolution of social presence is depicted and a gap in the literature is identified which the present study will aim to address. Chapter Three introduces common methodologies that have been employed in social presence research and the methods that have been adopted in the present study. Chapter Four reports the way in which a questionnaire approach was conducted to explore student perceptions of social presence in a Chinese learning context where the text-based forum and the voice-based chat room are used for mediated interaction of the online learning environment. Chapter Five describes the content analysis approach which was adopted to explore the projected social presence of the learners in the same situations. Chapter Six draws on extracts from interviews with eleven students to reveal their views on projecting social presence in their learning process with the two technological tools. Chapter Seven is an integration of the previous three chapters to construct a triangulation of the findings in order to enhance the reliability of the

research. Chapter Eight draws some overall conclusions, describes the strength and limitations of the study, and provides some suggestions for future research.

Chapter Two: Literature Review

2.1 Introduction

This chapter begins with an introduction to learning theories which form the basis of interactive learning in the online learning environment. When interaction is mediated with technological tools the complexity of interaction is increased with various modalities, such as text, audio and video. Social presence theory has widely been used as a framework to measure the effectiveness of the mediated interaction with regard to how learners become connected in a community. As social presence theory was developed at the time when text-based interaction was the dominant channel for online interaction, it requires a critical application of the theory to the new settings of voice-based interaction. With this in mind, four research questions have been raised with the purpose of applying the social presence theory to a practical teaching context where the text-based forum and the voice-based chat room constitute the main channel for mediated interaction in an online course. The result will validate and problematise the theory in order to provide suggestions for a later modification of the theory.

2.2 Phenomenon of online courses

Online courses are burgeoning at a fast pace. As they usually enrol a larger number of students to increase cost effectiveness and social impact, understanding the learning process of online courses in order to benefit a huge learning population is an urgent task particularly when, in recent years, massive online open courses (MOOCs) is an

emerging phenomenon in the field of online education. MOOCs are online courses accessible to an extremely large number of students who mostly learn through self-direction and peer assistance. The new way of learning has become fashionable and spread widely in the United States and around the world in recent two years. In 2012, educational companies such as Coursera, Udacity and EdX were established to provide free courses to millions of learners worldwide (Billsberry, 2013). American universities like Stanford, Harvard, Yale and many other universities are also joining forces to provide online courses not only to learners in the US, but also to potential students in every corner of the world. These universities are astounded by the enormous number of students taking their MOOC courses. One course studied by only a hundred students on campus can attract more than one hundred thousand students internationally.

The huge number of online courses has changed in distinctive ways both traditional education and the previous online courses. The free educational model provides opportunities which have driven educators to search for a different method to deal with education with a large number of students and so far they have not come to a clear conclusion about the best practice (Billsberry, 2013). The new educational situation is now considered as a disruption to traditional education due to quality issues (Amo, 2013). With this large number of students studying a course, it is financially impossible to provide enough teachers to support the whole learning process. As a consequence learning materials are delivered online with built-in exercises which are assessed

automatically by computer. Some institutions may have a text-based forum in their learning platform where student-student and teacher-student interaction occurs. The online interaction may encourage students to ask questions if they encounter difficulties in their learning process and discuss what they have learned in the course. In such a situation, student-student interaction becomes particularly important as it is more feasible for students to learn from each other than from the teacher since student numbers are incredibly large.

Researchers have begun to focus on understanding learners in their learning process. It is a priority to analyse students' learning behaviours during MOOC courses and ordinary online courses. Learners have been categorised as follows: viewers, solvers, all-rounders, collectors and bystanders (Anderson et al., 2014) and their interaction has been observed. Because of the huge number of students involved, much intervention for better learning outcomes lies in the area of artificial intelligence. For example, the badge system is introduced in the text-based forum of the Stanford MOOCs (Anderson et al., 2014). If students read a text message, or post one, they will receive a cumulative point. When they reach a certain target they are awarded a laddered badge. This reward system aims to encourage students to participate in the online interaction for the courses. If interaction is the key issue in online courses, much has to be done to encourage student-student interaction and understand the mechanism of enhanced interaction.

2.3 Learning theories behind online courses

Learning theories that underpin the encouragement of interaction with online courses is the foundations on which we base our assumptions about online learning. The mainstream of online learning theories is concerned with learner interaction in order that social styles of learning are realised. The philosophy behind this learning style is social constructivism (Crook, 1994), which emphasises that learning happens in a social context through collective efforts and knowledge is constructed actively utilisng the scaffolding of peers and teachers. Learning is not merely the processing of information in an individual's mind. The social environment significantly impacts on that learning process and make it happen.

Social constructivism originated with Vygotsky (1978) who proposed the notion of social learning and argued that learning takes place mostly in social groups rather than individually. It is believed that human learning is a continuous reciprocal interaction between people (Alavi, 1994; Bandura, 1977; Crook, 1994). Firstly, people start to learn because they are motivated by what other people already know. The metacognitive awareness of their lack of certain knowledge that already exists in others triggers their curiosity or competitiveness to drive them towards a learning goal. Secondly, they learn by observing the way others function in a particular situation and thus new ideas of how things are performed will later serve as a guide for themselves to imitate. Knowledge from others can also enrich ideas, and provide perspectives for a new understanding of issues. Thirdly, when an individual is placed with a group in a

social environment, their ideas will most likely be encouraged, challenged, denied or confirmed. This creates a virtuous circle; they reach a higher level of proficiency that they cannot achieve on their own.

The zone of proximal development (Vygotsky, 1978) explains how learners develop the capabilities of reaching a higher level beyond their own limits through imitation in a collective activity or with the guidance of a more competent peer. When learners work in groups, it is always certain that they have a mixed level of abilities and competence in one way or another. The more competent ones in the learning process tend to show their skills and understanding to help their fellow learners and by helping others they help themselves develop their own capabilities and interpersonal skills. When working together, less competent learners' existing level of skill and understanding can be improved and a higher potential level of development is awakened "in collaboration with more capable peers" (Vygotsky, 1978: 86). Contact with others thus plays a critical role in the learning process. On the one hand, communicating with others may help learners reach a higher stage in the learning process through obtaining new ideas from other people and achieving new perspectives on various issues for arriving at a new understanding. On the other hand, even if there is no useful information provided to resolve a problem that the learner is facing, a possible motivation remains when there are peers to encourage the student, they are likely to make greater progress, when they compare their performance with that of others.

Dewey (quoted in Garrison and Anderson, 2003:13) expressed a similar idea of social learning in suggesting that the educational context is a place for individuals to unify in society and where social norms are accepted. When students arrive at school with their individual ideas and their unique experiences, which do not mean much to the whole group at the school, they have to model these personal ideas and experiences into socially accepted knowledge through exchanging ideas and views with their fellow students and teachers. Through this process of encounters with peers and instructors, they find the right pattern to express themselves and make meaning out of their ideas and experiences in an accepted way, construct knowledge within proper boundaries and accept the social norms that are displayed. Dewey believes that interaction is the key element in education and occurs when students accept social conventions and employ them as frameworks to hold personal ideas and experiences that are understandable in the society into which they are being socialised (Dewey, 1916 in Garrison and Anderson, 2003:41).

When social constructivism and social learning become the underpinning theories for online learning, an interactive approach is promoted and online mediated interaction becomes a key term in the field of online learning. The interactive nature of social learning requires community building which is crucial and allows individuals in a group to exercise, test, reinforce and improve their way of thinking and doing through negotiation, discussion and information sharing. Moreover, apart from the

collaboration of joint efforts and the motivational aspect of metacognitive triggering for learning, there is another common sense reason for including interaction in education. People feel happier within a community because it is their instinct to seek affinity. Aristotle stated that 'Man is by nature a social animal'.

2.4 Social constructivism and online language learning

When social constructivism is applied in the field of language learning, the interaction theory of second language acquisition appears and values the social context in which language learners interact with other fellow learners, with native speakers of the target language and with the teachers. Language learning depends on interaction in which learners access the enhanced language input, and practise language through collaboration, negotiation of meaning, and repairing communication problems (Peterson, 2009). As a result of the interaction, learners use not only the language they know from their knowledge, but also the language of others, thus their language capability is improved.

As technology mediated interaction is prevalent in the home and in schools, it therefore allows formal and informal learning in a large context at any time. Use of communication devices makes online interaction ubiquitous in daily life. Studies found that computer-mediated communication encourages discussion among learners by giving them more opportunities to express their ideas (Kötter 2001) and receive information around the clock. The fast transmission of the messages allows

participants to produce and receive instant feedback as if the people in the communication are present before them and the immediacy effect produces a positive impact to motivate the conversations of participants. The storage function of the online interaction provides the possibility of saving and revisiting the language used and gives learners time to reflect on their own language and their counterparts' responses. It is more likely for them to increase their language proficiency and accuracy.

Researches concerning interaction for language development found that learners support each other employing practical strategies in the process, for example, they request help and provide assistance when they are engaged in the interaction (Foster and Ohta, 2005). Scaffolding is a common communicative situation where more knowledgeable participants or language users with higher proficiency explain difficult language points, use more complex language structures and, if the other participants do not understand, they would probably paraphrase them. This scaffolding provides more comprehensive language input which is precious for novice learners in the learning process to understand more and motivate them to learn better.

2.5 Interactive online learning

In the present literature of online education, interaction is seriously encouraged in the online learning process. Three types of interaction are frequently quoted: student-teacher interaction, student-content interaction and student-student interaction (Borokhovski et al., 2012; Dzakira and Idrus, 2003; Garrison, 1993; Garrison and Anderson, 2003; Moore, 1989; Moore, 1993; Thurmond, 2003). Student-teacher

interaction consists of the dialogue between the teacher and students in which the teacher delivers learning materials, manages the online course, facilitates discussions, and maintains student interests. Student-student interaction is for information exchange, idea elaboration and confirmation, study pleasure and motivation in the learning process (Garrison and Anderson, 2003). The premise for this type of online interaction is that they need to socialise with fellow students in order that a community is formed and long term relationship is established. When trust is built between learners, information sharing and critical judgment are more likely to occur through interpersonal communication which serves the function of stimulating each other and encouraging higher-order thinking (Garrison and Anderson, 2003). Critical thinking requires much peer interaction in a community where learners not only feel close to each other, but are also responsive to each other. This means that when these group members are together, they will develop techniques to remain close and build a healthy organisation for a beneficial environment in order to become connected for online learning.

Student-content interaction refers to students dealing with the content of the subjects and reaching a status where they have a better understanding of issues covered and are capable of looking at the issues with different perspectives having changed their cognitive structures (Borokhovski et al., 2012). In order to reach this goal, students have to interact with peers and their teacher in the learning process to construct knowledge and to make meaning out of their experiences. As online learning is mostly

learner-centred, being concerned with learners' needs and providing support to the learners' processes of knowledge construction and meaning making is the core business of education.

With online courses, support for learners is mostly through mediated interaction which is carried out with computer-mediated communication (CMC). CMC fills the gap between the separate participants of the online courses. Currently, technology is developing quickly and many exciting tools are being integrated into the online learning environment to provide useful opportunities for mediated interaction. Various features in the tools are employed to enhance interaction. This situation requires educators and learners to make greater efforts to understand the new environment and develop new skills. It is a particularly daunting task understanding the new tools for online interaction and they keep changing at a fast pace. For example, when we think about asynchronous and synchronous text-based interaction and their impact on community building, audio and video tools with even more advanced features are available. The new tools are always claimed as being more effective. However, discovering how effective they are requires time and effort.

2.6 Online courses with mediated interaction

In online learning environments, the particular features of detachment (Garrison and Shale, 1987a: 10-11) "bring a whole new set of physical, emotional and psychological issues along with the educational issues" (Palloff & Pratt, 1999: 7), learning

institutions offer different technological tools for “bringing learners together and provide opportunities for interaction” (Hampel and de los Arcos, 2013: 161). With the introduction of the new technology, research has been done to explore new learning possibilities and their effectiveness.

Most online courses provide a text-based forum for student-student and student-teacher interaction. In many other online courses, if students pay a tuition fee, apart from a text-based forum, a voice-based chat room or even a video conference facility are added for learners to discuss course content, learning difficulties or practise the target language if it is a language learning course. The online interaction with the text, audio and video facilities are certain to bring about positive learning effects if they are used properly. However, in the text-based forum or in the voice-based chat room, learners cannot see each other in online interaction and they may encounter psychological difficulties. For example, asynchronous text-based interaction was seen as slow and emotionless (Johnson, 2006). It takes longer time to build a relationship among participants as the non-verbal signs in the face-to-face communication situations are lost in the text-based communication. Some learners complain about the loneliness of their learning process and because there is not adequate interaction among learners and they do not see much of their fellow learners in their interaction process, a sense of community is thus difficult to establish and it becomes challenging to persist with learning. Many of them choose to drop out of the online learning program causing an alarmingly high dropout rate (Rovai, 2002; White, 2003).

When computer-mediated communication is used for improving language learning, they provide benefits as well as constraints. Using asynchronous text messages to interact with peers, learners have time to plan and think about their language output (Yamada and Akahori, 2007). They will be less likely to make mistakes and more accuracy is possible in their language performance. As text messages remain in the forum or elsewhere to be traced for a long time, they give learners time to pay attention to language form and allow them to read and rethink and later make the better version of the messages for communication. The problem is that their response is slow, which will sometimes make their fellow students lose patience and discontinue interaction. Although synchronous text messages are faster, and the participants are talking in real time, when the other side is inputting long messages and no sign can be seen in the process, the feeling of suspense is still a negative factor for maintaining the interaction. In addition, typing a foreign language may also pose a problem and causes anxiety for some learners (Hew and Cheung, 2012).

The voice-based and video-based interaction has been employed in language learning contexts with many advantages and hope. Instead of focusing on accuracy, audio and video tools may be helpful for language fluency. The quick response encourages learners to have enhanced interaction. This will highly motivate the participants to cover a wider range of vocabulary and topics. The non-verbal behaviours and the quick pace of response help learners improve comprehension. Furthermore, "sociocultural, visual, and audio perception of the input" makes the language richer and thus more

learnable (Volle, 2005, p. 156).

However, as more and more students use the text-based interaction and gain rich experiences and when practitioners begin to explore new possibilities of text-based interaction with more actual use in learning contexts, they discover many emerging advantages. For example, more equality is detected among learners in the interaction and they feel quite excited about the offered opportunities and freedom they have. In face-to-face encounters, social status is easily recognised with visual cues and it may sometimes prohibit free expression, especially in hierarchical societies and students are inhibited because they are placed in an inferior position. In online situations with text-based interaction, these social cues disappear and it allows equal participation of all the participants (Swan and Shih, 2005) and even shy students may become active in the text-based interaction. The enhanced interaction produces practice opportunities for almost all the learners and helps them improve their level of performance. Moreover, the asynchronous nature of the text-based forum allows time for learners to reflect before they post and thus improves the quality of the communication (Swan and Shih, 2005). New findings indicate that text-based interaction may function better in an online learning environment when it is better understood by learners and when more effort in its actual use has been made.

Moreover, new technologies are also introducing new tools that may not only enhance text-based interaction with a mixture of other modalities but also provide unimaginable

new opportunities. For example, blogs, wikis, and other social media, such as Facebook are powerful and link people into groups to such a degree that the barriers of time and space are overcome and new ways of connecting are established (DeAndrea et al., 2012). Blogs, Weibo (microblogs), WeChat and QQ in China enable students to become well-connected so that the exchange of information becomes convenient and knowledge construction is more likely to occur.

Voice-based interaction and multimedia have been employed to enrich online interaction which benefits online learners. As Garrison and Anderson (2003: 7) describe it, "electronic communications technologies, with their multiple media text, visual, voice and their capacity to extend interaction over time and distance, are transforming teaching and learning." New advantages are emerging as practitioners and learners are endowed with more and more choices to enhance online interaction (Hampel, 2009) and sometimes it is difficult to know which one suits them better. This encourages them to explore how new technological tools and multimodal interaction could achieve maximum benefit in online schools. The new communication methods which are meant to provide them with opportunities are filled with complicated factors, such as modality and synchrony (Hampel, 2006; Kenning, 2010). If voice-based interaction is used, sound features may bring changes to the new communication method. Synchronous voice-based interaction should be different from an asynchronous voice-based one. As the new tools provide endless methods of communication, it is certain that practitioners need to explore the numerous

possibilities of the various tools in computer-mediated communication.

2.7 Searching for social presence in online mediated interaction

2.7.1 Social presence and its research routes

Social presence has been researched for the past fifteen years with a particular interest in how it can benefit mediated interaction in an online learning environment (Jones and Issroff, 2005; Rourke et al., 2001). Educators have suggested that tutors "enhance and foster online social interaction, a major vehicle of social learning" (Tu, 2000: 27) and that increased social presence is believed to be useful for achieving learning satisfaction (Conrad, 2005; Picciano, 2002; Richarson and Swan, 2003; Swan and Shih, 2005; Tu, 2002a). A higher social presence has a positive impact on students' motivation to participate in online interaction and their perception of learning would be greatly improved. If social presence is low, and feelings of alienation are engendered, this prevents participants from being actively involved in the interaction (Wegerif, 1998). If this negative situation occurs, online learning quality suffers and learning sustainability is difficult to maintain.

The significant consequences social presence can bring to online learning drive many researchers to explore it to suggest implications for the instructional design of online courses. Research on social presence has generally followed two routes: a top-down approach and a bottom-up approach. The top-down approach employs existing frameworks to look for elements in online interaction which are related to social

presence. For example, in the survey approach, some researchers modify the questionnaires developed by previous researchers because they believe that the concept of social presence has already existed and what they do in their further research is to discover more about it and perhaps correlate it with other factors which perhaps have not been previously researched in the online environment. Moreover, with a content approach, existing social presence categories and indicators have also been used to analyse online interaction to discover the linguistic signs that are supposed to show social presence. The top-down approach is more of a deductive way of thinking, utilising the existing framework and expanding it to a certain degree.

With a bottom-up approach, researchers try to collect raw data from online interaction and then try to search for signs which may be related to social presence and arrive at patterns of signs that may be used later as a framework. A bottom-up approach adopts an inductive way of thinking, searching for large quantities of data and generalising them to arrive at some conclusions about a particular population of learners. This approach is particularly useful as the concept of social presence is still expanding and exploring new territories.

2.7.2 Social presence: old bottle and new bottle

Social presence research started in the 1970s with many experiments on how participants perceived communication tools as an effective means for concluding communication tasks. The research approach was usually bottom-up as the concept of

social presence did not exist in the literature at all. Through much observation and many questions regarding the participant perception of the communication process, it was found that in a communication process with a tool, how much the tool could deliver participant information was crucial in deciding on the quality of the communication (Short et al., 1976). In other words, if the other person was perceived with many cues in the mediated interaction, it meant that an interpersonal relation was likely to be maintained and the communication would move forward to reach a goal. If a communication tool transmits many visual cues, participants must feel positive about the tool and it is then thought to be a proper tool for conducting advanced communicative tasks such as a problem solving task in a highly emotional communication. If fewer visual cues were revealed about participants in a medium it would be difficult to carry out complicated communicative tasks.

Researchers in early media studies provided concrete examples to illustrate the point they wanted to demonstrate. For example, on a video phone, a user perceived more of the other participant than in an audio system and thus the former medium had a higher social presence than the latter one. The user in video communication felt personal, sensitive or intimate, and the communication was thus smoother. The medium which is able to transmit additional visual cues is believed to have a higher social presence and was considered to be a more effective medium for communication. The social presence concept was later developed as a very important criterion to judge the medium for its quality of mediated interaction.

Early social presence research was conducted comparing face-to-face communication with the various types of mediated communication. Face-to-face communication was considered an ideal template for the effective exchange of information with verbal language and non-verbal cues (Short et al., 1976). In face-to-face conversation, the "facial expression, direction of looking, posture, dress and non-verbal cues" (Short et al., 1976: 65) of the participant are visible and so much is perceived of him or her in the communication process and consequently social presence is high in this situation. The visual non-verbal cues may perform communicative functions, such as expressing meaning, providing aids to strengthen meaning or adjusting meaning so as to strengthen the quality of communication. When compared with face-to-face communication, technology-mediated communication tools, such as text or audio only, transmit far fewer non-verbal cues and the level of social presence is thus reduced. Text-based and voice-based interaction are therefore rated as less efficient than video interaction.

When researchers in the field of online learning borrowed the concept of social presence from media studies, they adopted a top-down approach, using the existing framework established by Short et al. (1976). Continuing in this line of research, text-based interaction is investigated for its non-verbal cues and the relational cues of the participants involved, which are filtered out (Walther et al., 1994: 461; Xie, 2008). Text only is labelled as a lean medium suitable for simple communicative tasks such as

scheduling but not adequate for complicated tasks that require intensive interactions and negotiations (Xie, 2008). In addition, findings are made about lack of simultaneous feedback, time delay, differences in rhythm and confusion in turn-taking especially when there are many people participating in text-based interaction (Crystal, 2001; Herring, 1999; Kalman et al., 2006). With many disadvantages, text-based interaction appears to be doomed. In reality, the truth is that it is widely used in the online learning environment and enjoys popularity particularly among young people. Therefore, text-based interaction requires a new perspective to explore it.

In 2001, using a bottom-up approach, a group of Canadian researchers recorded considerable online mediated interaction data in an online course to develop a new template (Rourke et al., 2001), such as that described in the first chapter of this thesis and which provided a different framework for later researchers to measure social presence in text-based interaction. Language elements were analysed to recognise the signs in the interaction which were thought to promote goodwill and a sense of community in online mediated interaction. Expression of emotions, use of humour and self-disclosure are considered as effective indicators; interactive as well as cohesive features are also explored (Rourke et al., 2001). If learners employ such strategies when using text for online interaction it is believed to establish social presence. If these elements are rich, it means that social presence is high and the communication quality is ensured. Other researchers have followed this trend. For example, Swan (2002) searched for emoticons and the special arrangement of punctuation and

spellings for the new style of non-verbal cues. When the new criteria were employed to research text-based interaction, the medium revealed itself to be highly animated and transmitted many positive signs for establishing close relationships and good connections.

2.7.3 The change of intimacy and immediacy factors

In the old framework of social presence research, intimacy and immediacy were the important components related to cues shown in the interaction. In face-to-face communication, intimacy is revealed by factors such as eye contact, proximity and smiling. In other words, when communicating participants are aware of eye gaze, physical proximity, and smiling, they judge these behaviours as indicative of intimacy. Immediacy is the measure of psychological distance between the people in the interaction (Short et al., 1976: 72-73). In face-to-face situations, a wink or laughter may draw a conversationalist closer to the other person he or she is talking to and the memory of it can be long-lasting. When intimacy and immediacy factors are used to measure the quality of communication media, visual cues are the key issues to identify in the mediated interaction. However, it is worthy of note that these abstract psychological terms are flexible and can be modified in new environments.

When social presence research is conducted in the field of online learning, the intimacy and immediacy factors begin to extend from visual cues, which emanate mainly from the medium's characteristics in communication, to how users adapt their

linguistic behaviours and skills for a new type of interpersonal relationship developed over online interaction (Gunawardena and Zittle, 1997). In such a shift, online communication has more to do with participant performance than with medium characteristics per se. Low social presence was probably caused by inappropriate behaviour and not making full use of the contextual factors (Walther, 1992: 56). Adopting this new approach to study text-based interaction, Walther et al. (1994) explored the subjective quality of the communication media and investigated the process where people used the medium to communicate with efforts to reduce uncertainty and search for affinity. In online environments, users adapt their linguistic behaviours and develop new strategies for new types of interpersonal relationship. The text message may contain emotion and in this way learners can build intimate relationships although it may take time (Walther, 1992). The presence of others can be perceived in text-based interaction and that can also bind interactants with a common interest.

Later researchers continued to work on participant elements in the communication of social presence. Gunawardena and Zittle (1997) found that "student perception of the social and human qualities of CMC will depend on the social presence created by the instructors/moderators and the online community" (Gunawardena and Zittle, 1997: 23). In other words, active participation and involvement makes online interaction interesting and meaningful and thus creates social presence and improves the quality of communication. People utilising the communication medium play an important role in

the new learning environment by making the best use of the medium's characteristics. Garrison et al. (2000: 94) believed that if we want to have enhanced social presence on an online course, we need to pay attention to participant capabilities and action. If the tutor's job in an online course is also to provide training to learners for mediated interaction or if learners are inclined to help each other, learners are likely to develop the practical skills which would lead to a high level of social presence. This means that social presence depends more on what participants do than what interaction media can possibly offer. The shift of the focus in the field of online education reveals that course design is an important premise for a successful online course. Teachers have to think in advance about which elements are the key issues in the course components and participants need to develop skills to make the new environment more friendly and conducive to learning.

As social presence research moves towards stressing the participant action in the communication process, Tu & McIsaac (2002: 2) redefined social presence as "the degree of feeling, perception and reaction of being connected to another intellectual entity on CMC". Their understanding of social presence was broadened to not only include participant feeling about the medium, and their perception of other participants in the communication process, but also their action and the relationships developed in online interaction. Social presence was extended to cover the connection between participants. The indication then was that in the online learning environment, social presence had to do with participant skills and their connection with other learners and a

system was required to create an environment where all learners felt connected and comfortable. Kehrwald (2010) expressed a similar view that social presence was a combination of participants' ability to project themselves online as real people, the degree to which they saw and interpreted fellow participants and how much they felt connected to one another in a group. He believed that social presence was a subjective process that was built on cumulative individual actions and interpersonal connections. In this view, social presence is about what a participant does online and what a fellow participant feels about the actions. This combination of the interrelated efforts creates social presence in online mediated interaction.

In text-based interaction, social presence research explores many interesting signs such as smiling faces and punctuation which are created to show emotion in order to shorten the psychological distance between people online and which leads to a feeling of immediacy. Rich and imaginative language are identified to demonstrate immediacy between participants in mediated interaction. The interesting aspect in this regard is that as greater numbers of people use text-based interaction for various purposes, it tends to become a more powerful tool for communication. As participants are creative, they can always find ways to make the best use of them to reach a communicative goal and thus immediacy is realised in the communication process.

The getting-rich phenomenon of voice-based interaction is explained by a theory referred to as 'equilibrium'. In every normal communication process, a certain

standard level of intimacy is needed to make people feel comfortable or it will not be maintained. Participants are usually aware of a balance of intimacy factors called equilibrium which is a normative level of interaction involvement, the violation of which causes reciprocal or compensatory reactions (Argyle & Cook, 1976; Argyle & Dean, 1965). When one conversational partner disrupts the equilibrium through a nonverbal channel (e.g., proxemic distance reduction) the other attempts to restore it through the same or an alternative channel (e.g., reduced gaze) in order to maintain desired levels of intimacy. According to the equilibrium model, eye contact and interpersonal distance are inversely related to each other. Participants in communication tend to look at each other for shorter periods of time when they are physically closer. When they move further away from each other, they are likely to engage in more frequent eye contact to compensate for the longer distance.

This equilibrium model explains the richness of text-based interaction. When those visual cues of smiling and eye contact are lost in online communication, participants in the process compensate by using a new system of signs to reach an appropriate level of intimacy. This is similar other types of mediated interaction. When in audio-based interaction, the participants may compensate for non-verbal cues using other signs which are typical of the sound features and which may also establish intimate relationships with others in the communication process. For example, voice-based interaction has prosodic features that have the potential to express subtle feelings and these valuable features are already recognised in our daily life. The medium's

characteristics become very complicated when new functions have been added in online interaction; each medium has its own strengths and various capabilities. It may be true that their characteristics have to be used fully and it is the participants' behaviours that are the key to deciding the intimacy level of the medium.

2.8 An expansion of social presence dimensions

Based on the new version of intimacy and immediacy, Tu (2000: 29-30) expanded his construct of social presence. He included three dimensions: 1) social context: task orientation, privacy, topics, recipients/social relationships; 2) online communication: attributes of the language used online and the application of online language; 3) Interactivity: the activities in which CMC users engage and the communication styles they use. This extended construct provides a broader view of social presence in text-based interaction. Influenced by Tu's insights, researchers are provided with a larger picture of social presence by investigating the context where the communication occurs so as to search for more relevant elements that may enhance the quality of the interaction.

As a result the intimacy and immediacy level of online mediated interaction is also decided by the contextual factors, such as task types, system privacy, topics of the learning subjects and social relationships, all of which have an impact on the level of social presence. For example, some tasks are easier to facilitate more personal involvement than other types and then they are likely to cause participants to be more

closely connected in the mediated interaction. Alternatively when there is adequate privacy space in a technological tool, participants feel more comfortable about exchanging intimate information between them. This may also have a positive impact on how they feel connected. The language used online, the interactional activities and communication styles all influence the level of social presence in one way or another. Interesting topics and positive participant relationships are also beneficial in increasing social presence. Even when the participants know each other and the communication content is similar, immediate responses and friendly communication styles shorten the distance between online participants and make them feel part of a group. All the positive signs showing social presence are beneficial for increasing more interaction which is the essential condition for online learning.

Tu and McIsaac (2002) later described social presence in more specific terms. Their list of the dimensions of social presence is in Table 2-1. Each dimension has included some specific elements. For Tu and McIsaac social presence involves contextual factors which are related to the relationship between the people involved, their attitudes to technology and their own characteristics. The following all have an impact on social presence in the online learning process:

- Are the learners familiar with their peers or not?
- Are they assertive or acquiescent?
- Is their relationship formal or informal?
- Do they trust each other?

- What is their attitude towards technology?
- How and where do they access the internet?

In addition participant online communication skills, the characteristics of the medium's tools, communication styles and system privacy, and communication strategies also play an important part in social presence enhancement.

I. Social Context	II. Online Communication	III. Interactivity	IV. Privacy
Familiarity with recipients	Keyboarding and accuracy skills	Timely Response	Formats of CMC
Assertive/acquiescent	Use of emoticons and paralanguage	Communication Styles	Access and Location
Informal/formal relationship	Characteristics of real-time discussion	Length of Messages	Patterns of CMC
Trust relationships	Characteristics of discussion boards	Formal/Informal	
Social relationships (love and information)	Language skills (reading, writing)	Type of tasks (planning, creativity, social tasks)	
Psychological attitude toward technology		Size of Groups	
Access and location		Communication strategies	
User's characteristics			

Table 2-1: Dimensions of Social Presence (Tu and McIsaac, 2002: 141)

(used with permission of the author)

The concept of social presence here is expanded into further dimensions. Medium characteristics, contextual factors and participant behaviours are all included as factors which impact the level of social presence in online mediated interaction.

2.9 Community of Inquiry

The Community of Inquiry was developed by a group of Canadian researchers and social presence was investigated in a larger social setting. This framework states that online learning occurs in a social environment and online interaction is carried out in a systematic manner. Garrison and Anderson (2003: 3) state that the essential features of online learning build on "communications among human beings engaged in the educational process". To realise the communicative and collaborative learning outcome, a critical community of inquiry is formed for the purpose of "maintaining the personal critical inquiry and the construction of meaning" (Garrison and Anderson, 2003: 27).

(used with permission of the author)

Fig. 2-1: Garrison and Anderson's (2003:23) Community of Inquiry

In this model, the core business of online education is to help learners construct

knowledge and make meaning out of the learning experience. To reach the goal, cognitive presence is seen "as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison, Anderson, and Archer, 2000: 11). However, the premise of cognitive presence is community building. In other words, if learners have a sense of community, they may begin, in online courses, to initiate learning activities, explore possibilities, seek help and find solutions to their problems (Garrison, Anderson, and Archer, 2000: 4), all of which is evidence of cognitive presence. Social presence is an important part of the community because it provides a foundation on which critical thinking is instigated, supported and sustained (Garrison and Anderson, 2003). It is seen as setting a climate and builds a positive environment for online learning (Garrison and Anderson, 2003).

Because of the importance of social presence, the function of teaching presence is to cultivate it in the online learning environment. Teaching presence is defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Garrison and Anderson, 2003: 29). In the online environment, the resources are delivered with ease. How the resources are arranged and best used depends on a teaching design. Selection of activities that are suitable for learning purposes is another important aspect of teaching presence. Maintaining interaction and providing motivation are key issues amongst many others. If a satisfactory outcome is to be

arrived at in online courses, cognitive and social processes have to be facilitated and directed by teaching presence. However, because of the nature of online courses, teaching presence can be created through learner participation, therefore teaching presence is different from teacher presence in the sense that in an online environment, learners are autonomous and they may also be involved in the instructional design of their learning. Learners choose their materials and decide their learning pace and learning style and that is also why the teacher in an online environment is seen as a facilitator and quietly departs from being centre stage in their education.

In this framework, social presence is defined as "the ability of participants in a community of inquiry to project themselves socially and emotionally, as 'real people' (i.e., their full personality), through the medium of communication being used" (Garrison, Anderson, and Archer, 2000: 94). In other words, to cultivate social presence is to encourage learners to express their emotion and project their personality online in such a way as to provoke their fellow learners into responding. Certain linguistic features are believed to relate to expression and projection, such as their affective, interactive and cohesive tendencies in online interaction. This means that if learners are identified as expressing their emotions, connecting with fellow students and trying to be included in a group, it is evidence of social presence which demonstrates that they are well prepared for online learning.

The Community of Inquiry has been supported by other researchers. Palloff and Pratt

(1999: 32) believe that online learning is dependent on community building and that a sense of community is an essential part of online learning. They have described the features of the online community as follows:

1) Active interaction and personal communication,

2) Collaborative learning,

3) Socially constructed meaning, and

4) Mutual support and encouragement.

These features illustrate the characteristics of online learning which requires learners to interact constantly with peers and teachers for knowledge construction and meaning making in the learning process. They share resources with colleagues, give critical feedback on their work and encourage them to move forward. As this community is formed, learners start to take responsibility for working on their own and their teacher recedes into the wings as a facilitator. In the new environment of online learning, if such a community is formed, "common expectations, shared values and goals" (Rovai, 2002) are clearly demonstrated so that they can be pursued through collaboration among community members. In such a situation, members of the community are well connected and trust is cultivated so that learning becomes an enjoyable experience and isolation in online courses is greatly reduced (Rovai, 2002).

The Community of Inquiry calls for a systematic investigation of online learning. When students learn on an online course, they have a collective purpose in their educational experience. They form a community to realise this goal. In this social

community there is a support mechanism for the learners. When this framework is applied to social presence research, a social perspective has to be taken to view the community in an online course as a collective entity of learners who may influence each other in the learning process.

2.10 Technology and social presence in a community

2.10.1 Comparing technological tools of text-based interaction with regard to social presence

Technology has attracted researchers' attention in the field of online learning specifically with regard to mediated interaction. Mennecke et al. (2011: 414) believe that there is an urgent need to understand how technology impacts social presence in mediated interaction. Researchers as well as practitioners need to know the affordances and constraints of technological tools employed in online mediated interaction − this knowledge will certainly inform future research and guide the practical work. However, when technology is researched, there are innumerable elements such as the characteristics of tools, factors concerning how we use them and in which context we apply them. All of these elements have an impact on social presence in the mediated interaction of learning an online course.

When Tu and his colleagues (Tu, 2002b; Tu and McIsaac, 2002) compared e-mail, bulletin boards and real-time discussion and investigated their impact on social presence during the process of learning an online course, they found a difference

between the three tools. Students used the three technological tools for class communication in learning an online course. At the end of the term they reported that e-mail had the highest level of social presence, followed by real-time discussion and then bulletin boards. These two studies involved a combination of top-down and bottom-up approaches to research on social presence. The researchers employed a questionnaire of items adopted from the existing framework. Intimacy and immediacy were the main components of the perception of social presence in the online mediated interaction. Student perception was assessed by gauging how the technological tools functioned in providing intimacy and immediacy. The conceptualisation of social presence was expanded in these two studies. Student perception of social presence was also measured against contextual factors, participant relationships and their previous experiences, as discussed in section 2.7 of this chapter, which all played a role in improving social presence with the mediated interaction. In the studies, e-mail, especially one-to-one e-mail, contained the highest privacy space for learners, and therefore provided the most comfortable place for communication, and thus a high level of social presence was perceived by the students. Student relationships and their previous experiences also had an impact on social presence. If participants had a comfortable relationship with other participants, they probably covered more topics and the discussions went into more depth and thus they felt well connected. However, in order to shorten distance in online interaction, students had to develop certain skills. For example, they had to type quickly in order to deliver quick messages and communication styles also had to be learned to make other participants

feel comfortable and pleasant.

2.10.2 Comparing voice-based interaction and text-based interaction regarding social presence

Text vs. voice in mediated interaction in a social service website

When text-based interaction and voice-based interaction are compared with regard to social presence, sound features in the latter have been explored to connect participants for the benefit of the mediated interaction. For example, when Xie (2008) conducted a study concerning the use of three different tools of computer-mediated communication (CMC) for the public service to the senior citizens in a website, she compared the voice-based chat room, the online text-based forum and instant text messaging, which were used by older Chinese (age 50 or older) for community building and the development of relationships. She recorded the interaction data and analysed how these senior participants managed these tools to enhance social presence among themselves. In this study, the sound feature of the synchronous voice-based chat was creatively employed to sing karaoke, which was a popular entertainment for these elderly Chinese people and thus brought a great deal of enjoyment to a circle of friends online who felt intimate with each other. After they discovered this amusing activity amongst themselves, they began to talk enthusiastically about many things in their life. The simultaneous nature of the interaction with voice was believed to suit them very well for the expression of deep feelings and concern for each other. The researcher came to the conclusion that "the voice chat room is best suited for

companionship...” compared with the online text-based forum and instant text messaging (Xie, 2008: 728). It might be true in this case that when expressing complicated feelings and concerns with this particular group of people, it is easier to voice them than to write them down.

Instant messaging was also found to be suitable for emotional support for this group as they were aware of who their partners were in real time. The quick response of their partners made them feel they were together. The synchronous feature was found to be beneficial for developing their sense of community with a group of people with whom they kept in contact. However, without sound, the excitement tended to decrease. As for the online forum, the asynchronous text-based interaction, it “is used primarily for informational support and personal advice” (Xie, 2008: 728). When typing messages, the participants had time to think and extensive information was produced. The long information shared in the forum could be useful for their friends in practical purposes. Although the researcher does mention directly that social presence is higher in the voice-based interaction than in the text-based interaction, she does show a clear indication that the sound feature on its own has a positive impact on improving social presence and in this study synchronicity also produced a beneficial effect on the possibility of enhancing social presence in mediated interaction.

Employing voice-based interaction and text-based interaction in a blended course

Another comparative study was conducted by Hew and Cheung (2012) on voice-based

interaction and text-based interaction in a blended course of teacher education with forty one students in an American university. In the study, apart from face-to-face tutorials, the students utilized text-based forums, and the Wimba Voice Board to discuss topics or issues about information technology in teaching and learning. When comparing text-based and voice-based interaction, the latter was found to be more spontaneous, to produce more original ideas and therefore motivated students to engage in further discussion. The synchronous nature of the voice-based interaction provided a quick tempo of conversation and the sound feature made the conversation easy with less effort involved. The voice-based interaction was thought to be particularly useful for students who had poor typing skills and lacked confidence in writing skills. They were encouraged by the convenience of voice and expressed their thoughts more freely with their fellow learners. The voice chat was also liked because of the novelty element. Voice technology is new compared with text and the usual discussions with online interaction are completed through the text-based forum. Young learners especially like to experience new technology.

This case study did not compare the level of social presence found in the text-based interaction with the voice-based interaction directly but mentioned some factors of the latter that may lead to better communication quality in terms of close connection and enhanced interaction. It highlighted the merits of voice-based interaction from three aspects: spontaneity, novelty, and convenience with no keyboard skills, which encouraged more lively and realistic interaction particularly because of the sound

features. Consequently, participants were able to perceive emotions in the interaction and understand fellow participants more easily with sound in the communication. The synchronous voice-based interaction and the new form of technology were also the key factors that contributed to more successful mediated communication in the online learning environment.

Audio feedback and its implication for social presence research

From spring 2004 through to the summer of 2005, Ice et al. (2007) compared audio feedback and text feedback with students in an online course in order to elicit how sound features could assist student understanding of mediated interaction and what would be the later impact on students' behaviours. Their usual feedback to the students' writing was text-based. They then incorporated audio commenting on the discussion boards and in e-mails to the whole class or to a small group. At the end of the term, they found students preferred audio feedback to text feedback as the audio feedback was believed to convey nuances which helped students more easily understand what teachers meant. When written text was presented, every word was silent and no extra meaning was attached to the important words which should be stressed, but audio messages revealed how the message was relayed providing more information about the value of words. If the words are stressed or pitched with sound differences, the meanings changed accordingly. Consequently students reported that they understood their teachers better because audio feedback had also provided subtle meanings apart from the regular word meanings in the message.

Moreover, audio feedback seemed to involve students more than the text feedback. Students made more effort to understand what was said and reached a higher level of comprehension of the ideas in the feedback provided. They thought that text feedback was from a template and involved cutting and pasting. The text messages, in their view, did not show original ideas but audio feedback had individualised thoughts with a caring and personal touch and therefore encouraged them to think more and make more contributions in their discussions. The audio feedback had rhythm, which made them feel that they could remember the content well from the audio messages and applied new ideas in different situations. This case study found that voice-based interaction was more capable of expressing subtle meanings with its sound features than the text-based interaction. Sound revealed an individual's thoughts and attention to the participants in the communication, which draws interpersonal relationship closer to each other and produces more involvement with participants.

Ice et al.'s study (2007) did not focus on social presence as such, but their comparison of text-based and voice-based interaction brought considerable insights with regard to social presence. In this situation the audio characteristics which improve the understanding of the mediated interaction and the student enthusiasm of participating in the interaction are likely factors enhancing social presence in an online environment. Although this study is a one-sided narrative revealing the superiority of voice-based interaction, the case study in the real context had revealed a true story of how well this type of interaction functions towards connecting participants in an online course.

Voice-based interaction and learning purposes

Voice-based interaction can also stimulate enthusiasm and help develop an engaging and empathetic community if sound features match student learning needs. In the study conducted by McIntosh et al. (2003), voice-based interaction was used to improve listening skills and spoken competency in the English language and this was the strength of the voice features. As the mode of communication matched learning needs it was stimulating learner enthusiasm, comfort levels in the interaction and made the learning experiences enjoyable. In another study, synchronous voice chat was used for team teaching on an online English course delivered by American teachers assisted by local bilingual teachers in Taiwan. The focus of the course was on conversational English based on current news. It was found that the synchronous learning environment provided a rich context of "online intercultural community of practice" (LaPointe et al., 2004: 1). An engaging and empathetic online community was formed. It is believed that "the relationships that have grown out of these conversations have developed more rapidly and more deeply, and have been sustained longer, because of the voice capability" (LaPointe et al., 2004: 3).

Negative evidence against voice-based interaction

However, voice-based interaction may also pose challenges as some researchers have pointed out. Marriott and Hiscock (2002) made a case study which suggested negative evidence relating to voice-based interaction. This study was conducted in March to June 2001 at an Australian university using voice- and text-based interaction in a

blended course. Students were required to post a summary of their readings for a discussion each week in a course forum. They could choose to make contributions to the forum in either text or voice or a combination of both. It was found that more students preferred to post text messages and they felt frustrated with the voice tool and abandoned it. Marriott and Hiscock (2002: 646) stated that:

> For a great many of the participants it would seem that voice-posting presents a challenge in that it:
>
> - is embarrassing to talk into a computer in public or private
> - is difficult to make long responses without errors
> - is difficult to speak fluently
> - is difficult to correct errors
> - requires additional equipment (headset)
> - presents technical problems on some computer systems

If we look at the study in detail, we find that the voice-based interaction was asynchronous. It seemed that one interactional turn was usually long and voice-based interaction usually demanded a two-way conversation with short turns rather than a monologue with a long turn. This may explain that 1) it was not natural for participants to talk to computers with no-one before them, 2) the norm of conversation was broken so that a participant may take a turn for a long period and nobody else took the turn from them to stimulate them. This case study also showed that the technological difficulty was a critical issue in voice-based interaction but was usually not an issue in

text-based interaction. It also presented a conflicting result with regard to the findings of the previous studies about the advantages of voice-based interaction. The indication here is that although the voice-based interaction has the merit of encouraging interaction and improving the understanding of other participants and enhancing their interpersonal relationships, it also has demerits that prohibit the natural flow of conversation and this will probably decrease the level of social presence in online mediated interaction.

Comparing projected social presence in voice-based and text-based interaction

In the above mentioned research when comparing social presence in the text-based and voice-based interaction, the concept of social presence was more concerned with the perception than the actual interaction itself. It meant that researchers explored how the participants felt connected with the two types of interaction. King and Ellis (2009) conducted a study to compare the level of projected social presence in voice-based interaction and in text-based interaction with students studying an online course on health science at an American university. In their quasi-experimental study, 86 undergraduate students completed the course. Students were required to complete at least one text message and one voice message in a forum for each of the seven course topics. They had a choice of posting either asynchronous text messages or asynchronous voice messages, depending on their preferences. At the end of a school term of 15 weeks, 4237 messages were collected of which 2812 were text-based entries (66.35%) and 1425 were voice-based (33.65%). The recordings of their voice

and text messages were coded and analysed using social presence categories (Rourke et al., 2001) to compare the level of social presence. In this study, the research data is the actual interaction of students during the process of learning a course.

When the density of social presence was calculated in the voice and text messages, King and Ellis (2009) found that text messages had a higher social presence, although not at a significant level, with more affective and interactive categories than the voice messages. The cohesive category appeared more often in voice messages but not at a statistically significant level. King and Ellis (2009) concluded that voice-based interaction did not necessarily improve social presence for students and was not necessarily a better tool compared with text-based interaction.

This study has a new perspective to compare text-based and voice-based interaction. As most of the research focused on the student perception of social presence, this study collected data in the actual interaction while students studied an online course. The strength of this study was to examine the projected social presence rather than what students thought they had done with social presence. It reflected a true picture of social presence at least in some points. The result contradicted other research findings as I have described in this chapter. The reasons behind the differences are possibly that when the actual interaction was chosen, there needs to be a particular point which we decide to choose. There are also contextual factors which must be investigated as discussed in the existing literature. What is the learning goal of an online course? Are

the types of interaction synchronous or asynchronous? Are the medium characteristics recognised fully? If we examine these questions, the weakness of this study is revealed as it had a static and fixed focus. It was not sufficiently flexible to cover a large range of interactions and therefore is limited in its research scope.

Furthermore, King and Ellis' study (2009) touched on measuring social presence in voice-based interaction; however, there is still much to explore in the area. First, the scale of the study involved 4237 entries of messages collected during the 15-week course. This invited further studies to consolidate the findings or challenge them. Second, the study's context was in an American south-eastern university. It is felt that the present study's context needs to be extended to other areas of the world so that contextual factors can also be taken into account when social presence is measured. Finally, in King and Ellis' study, text and voice messages were all asynchronous, text-based and voice-based interaction could be more complicated with regard to its effects on social presence and interpersonal communication in various situations.

2.10.3 Video-based interaction and social presence

As technology advances, new research studies have been conducted concerning social presence in multimodal interaction. The new research is indicative for the present research. As broadband becomes more pervasive, video is integrated with online interaction with the possibility of including more and more visual cues in the communication such as interactants' facial expressions and body movements. In

addition, it captures the context where a conversation takes place and provides clues about the background to the conversation. If a lack of visual cues makes social presence difficult in text-based interaction, with the use of video, the sense of distance between participants in the interaction may be reduced if real people in a real context are visible and this situation is likely to increase participant feelings of connection and the level of social presence is thus improved (Garrison and Arbaugh, 2007; Garrison, Anderson, and Archer, 2000; Rovai, 2002).

When video-based interaction is examined for social presence, it encounters a similar situation with voice-based interaction. It is usually compared with text-based or voice-based interaction for its advantages and disadvantages. For example, in a recent research study, Borup et al. (2012) organised their online students into small groups and requested them to discuss class topics. They used asynchronous video clips to create social presence, including recording their teaching in the classroom, inviting their students to produce videos to introduce themselves, asking students to participate in the discussion and presenting individual feedback to fellow students. After interviewing the students it was found that social presence with instructors was higher with the use of video clips than with text-based interaction. Students said that they knew their instructors' personality by watching their facial expressions and movements. Most students also found their peers' social presence was enhanced after they had watched the video clips presented by fellow students. They said that these students came to life through the videos. Video communication provided more clues as to the

speakers' intentions because of the inclusion of tone of voice, facial expressions and body movements. The video also revealed their peers in a real life context and this provided a picture of their personal lives. This vivid information of their peers drew students closer to each other and made them feel less inhibited. Their motivation to discuss their learning content was also stronger.

However, the video in Homer et al.'s (2008) two studies did not help increase the social presence in multimedia learning environments. In the first of the two studies, the students (N = 24) attended either a video lecture with PowerPoint slides, or an audio lecture with PowerPoint slides. The purpose of the study was to discover whether the video image of the teacher would either improve students' learning or their social presence with the teacher. After either watching or listening to the lecture, students were assessed for learning, cognitive load and social presence. A significant difference was found with regard to cognitive load. Students watching the video lecture experienced a greater cognitive load. In the two situations, the learning result and social presence were not significantly different. The conclusion is that when students learn the information delivered by the teacher, the video image actually did not improve either their learning or their social presence with the teacher.

In the second study, students (N = 25) were assigned to watch or listen to the video lecture or the audio one, but the students' background knowledge and learning preference were assessed before viewing the lecture. After students had watched or

listened to the lecture, learning, cognitive load, and social presence were assessed. No significant differences were found for learning or social presence. However, a learning preference was found to produce an effect on cognitive load: low visual-preference students were reported to have experienced greater cognitive load in the video condition, while high visual-preference students experienced greater cognitive load viewing the audio lecture. The results of the two studies were interesting because they showed that students' learning preferences had an impact on their learning and their social presence with the teacher although not at a significant level. Video presents vivid motion pictures and appears stimulating to practitioners and learners. It has the capacity to show more of the other people in the interaction, but it cannot guarantee an increase in social presence. When video is not coherent with the content of the communication it divides the students' attention. It may produce some negative rather than positive effects. This leads to the thought-provoking notion that video may bring certain benefits that can help increase social presence but only in certain conditions (Homer et al., 2008).

Video is likely to produce a high level of social presence when compared with voice- and text-based interaction, but only in certain conditions. This point is certainly useful for researchers conducting research on voice-based interaction. Since video is not the focus of this study, I will not review the literature on the video section any further. In the practical teaching context, video has been used in online learning around the world. However, in China, there is an uneven development in the country where in Beijing,

Shanghai and in other large cities, broadband is widely used, but in rural areas the internet connection is still very slow. If students of an online school are geographically widespread, video-based interaction can sometimes be used, but not as a mainstream method of communication. It is therefore not included in this study.

2.10.4 Social presence in virtual worlds

When three dimensional (3D) virtual worlds are employed for training or for educational purposes, social presence becomes a popular topic for research. Virtual worlds have been created to represent places or situations similar to the real world and learners can take part in the generated virtual world. This provides significant benefits especially for those involved in the type of training which is expensive or dangerous to conduct in real world situations. For example, if learners intend to work in a foreign country and it is expensive for them to live there for intercultural knowledge training, they may receive training in the virtual world where the streets are similar to the real streets and the people look like the real people in the different culture. Learners may observe and experience facets of the foreign culture as if they are in the real world, moreover participants act through external devices to interact with the virtual environment and other participants there. The participant enters the virtual world as an avatar and can control the avatar thorough external devices to make the avatar speak and act to interact with the avatars of other participants. As the virtual world has rich immersive and collaborative learning environments for online students, many research studies have been conducted and the positive effects of the new involvement suggested.

In addition participation would motivate students to engage more with each other in social interaction. In this way social presence is enhanced (Dean et al., 2009; Traphagan et al., 2010).

Social presence has been researched in the virtual world from a number of perspectives. The role of the avatar is an active area. Dean et al. (2009) conducted a study in which two survey situations are compared to discover social presence in the virtual world. In the first situation, the survey questions were placed in a kiosk in Second Life. Students were recruited through word of mouth to enter the virtual environment and answer each question in the kiosk as they would do a web survey. The second situation featured an interviewer in the shape of an avatar conducting the survey with the students in the virtual environment. The interviewer asked the questions using instant messages. The results revealed that in the first situation students were found to pay less attention and were thus less engaged than in the second situation. In contrast, in the in-avatar survey, students spent more time on questions and were more serious in answering questions. In the first situation without the avatar of the interviewer more students failed to answer some of the questions. The presence of the interviewer in avatar form seemed to have improved the level of attendance for the students in the survey. Students were more comfortable with the in-avatar interview experience. It is also believed that students were more compliant in the presence of the interviewer. This study demonstrates that if the participants take a visible representative shape in the virtual world it will influence the result of the communication process. The level of

social presence is increased and thus the parties involved are more engaged in the mediated communication.

Mennecke et al. (2011) used the concept of embodied social presence to research the communication process in virtual worlds. In real life situations people use their bodies to perform communication functions. Similar to this, the avatar is used as a virtual body to indicate meanings in communication. “When a user of a virtual environment is presented with a body representing himself or herself in the virtual world, that representation will have an influence on perceptions of self, identity, and the user’s actions associated with that representation. Thus, embodied presence creates an opportunity for the user to develop and extend his or her identity in the virtual environment in a way that is not present in most other communication environments” (Mennecke et al., 2011: 425). In this approach, the virtual world is considered a system of communication in which the avatar becomes the centre. The participant’s intention is embodied in the avatar. The change in the avatar may produce responding results that create an interrelated process of interaction. The conclusion is that when users experience a higher level of embodied interaction they tend to have higher social presence and more effective communicative behaviours.

This study is interesting in that it provides a path for research on social presence in the virtual world. Interaction in virtual worlds is different from text-based interaction and voice-based interaction in some very concrete ways. The virtual world simulates the

real world and an independent space is created and therefore it seems that there are usually two worlds in parallel existence: the real world of the individual user and the computer-generated world (Coelho et al., 2006). In the virtual world visual display devices have provided higher resolution, stereoscopy, and a large field of view. Through visualizing the vivid image, hearing good quality sound and seeing others in a true-to-life yet fictional world the user is immersed in the virtual world in ways which are similar to the real world of the user. Moreover, the user may enter the virtual world taking the shape of an avatar to walk, to jump and to fly in the virtual world. They also have devices to send comments and signals to interact with the environment and other users in the virtual world or even create objects there. When more dimensions are involved in the communication with the virtual world, research on social presence in the virtual world requires an understanding of its own features. This is also instructive for various types of interaction as they all have specific characters.

Traphagan et al. (2010) researched social presence in the virtual world using a Community of Inquiry framework and came to a different conclusion about the advantages of the virtual world in enhancing social presence in an online course. The mediated interaction using Second Life, a virtual world, and in a textchat was compared concerning the cognitive, social or teaching presence that the two tools created in the student learning process of the online course. This study was conducted in an online graduate course at an American university. The interaction data for this study were collected in a debate activity with three groups taking turns to use text chat

and Second life. The transcripts of the Second Life and text chat were recorded and coded with the categories and indicators of cognitive, social or teaching presence. The frequencies of cognitive, social or teaching presence were counted and compared in the mediated interaction. Text chat was found to facilitate a higher level of cognitive process and included more cognitive presence when students integrated views from their colleagues. When sharing information and exchanging views with fellow students, learners found that text chat and Second life were similar, but when they developed a critical view from the information, they believed that text chat was a better tool for them to reach a stage where they may absorb ideas and obtain a better understanding of various views at sight. The reason behind this difference in the two tools was that the students were more familiar with text chat and because the avatars' behaviours were distracting and they found that they could think more thoroughly and express themselves more freely with text chat. The other reason was that Second Life had a higher requirement for computer specification and some students experienced related difficulties and could not concentrate on their learning efforts.

The conclusion that the virtual world had a negative impact on social presence may provoke thoughts in later research. The avatar and visual cues could be a double-edged sword likely to cause distraction in the communication as mentioned above. In addition, students' previous experiences with technological tools also affected their cognitive engagement and social interactions. Pedagogical considerations may be more important than the medium's characteristics. If the exciting virtual world does not

integrate well with the educational theme it could do more harm than good with respect to learning. The other difficulty was that if students were not familiar with the virtual world and consequently did not feel comfortable with it. There might not be enhanced social presence for the participants in the virtual world.

When virtual worlds are researched with regard to social presence they provide insights for similar research in text-based and voice-based interaction. Medium characteristics can be employed to enhance social presence when new technological features are pedagogically considered appropriate and meet the learner needs of communication as they provide beneficial functions to the participants involved. If this were not the case irrespective of how high-tech it was, the cutting edge of the tool may do harm to the people involved. Moreover, learner characteristics are more actively involved in mediated interaction concerning social presence enhancement and community building. The virtual world is not the focus of this study and therefore will not be discussed further. On the practical side the majority of Chinese online schools do not, as yet, offer a 'virtual world' in which students can interact with one another. The current study is thus restricted to an investigation of social presence in the text-based forum and the voice-based chat room.

2.11 Calling for a holistic approach for investigating social presence in the voice-based chat room and the text-based forum

In the existing literature, there is a conflict of evidence on how voice-based interaction

influences social presence in online learning environments. On the one hand, voice-based interaction is claimed to enable participants to express deep feelings and concern with each other and believed to be beneficial in improving the quality of communication by developing their sense of community (Xie, 2008). The spontaneity, novelty and convenience of voice-based tools can encourage more lively and realistic interaction and the participants are able to perceive peers more effectively in voice-based than in text-based interaction (Hew and Cheung, 2012). Moreover, voice-based interaction is believed to be more capable of expressing subtle meanings so that individual thoughts and concern for other participants can be identified and interaction and involvement are enhanced in the learning process (Ice et al., 2007). It can also stimulate enthusiasm and help develop an engaging and empathetic community if it is integrated properly in online courses (LaPointe et al., 2004; McIntosh et al., 2003). All these characteristics of voice-based interaction have a positive impact on enhancing social presence in online interaction.

On the other hand, there are negative aspects to voice-based interaction for online interaction in terms of learner control and interactive features. Marriott and Hiscock (2002) found the weak points of asynchronous voice-based interaction discouraged interaction because it was difficult to talk to computers with no one physically visible for the participant; the norm of conversation was broken and the technological difficulty made interaction hard to conduct. King and Ellis (2009) compared the social presence level in both text-based and voice-based interaction. They concluded that

generally social presence is higher in the text-based interaction although not at a significant level. Voice-based interaction was more effective for cohesive features but not for interactive features.

When the divergence of views is revealed concerning the comparison of text-based interaction and voice-based interaction with regard to social presence it is possible that there are many variables which may play a role in the two types of the mediated interaction in the online learning environment. Studies have shown that when the sound features of voice-based interaction are properly used they help improve the social presence level in the interaction. Sound features increase the expressiveness of voice messages so as to enhance understanding of the mediated communication (Ice et al., 2007). When sound features are employed to meet the communicative needs or match the online learning needs they can stimulate excitement and bring positive results to the mediated interaction in terms of participant connection (LaPointe et al., 2004; McIntosh et al., 2003).

Another important issue is synchronicity. In the studies made by Xie (2008) and LaPointe et al. (2004), voice-based interaction is synchronous whereas the rest of the above mentioned studies concern asynchronous interaction (Hew and Cheung, 2012; Marriott and Hiscock, 2002; McIntosh et al., 2003; King and Ellis, 2009). Xie (2008) states that synchronicity was an important factor for the participants in order to build a close relationship. If the participants met each other at the same time, heightened

awareness of each other was created and then emotive expression and concern were more likely to happen. This point was also supported by LaPointe et al. (2004) and other researchers (Hrastinski, 2008; Motteram, 2001).

Technological difficulty is another factor which may play a role in its impact on social presence. In King and Ellis' study (2009) and in Marriott and Hiscock's study (2002), when students were left with a choice they chose text-based interaction as voice-based interaction posed technological difficulties. Sometimes voice-based interaction was a huge barrier to some of the online learners and they decided not to use it. If students have difficulty in using voice-based interaction the problem will affect how they feel about using it to connect with other participants. It is true that there are contextual factors, learner characteristics, and a combination of various factors that may counter the difficulty. If there is a strong support team students should feel safer. Or if a learner is more determined to overcome the difficulty, they need a better perception of the medium to become connected with other participants in the mediated interaction.

King and Ellis' study (2009) raised the issue of the perception of social presence and projected social presence. This study is the first to compare levels of projected social presence in text- and voice-based interaction with a uniform standard of social presence categories (Rourke et al., 2001). The question then is: "When students have a high perception of social presence, does that mean that they also projected social presence?" In their study, samples of actual interaction were chosen from both

text-based and voice-based forum and the number of words both types of interaction were counted. Social presence density per thousand words was compared. The conclusion was that voice-based interaction does not necessarily improve social presence level in total, but it has higher cohesive categories when compared with the text messages. The problem with this study is that it only uses a quantitative approach to make the calculation. What do those abstract numbers mean exactly? When they say that cohesive categories are more frequently used no examples of conversations show what is happening. Another problem is that when they use one uniform standard to compare the two types of the interaction and focus on the interaction data only they have lost the context in which the mediated interaction takes place. Participant characters, course content and personal relationships are hidden with no trace at all. It is certainly essential to control variables in an experimental study but the reality is that there is never a decontexualised situation of online interaction in an online course.

As there are many issues entangled in the comparison of social presence in text-based and voice-based interaction the task is daunting. Firstly, voice-based interaction in the existing literature includes both synchronous and asynchronous communication. This is an aspect which has to be declared in a study because they may produce different effects on participants in terms of connection. Secondly, social presence frameworks which were developed particularly for text-based interaction do not necessarily capture some important sound features that contribute to enhanced social presence. Perhaps we need to add something to the framework to make a fair comparison or at least

problematise it so that later researchers notice the issue. Thirdly, a problem exists in the data. If we compare actual interaction of voice-based and text-based interaction, choosing data that is representative is always an important issue. Moreover, it is usually easy to record the text data directly but the voice data has to be changed when it is transcribed. The recording and transcription of the voice are reduced in some way. If we compare the reduced voice-based interaction with the full text-based interaction, we need to constantly remind readers of the missing section of the voice-based interaction and compensate for its recovery. Finally, technology is a complicated problem. For example, voice-based technology is more demanding than text-based technology. To type words and post them in a text-based forum is usually easier than to record sound in a platform or to use a microphone to converse with other people online. In King and Ellis' (2009) study, students posted far fewer voice messages probably due to the technological element. Technology can also be integrated with other issues as mentioned earlier.

With so many issues involved in the comparison of social presence regarding social presence in mediated interaction, a holistic approach is called for to obtain a more complete picture of social presence in a real context. Perception of social presence as well as projected social presence is to be assessed with contextual factors taken into consideration. Medium characteristics as well as participant characteristics have to be revealed as there are various elements that may impact social presence in mediated interaction of online learning process.

2.12 The research gap in the present literature

As voice-based interaction is serving online learners it is crucial to understand it fully so that it is better utilised for online learning. The present study aims to build on an existing social presence framework (Rourke et al., 2001) to investigate social presence levels in a voice-based chat room and a text-based forum. It bridges a gap in the present literature in three ways. Firstly, this research compares student perception of their social presence and their projected social presence in the voice-based chat room and the text-based forum to find out if they are the same. If they are different it may supply an answer to certain diverging evidence regarding voice-based interaction as discussed in this chapter.

Secondly, I will touch on the issue of synchronicity which affects mediated interaction in terms of participant connection. The difference between this study and King and Ellis' (2009) research is that the voice chat in this study is synchronous while in King and Ellis' (2009) research the voice message is asynchronous. Synchronous voice-based interaction may produce a different level of social presence. This distinction of synchronicity will probably elicit some consequences. Thirdly, the present research explores the differences between text-based interaction and voice-based interaction by using both quantitative and qualitative content analysis so that contextual factors are likely to be discovered if they play a role in mediated interaction regarding participant connection and relationship building. In contrast to

King and Ellis' research, what students say will not only be calculated in categories to compare the density of social presence but also be interpreted and analysed in terms of their interactional meaning. As meaning in interaction is partly determined by social context and participant relationship (Norris, 2004), the interpretation and analysis will involve revealing the contextual factors which were ignored in King and Ellis' study.

2.13 Research questions

In this study, the key research questions were:

1. Is student perception of social presence different in the text-based forum and in the voice-based chat room?
2. Is the projected social presence different in the text-based forum and in the voice-based chat room?
3. Does the student perception of social presence match their projected social presence?
4. If they do not match, what are the areas where discrepancies occur?

The significance of the study has two key points. One is to test student perception of social presence and their projected social presence in the voice-based chat room and the text-based forum when they use them to study an online course. Another important factor teased out as a key issue to impact social presence in voice-based interaction is synchronicity. The research will be conducted using a questionnaire, interaction data and interviews to verify how this key element impacts the connection of the students in

a real learning contact. New knowledge will be created on these two points in particular.

The dearth of literature on social presence related to voice-based interaction presents a problem as computer technology is integrating sound technology rapidly in online learning, particularly in the area of foreign language learning. Thus it is essential to explore this new area to provide some insights as well as a practical guide for the understanding of social presence with mediated interaction using voice-based tools in the field of online learning. This study compares the text-based forum with the voice-based chat room with regard to social presence. The researcher intends to use the social presence categories (Rourke et al., 2001) as a framework from the existing literature because there is a lack of theory on researching social presence with voice-based interaction. The dual purpose of the research is also to validate the theory as well as providing suggestions to modify it for future research of a similar kind. Moreover, it is possible to provide a larger picture of social presence with mixed-method research in order to collect data to explain the conflicting evidence against voice-based interaction in the existing literature. If this is true, this research will be useful for the practical application of voice-based interaction for studying in an online course.

Chapter Three: Methodology and research design

3.1 Introduction

This chapter describes the methodology used for the execution of this research project. It discusses three methods: survey, text analysis and interview (see Table 3-1). When each method is introduced, a brief overview of the motivation for using it and the general procedure is provided and then a conclusion about its strengths and weaknesses is provided. The chapter also describes how the three methods have been

Methods	survey	text analysis	interview
Data collection	questionnaire	online interaction	recording and transcription
Data analysis	SPSS calculation	content analysis	thematic analysis

Table 3-1: Methods employed in the study

employed in the field of social presence. After the introductions to the three methods, the chapter describes the advantages of mixed methods and how they have been integrated as a unifying approach to improve the quality of the study. These reflections have led to a methodological design for this present study. When the research questions of this present study are examined, a mixed-method approach is proposed for the investigation of social presence specifically with learners at the Beiwai Institute of Online Education (BIOE), where the researcher works and where they use the text-based forum and the voice-based chat room for learning an online course titled "English through Literature". A questionnaire was used to discover learners' perceptions of social presence in the context. A text analysis was completed to search

for the projected social presence in the online interaction of the BIOE students. Finally, interviews with some BIOE students go beyond the projected social presence to explore some of the reasons for causing the differences in social presence. The three methods are combined to make a complete study to show an all-round picture of social presence in the BIOE context. The detailed procedures of how the research was conducted are described in the following sections.

3.2 Measuring social presence with a questionnaire survey

3.2.1 An overview of a questionnaire survey

Survey studies have frequently been employed in the field of education and in applied linguistics, with the aim of "describing the characteristics of a population by examining a sample of that group" (Dörnyei, 2007: 101). The main data come from a set of questions in a questionnaire designed to elicit factual, behavioural and attitudinal information from the chosen sample representing the population under research (Dörnyei, 2007). The results of the data are usually quantitative because the questions are normally designed using a Likert scale which means that a question or a statement is followed by answers each of which is endowed with a value. For example, a statement "Online discussions enabled me to form a sense of community" has five choices for participants to make 1 2 3 4 5 (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree, 5=strongly agree). All the answers to the questions can be treated numerically and data can be analysed using statistical software. A questionnaire may contain some open questions or interview questions which require qualitative

treatment but most survey studies use questions that can produce numerical data.

The major issues regarding surveys are the sampling of the researched population, the design of questionnaire items and the administration of questionnaires (Dörnyei, 2007). It is true that to make a fair representation of the population is always a complicated issue. If we ask whether online communication helps form a sense of community there are probably divergent views with some of them agreeing and some of them disagreeing. If a group of student dropouts are chosen it might be the case that most of them do not agree that online communication helps community building. Then the issue is "Are you researching the whole student population of an online school or do you just want to research that particular group of dropouts?" The design and administration of the questionnaire is not only a science but also an art. If questions measure what they are supposed to then the questions are considered highly valid (Bachman, 2004; Dörnyei, 2007). The way the questionnaire is conducted may have a substantial impact on the results. This point will be explored in the next chapter which will focus on the questionnaire.

3.2.2 A semantic differential technique in early social presence research

Social presence research originated in communication studies conducted in the 1970s at the University of London. A group of scientists measured the effectiveness of communication tools and they found that social presence was an important element in deciding if a particular tool is communicative or not. The method adopted for

measuring social presence was the semantic differential technique (Short et al., 1976). Short et al.'s study was an experimental study with subjects in a laboratory using communication tools for a specific communication task. 72 subjects were enlisted in this experiment and were supposed to represent the larger population of the general public. They were divided into pairs and each pair conducted a conversation with a tool and then changed to another tool. After the conversation with one tool, the participants were asked to evaluate it on a series of seven-point, bipolar scales, such as impersonal – personal, unsociable – sociable, insensitive – sensitive, cold – warm, and so on. The participants were then given the same set of questions after they had completed the communicative task with another tool. The scores given to the two different tools were then compared and the tool with a higher score was believed to have a high level of social presence and thus considered as more effective for reaching a communication goal.

When social presence was researched in the early years of online learning the semantic differential technique (Short et al., 1976) was still used with some modifications to the question items (Gunawardena, 1995). 24 items were reduced to 17 and the seven-point scale was replaced with a five-point scale. The researcher did not mention what she had changed and it was difficult to describe the changes exactly. Gunawardena (1995) combined the questionnaire with a qualitative method using interaction analysis which means that she recorded what students actually said in online interaction and tried to explore the possible elements that may affect social presence in the new online

environment. She found that social presence was "a potentially significant factor in improving [the] effectiveness" of the distance course (Gunawardena, 1995: 164), and it was created by the participants, particularly with the help of the instructor. In another study, Gunawardena and Zittle (1997: 15) modified Short et al.'s model of social presence and developed a 14-item questionnaire to measure it. They saw it as a construct consisting of "a number of dimensions relating to the degree of interpersonal contact" (Gunawardena and Zittle, 1997: 9). With other questions in line with the questionnaire using five-point Likert-scale items, they calculated social presence in relation to other elements of online learning. The study showed that social presence is a strong predictor of learner satisfaction in a computer-based learning environment (Gunawardena and Zittle, 1997: 23). The authors also concluded that "student perception of the social and human qualities of CMC will depend on the social presence created by the instructors/moderators and the online community" (Gunawardena and Zittle, 1997: 23). In other words, active participation and involvement makes online interaction interesting and meaningful. Therefore, learners as well as the teacher play the major roles in the new learning environment.

Later researchers shifted the focus of social presence to the 'relational perspective' raised by Gunawardena (1995: 164), which means that social presence is more related to 'functional and social factors' (Gunawardena, 1995: 164) in the environment than the mere subjective judgement of the participants on the characteristics of the medium. Surrendering the semantic differential technique for measuring social presence, Tu

(2002b) made a construct of social presence with three major dimensions of social context, online communication and interactivity. In Tu's construct, social context refers to "CMC users' characteristics and their perceptions of the CMC environment". Online communication refers to "the language used online and the applications of online language, attributes of CMC, computer literacy skills, online immediacy, and online language skills" and interactivity refers to "the active communication and learning activities in which CMC users engage and the communication styles they use, such as response time, task types, topics, and size of groups" (Tu, 2002b: 2). From these dimensions, participants do not just offer their feelings about what they think of the communication medium, they evaluate how they function. In addition, Tu (2002b) related these dimensions to system privacy and feelings of privacy which are important social factors and have an impact on social presence as explained in the literature review chapter of the thesis. In his study, the questions centre on these dimensions and social presence levels were compared in e-mails, electronic bulletin boards and synchronous text chats.

3.2.3 New shifts in the questionnaire on social presence research

Progress in the types of questions used to identify social presence continues to evolve in studies made by later researchers. The dimensions of the concept have been successively enlarged. For example, in Swan and Shih's studies (2005), subjects were asked to rate their agreement with statements concerning the perceived social presence of peers, the perceived social presence of instructors, their satisfaction with their

instructor, and their perceived learning

	SPP	SPI	PL	PI
Social pres. of peers (SPP)				
Social pres. of inst. (SPI)	.70*			
Perceived learning (PL)	.70*	.74*		
Perceived interaction (PI)	.62*	.50*	.55*	
Satisfaction w/ Inst. (SI)	.56*	.81*	.74*	.41*

*p<.005

Table 3-2: Correlations between variables (n=51) (Swan and Shih, 2005:121)

(used with permission of the author)

When the data were collected in Swan and Shih's study, correlations were found between various factors (see Table 3-1). These findings "indicate that perceived social presence has a stronger effect on student perceptions than perceived interactivity" (Swan and Shih, 2005: 121). The social presence concept is broadened and the perceived social presence of peers, and perceived social presence of instructors were used to gain a broader picture of the concept. The context was also considered in the study in order to understand what students are actually doing in online interactions and to relate the concept to the context in which they were placed.

There are several questionnaires for reference in the existing literature on social presence (Gunawardena and Zittle, 1997: 15; Shea and Bidjerano, 2009: 546; Swan and Shih, 2005: 134). But no two questionnaires are the same. This is understandable because each study has a particular focus and the context in which it is conducted is different. The recent questions continue the line of stressing the functional factors of

the participants and the social factors in the online learning system. The major focus is on how the participants get to know each other, how they form a community, and how they collaborate in the learning process (Shea and Bidjerano, 2009: 546).

In addition to the content of the questions in the questionnaire, the wording of the questions is also crucial to make it succeed. Dörnyei (2007: 108) provides some principles regarding wording, such as using "simple and natural language", and "avoiding ambiguous or loaded words and sentences". The format may also have an impact on the audience. A questionnaire with a clear structure, appropriate length and attractive layout looks very positive and the audience would most probably take it more seriously and thus produce more considered responses. The ultimate goal of the questions is to present clear information to the audience so that they know what is required of them. Before the questionnaire is distributed, it is always useful to pilot it and test how it is received in the real context and then, based on the feedback of the pilot study, the questionnaire can be modified for a better effect (Dörnyei, 2007).

3.2.4 The administration of a questionnaire

The administration of a questionnaire concerns the sampling procedure and sampling size of the students and the handling of the questionnaire. Sampling procedure and sampling size have to take many things into consideration. The procedure has to follow strict rules so as to enable the survey results to be convincing and reliable (Fowler, 2009). Sampling strategies can generally be divided into two types: probability and

non-probability (Dörnyei, 2007: 97). The former adopts scientific rules which are complex and expensive to carry out. It is "usually well beyond applied linguists" (Dörnyei, 2007: 97). Most of the survey studies involving social presence research have adopted convenience sampling which means that the researcher chooses subjects they have access to, which is reasonable and within the means of ordinary researchers. Tu (2002b) delivered a questionnaire online and 43 of 51 subjects responded to it. In another study, Swan and Shih (2005) had 51 student volunteers complete the questionnaire. The problem with convenience sampling is the extent to which the subjects are representative of other subjects in a similar context. If the participating subjects do not represent the whole population in the context, then researchers cannot generalise their results. For example, in the two studies mentioned, active students usually volunteered to answer a questionnaire and the question arises as to whether they represent the whole population fairly. This type of self-selection is a difficult problem which is hard to solve (Dörnyei, 2007). What the researcher can do is to explain it and accept there are limitations to the research.

The handling of the questionnaire also produces an effect in a study. As we have already mentioned in Section 2.8.4, Dean et al. (2009) conducted a study in which two survey situations are compared to discover social presence in the virtual world. In one situation, the survey was posted online and students volunteered to enter the virtual environment themselves and answer each question. In the second situation, is an interviewer in the shape of an avatar conducted the survey with the students in the

virtual environment. The interviewer asked the questions with instant messages. As a result, in the first situation, students were found to pay less attention and were thus occasionally careless in their responses. In the in-avatar survey, students spent more time answering questions. The two situations alert us to the significance of the differences between the online survey and the survey that is delivered by a person in the classroom. It may be the case that, when students answer questions with the teacher present, more convincing answers are provided.

There are other elements on the administrative side, such as administrator attitudes and the purpose of the questionnaire (Dörnyei, 2007). If the administrators are supportive, the questionnaire is more likely to succeed. Sometimes students wonder about the purpose of the research. If it is related to their learning or beneficial to them, they are willing to be involved and support it. It is usual practice for the researcher to communicate the purpose of the research to the subjects in the questionnaire. The researcher writes an introduction to what the research is about. This message serves as a good lead-in to the questionnaire itself and is also necessary for ethical reasons which will be explained in Section 3.7.

3.2.5 Advantages and disadvantages of a questionnaire

The strength of the questionnaire is its capability to access a large number of subjects at one time. Theoretically, an online questionnaire can be distributed to all internet users worldwide. Of course, it does not necessarily mean that all of them are interested

in it and will return it. In the field of social presence research, this questionnaire approach has been employed to investigate the opinions of large numbers of subjects. For example, in Shea and Bidjerano's study (2009), 2,159 learners were involved and in another study by Leong (2011), 294 students participated. With such a large number of subjects, methods other than statistical ones cannot possibly manage the amount of data which is normally generated. In addition, the strength of the questionnaire is that the questions can cover a variety of topics (Dörnyei, 2007) to ensure it is efficient.

This method has been followed in many studies in the online learning environment (Gunawardena, 1995; Gunawardena and Zittle, 1997; Richardson and Swan, 2003; Swan and Shih, 2005; Tu, 2000; Tu and McIsaac, 2002). The benefit is that the method can be easily replicated by later researchers in similar situations and the reliability of studies of this kind is thus strengthened. The results of the studies are in quantities which can be used to make comparisons across studies and thus make related studies continue along the same line so that they can be easily traced in later studies. It is particularly important in social presence research as the concept is complicated and requires many years of research to progress. As computer technology has been advancing rapidly and the social context changes extremely quickly because of the technology, the concept of social presence is inevitably evolving. Although the questionnaire method is generally accepted, the questions which measure social presence are being constantly modified.

The problem with the questionnaire is that the questions have to be simple and straightforward so as to make it easy for subjects to understand. This point makes a questionnaire unsuitable for probing deeply into an issue and superficial data are often obtained (Dörnyei, 2007), which may drive a researcher to supplement it with some other methods.

3.3 Text analysis

3.3.1 An overview of the text analysis

The text analysis method has a long tradition that can be traced back to the 18th century in Scandinavia and was first used in the early 20th century as an analytic technique for text data (Hsieh and Shannon, 2005). It has been widely adopted in analysing computer-mediated interaction in educational settings (De Wever et al., 2006). Many researchers in the field of social presence research favour this method because it shows what participants have actually said in their communication process and the linguistic data are believed to supply a solid foundation for research (Garrison and Akyol, 2008; Gunawardena et al, 1997; Henri, 1992; King and Ellis, 2009; Swan and Shih, 2005). While questionnaires reveal the perceptions of social presence when students reflect and look back on their past experiences, the text analysis deals with language use in the interaction, and text data is analysed to show how participants behave linguistically during the communication process which is more reliable than just the impressions and subjective perceptions beforehand and afterwards.

When text analysis is used as a research method, it covers the areas where the data is collected, modes of language that are accepted and how the data are analysed. Concerning data collection and modes of language, naturalistic interaction and written language are usually preferred. Naturally occurring language reflects the real world interaction in an objective way and may suit the research purpose. The written language is accepted probably because of the convenience principle. Even when other modes of language are analysed, they have to be transformed into the written language. When language data are analysed, Hsieh and Shannon (2005) have described three types of content analysis: 1) conventional content analysis, 2) directed content analysis and 3) summative content analysis. Conventional content analysis is "generally used with a study design whose aim is to describe a phenomenon" (Hsieh and Shannon, 2005:1279). This type of content analysis is used when existing literature is limited to a certain phenomenon. Instead of using preconceived categories from the literature, the researcher develops categories from the data which have been collected. With the directed content analysis, the researcher adopts existing theoretical models to deal with the collected data. The goal is to "validate or extend conceptually a theoretical framework" (Hsieh and Shannon, 2005:1281). A directed content analysis is more structured than the conventional content analysis. With the existing framework, it is more predictable to search the right categories to place them in the structured framework. When comparing conventional content analysis with directed content analysis, the former approach is more inductive: the research devises categories on the basis of the data collected and then labels the remains of the data with the categories

thus formed. The latter approach is more deductive using existing categories to label the data.

Summative content analysis is described as "identifying and quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content" (Hsieh and Shannon, 2005:1283). If the frequency of words or content is the only result of the findings, the research is then exploring the use of the words and content which is often quantitative. If the research moves beyond the quantitative stage, it may interpret the use of the words and content in a context. Oleinik (2011) has described two distinctive methods for content analysis: quantitative and qualitative. In the former method, the occurrence of certain words co-existing with other words is calculated and the frequency of categories has been considered meaningful. This method is labelled 'objectivist' as the calculation of categories is objective and does not produce much difference no matter who performs the calculations. The latter qualitative method is 'interpretativist' as individual interpretations of the words in use are drawn upon or the interpreter may infer meaning from the context. Nevertheless, they may be combined to produce a richer study. Quantitative content analysis is seen as objective and generalisable whereas a qualitative content analysis may provide many interpretations from various perspectives.

3.3.2 Making inferences from text

Concerning the process of doing content analysis, Anderson et al. (2001:10) defined

the content analysis technique as "a research methodology that builds on procedures to make valid inferences from text". The procedures include searching for a theoretical framework, collecting text data, coding the data with categories and indicators developed from the theoretical framework, and presenting interpretations and conclusions. Theoretical models are usually the starting points for collecting text data and analysing them. Without them it is difficult to have direction in the research (De Wever et al., 2006). In recent years, however, researchers have tended to take a bottom-up approach as described in the previous paragraph, which means that they collect data first and form categories in the data from the beginning (see Xie, 2008). Even in such situations, theory can still provide general guidance for searching the data that may fit with some guidelines but not others. Later interpretations can refer to the theory which shows that the research has been well grounded.

When the theoretical stance has been decided, the next step is to collect data with the underpinning theory in mind. The sampling issue regards how much is adequate and what will be most representative. Riffe (1996) states that sampling depends on the research objective and the design and is also related to how much resource the researcher has at hand. This is exactly what researchers are doing in the field. Content analysis of newspapers tends to have a large amount of data because electronic newspapers are available and easily accessed. In the field of online education, data from text-based interaction are more available than the other modes of interaction and therefore more research has been conducted with text-based interaction than the other

modes.

3.3.3 Unit of analysis

When data are analysed using content analysis, the unit of analysis is an important decision to make. The significance of dividing the analysed data into segments is particularly useful for finding certain language features in the chosen data so that frequencies or ratios of these features can be calculated (Foster and Wigglesworth, 2000; Schreier, 2012). When content analysis is adopted for social presence research, affective, interactive and cohesive features are the cues to be searched in the language data collected (Rourke et al., 2001). The level of social presence is decided by the intensity of the three types of cues. In other words, if the frequency of the indicated cues is high, the level of social presence is therefore labelled as high.

Segmentation into units with voice and text messages collected in the online learning process is different from traditional oral language and written language data. In King and Ellis' study (2009), one entry of a voice or text message into the forum was made a unit, which was reliable in asynchronous online interaction. In the text-based forum, one posting as an entry can be easily recognised. This is also transferable to other studies as well. Asynchronous voice messages can be treated in the same way as text messages with each utterance considered to be a unit, similar to a text 'posting'. In asynchronous voice messages, one utterance is a message at one move, which is also reliable and convenient for researchers. In synchronous voice messages taken from the

voice-based chat room, one turn of conversation is similar to an entry of message, but usually as the interaction is fast paced, one turn of a conversation is usually shorter than an entry of a voice message and a text message in asynchronous interaction.

Choosing the appropriate unit of analysis depends on research purposes. As this study intended to compare social presence level in the text-based forum and the voice-based chat room during the time when BIOE students studied an online course in a degree program in the Chinese learning context and to find out the discrepancies between the student perception of their social presence and their projected social presence in actual online interaction, reliable recognition of the unit was more important than what a unit should be. The problematic issue of the unit of analysis in this study lied in the comparison of the voice and text messages and the mixture of Chinese and English language in both types of messages. When the voice messages were transcribed, was the language changed or was it the same with the original spoken discourse? As the existing literature suggests, the analysis of spoken discourse is mostly on the transcribed scripts (Cameron, 2001). It is proven to be the most feasible method in practice.

Chinese and English are so different from each other. When they are mixed, segmentation with the two languages with one standard becomes an impossible task. Fortunately, the focus of social presence indicators was on the meaning of the messages rather than on the language form. Searching similar meanings in both

languages within an entry of message and a conversation turn was definitely possible. The thorny issue was the calculation of frequency of social presence. If English words were added up, for example, there were a certain number of social presence indicators in 1000 words, how many Chinese words were there with the same amount of social presence? A Chinese character is possibly an English word or maybe not.

In this study, messages in Chinese were translated into English. When translated into English, the original messages were changed in one way or another. But as both text and voice messages were treated in the same way and this study was to compare social presence level in both types of messages, comparability was considered as acceptable. When use of English and Chinese was calculated, both language were listed as separate languages and not added up to be one item (see Table 7-1).

3.3.4 Coding and inter-rater reliability

After the unit of analysis is chosen, coding and inter-rater reliability become crucial for ensuring the quality of research (De Wever et al., 2006). Coding in research can take time and much effort. This is why in some studies using content analysis researchers describe the training process for a coding team (King and Ellis, 2009; Rourke et al., 2001). The training is to ensure coders understand the categories derived from the theory and the administration issue for negotiation and discussion to solve the problems when they do not agree on certain points. However, coding the text into categories is subjective and relies on personal judgement. Oleinik (2011) mentioned

the objectivity of coding for reliability, which is important for improving the quality of the research if content analysis is adopted as a method. In order to make it more objective, an inter-coder agreement coefficient has been introduced. If two coders have a high percentage of agreement with each other's coding, it means that the coding process is reliable. Sometimes, if the project is adequately funded, it is possible to employ more than two coders and thus the reliability of the study can be improved. It is also true that coding may be completed by one person and then the coder is encouraged to do the coding at a time interval so there is an agreement rate for the coding on two occasions. If the agreement rate is high, it is also possible that the reliability is acceptable. When two or more coders are employed, the inter-rater reliability quotient is required, which is "the result of the ratio between the numbers of codes which is agreed upon and the total number (agree + disagree of codes)" (De Wever et al., 2006:10). For example, if the total number of codes is 4, and three of them are agreed, then the percentage agreement is 3 divided by 4, which is 75 %. The normal accepted level of inter-rater reliability is 70% however it varies from situation to situation.

Validity concerning content analysis has frequently been discussed by researchers (Neuendorf, 2002; Perraton, 1988). Internal validity concerns the match between conceptualisation and the operation of applying the theoretical framework (Neuendorf, 2002). Data collection emerges around a focus based on the theoretical framework. External validity concerns the generalisation of the findings and the replicability of the

study (Neuendorf, 2002). When a large data set is collected, it is tempting to make broad generalisations. However, is it safe to arrive at any conclusions? It is always an issue to consider. When thinking about replicability it is always helpful to describe the study process to make it transparent to other researchers and to any interested readers.

3.3.5 Content analysis and social presence research

Content analysis has constantly been employed to explore online interaction for understanding critical thinking, knowledge construction and teaching presence (Henri, 1992; Gunawardena et al., 1997; Rourke et al., 2001; Garrison, Anderson and Archer, 2000). Online interaction was recorded in the form of text and the text was analysed for the linguistic signs revealing the expected categories and themes of the research in the process of learning through online interaction. A similar approach has been adopted in the field of social presence research; a widely recognised template was made by Rourke et al. (2001) with categories and indicators of social presence (see Table 1-1 in the first chapter of the thesis) and it was later used by other researchers (King and Ellis, 2009; Swan, 2002; Swan and Shih, 2005).

When the text data are recorded from online interactions in educational settings, the presence of these 12 indicators reveals the level of social presence in an online Community of Inquiry. Low frequencies of the indicators in the online interaction indicate that the social environment is cold and impersonal. High frequencies indicate that the environment is warm and collegial. Participants feel a sense of affiliation with

each other and a sense of solidarity with the group (Rourke et al., 2001: 8). In such a situation, a lively atmosphere is formed and participants then tend to use more of the language that is related to the categories and indicators identified. If the text-based forum and the voice-based chat room are compared with regard to social presence, the transcripts of the text from voice chat and the text messages are taken from the online interaction with learners using the tools and coding is completed with the transcripts and the text messages to compare the frequencies of social presence categories and indicators. A higher frequency of categories and indicators means a higher level of social presence. This also means that when learners use the tool with a higher social presence they may have more increased interaction and produce a better satisfaction rate among learners as described in the literature review.

Later researchers expanded the categories and indicators of social presence. For example, Swan (2002) posed two more indicators in the affective category: paralanguage and value. Paralanguage includes emoticons, special arrangements of punctuation and spellings, which is typical of online text messages. For example, :-) may express a happy feeling and :-(may express the opposite feeling. CAPITALISATION and bolding may indicate a strong emotion. Value refers to personal values, beliefs and attitudes. More indicators were added to other categories, but the main framework remained the same with three types of categories and most of the indicators remained the same. This expansion can be observed as a positive advance with respect to analysing new types of text in online settings. As mentioned,

some typically new expressions of online interaction need new categories to describe them. King and Ellis (2009) changed the names of the categories and the indicators remained the same in the framework. Therefore, 'affective' becomes 'affective response', 'cohesive' becomes 'cohesive response', 'interactive' becomes 'communicative reinforcement, interactive response' (King and Ellis, 2009:4). They do not mention the reason for the change. From the name changes it may be inferred that they want to stress the response of the initial posting which keeps the interaction moving.

Although content analysis is new in the field of social presence research, it has great potential. The approach focuses on the characteristics of language in use. When Swan and Shih (2005) used a questionnaire to discover the perceived social presence of their learners, they also wanted to explore the interaction of the learners with content analysis. This analysis of language use in the actual context reveals much detailed information and triangulates some of the findings from the questionnaire, which improves the quality of the research and makes the results more convincing to readers. In King and Ellis' study (2009), recorded data from the online interaction was coded with the social presence categories devised by Rourke et al. (2001). The categories from the text messages and from the voice messages were compared in terms of the density of categories in the two types of data. A clear result was produced to show which tool was a better communication medium.

3.3.6 Strengths and weaknesses of content analysis

Content analysis is a recognised method in social presence research and has produced some significant results in the field (King and Ellis, 2009; Rourke et al., 2001; Swan and Shih, 2005). The strength of this method is its capability to probe into the real interaction of learners and explore their actual language use with regard to the specific features related to social presence categories and indicators. Because it has a long tradition and it has rules and procedures to follow, the reliability of the method is convincing to professionals. The weakness of this method is that sometimes the data are large in the real life interaction and to choose the right amount of data to represent the interaction is always a difficult decision to make. This method also requires much effort with coding and analysis.

3.4 Interviews

3.4.1 An overview of interviewing as a research method

The basic function of interviews is to elicit facts and opinions through talking to relevant people. Interviews are common and many people may have much experience with them, such as job interviews or interviews for a product marketing event. It gives an impression that interviewing is an everyday practice and does not require much practice. However, when it is employed in research, it is far from merely asking simple questions and eliciting answers immediately. As a research method, interviewing attempts "to understand the world from the subjects' points of view, to unfold the meaning of their experiences, and to uncover their lived world prior to scientific

explanations" (Kvale and Brinkmann, 2009:1). The research interview is different from an ordinary dialogue where participants exchange feelings and share information in an equal status (Kvale and Brinkmann, 2009). Instead, the assumption is that one party extracts information from the other party and therefore the interviewer is leading the topics and the interviewee is following them. Occasionally both parties are contributing to the interaction and lead the conversation in unexpected directions. The interviewer is likely to adopt a larger part of the interviewing process through the wording of the questions and the advantageous position of finding the relevant interviewees to talk to and the way the conversation is conducted. Occasionally the interviewer is not considered to be neutral steering the conversation in a particular direction such that the interviewees say what is expected of them to satisfy the interviewer. This results in the 'manufactured data' criticised by Silverman (1995). The data are therefore not natural data but invented because the interviewer encourages the interviewee to get the desired result. As a consequence, the interpretation of the data loses its capability to convince.

Interviewing has a long tradition in many fields of research and has contributed to some important findings. Freud's psychoanalytic theory was mostly founded on interviews with his patients and Piaget's theory of cognitive development was due to interviews with children learning in everyday situations (Kvale and Brinkmann, 2009). Interviews have a number of advantages and can produce significant results, but as experience increases with interviews it becomes necessary to be reasonable about the

method. Interviewing is seen as a useful tool for research in that it is interactional and both parties contribute in the meaning-making process. Data analysis has to take into consideration contextual factors that may have an impact on the conversation (Edley and Litosseliti, 2010). Properly handled, interviews may definitely produce valuable data and interpretations may be inferred from them.

3.4.2 The procedure of interviewing

Conducting an interview requires much preparation before it can be used as research data. Interview questions are the first priority before an interview is conducted. Before the questions are constructed, the researcher has to think about the conceptualisation of the theme. The questions have to centre on the issues which are important to the research goal. Questions can be structured or semi-structured or even free-flowing. Structured questions are easy to follow for interviewers especially when they are new and do not have experience with interviews. The problem is that it is not flexible and does not allow freedom for rich experience. Free-flowing questions allow more freedom and may produce unexpectedly rich information. However, the difficulty is that it is challenging to conduct and also difficult to analyse when data need to be interpreted. Semi-structured interviews lie in the middle and may be attractive to researchers.

Conducting interviews is more of an art than merely following strict rules -- the interviewer could be considered as “a miner and a traveller” (Kvale and Brinkmann,

2009: 48). These two interesting metaphors tell us a great deal about the process of the interviewing process. ‘A miner’ has to dig deep to explore the interior knowledge of the subjects. The process can be harsh and tough. ‘A traveller’ could acquire much knowledge of subjects on condition that there is much preparation and previous experience. Interviewing requires practice: an interviewer needs to develop the skills required to conduct a successful interview. When interviews are finished, the job of transcribing the recording is also time-consuming and needs patience. Analysing the data takes even more skill and patience to produce a satisfying result.

Kvale and Brinkmann (2009: 102) describe seven stages in the interview process: thematising, designing, interviewing, transcribing, analysing, verifying and reporting. Thematising concerns thoughts about research goals. How interview questions contribute to research questions requires deep thinking and a good knowledge of the researched area. Mind-mapping the research questions with interview questions is perhaps a good starting point in the early stages of interviews. Designing questions and making necessary arrangements for a successful interview is the second step that takes meticulous effort. Writing questions is a long process because questions should not only be appropriate for meeting the research goals but also easy for interviewees to understand. Arrangements of interview venues and finding interviewees and recording equipment may all lead to the success or failure of an interview.

In an interviewing process, apart the above issues there are always further

considerations to take into account. For example, the way that the interviewer converses with the interviewee will influence the interviewees. If the interviewer is friendly, he may elicit more useful information. Other issues are also relevant, such as whether what the interviewer is wearing suits the purpose, if the interviewer is sitting comfortably or ensures the interviewee is sitting comfortably. As mentioned in the previous paragraphs, interviewing is an art that requires practice and much thought.

In the transcription process, there are also choices to make. When the recording is played the researcher may decide to transcribe the parts that he or she needs or to transcribe the whole of the interview. Transcription may capture the prosodic features of the conversations, such as pause, stress, pitch, or only the verbal language. Again, the method of transcription is related to the purpose of the research.

When an interview is recorded, analysis can be conducted in different ways. For example, "the characteristic uses of language" (Kvale and Brinkmann, 2009: 219) may reveal some interesting stories about interviewees' personality or about a particular context. If we care about "what words and sentences do, and the meaning of a statement is the role it plays in a specific social practice" (Kvale and Brinkmann, 2009: 221), we may discover more of the meaning in interaction rather than the meaning of the words per se. If an interview "focuses on the stories told during an interview and works out their structures and their plots" (Kvale and Brinkmann, 2009: 222), using a framework with a specific structure to set up the interview in such a way as to elicit

stories is then necessary.

Verifying interviews is a process set up to test the objectivity of the interview and check the reliability and validity of the interview (Kvale and Brinkmann, 2009). Objective knowledge should be reliable and tell the truth without bias (Kvale and Brinkmann, 2009). For example, if a teacher asks a student to comment on her teaching in the middle of the school term, the student would likely provide positive comments in the Chinese culture. If the interview is conducted online anonymously it would probably invite negative comments. Interview results have to be verified for the situations in which the interview takes place. Reliability concerns "the consistency and trustworthiness of research findings" (Kvale and Brinkmann, 2009: 245). Consistency means that an interviewee gives definite replies and does not change responses over time. It also means that people in similar situations do not give contradictory answers. The validity of the interview means that the interview elicits the answers to the intended questions. If the interview produces answers that cover the variables that are related to the objective goals, then it is valid (Kvale and Brinkmann, 2009).

Reporting the interview is not to repeat the conversation held during the interview. It is the author's obligation to present the results in a way that is clear to the reader and makes the reader believe what is written. The language style is also important. If it is published, the report has to be written in academic language to suit the purpose. It is also necessary to give exact details of the procedure followed in order to make the

study transparent and replicable for later researchers.

3.4.3 Strength and weakness of interviews

Interviewing has long been recognised as a research method in many disciplines. It has explicit rules and previous examples to follow to produce high-quality research. Moreover, the interview can invite direct answers which cannot be accessed using other methods. However, interviews are far from just convenient ways of searching for answers to complicated questions. It requires skill and thought to arrive at suitable questions and to conduct the interview flexibly and thus produce valid and reliable responses.

Interviewing as a research method has been used in social science research, not as mainstream methodology, but as a supplementary one to search for the reasons behind some of the questions (Swan and Shih, 2005; Tu, 2002b). For example, when Tu (2002b) compared the technological tools with regard to social presence, he found that relay text chat was interactive because it provided a quick response and the difficulty was that students did not have time to think, thus the quality of the interaction may have become compromised. Students also reported that lack of keyboarding skills can also cause difficulties in the relay text chat, and an inexperienced typist may be put in a disadvantaged position. Such detailed information is one of the advantages of interviewing.

3.5 A mixed-method approach

With a mixed method approach, the researcher combines qualitative methods with quantitative ones in collecting data and analysing them in the same study. The benefits of this approach are numerous. It enriches the research design, improves the quality of the findings and reaches a larger audience (Angouri, 2010; Dörnyei, 2007). The mixed approach can provide more than one data set, and thus possibly more comprehensive accounts to respond to the research questions (Angouri, 2010; Dörnyei, 2007). It seems to expand territories, achieve triangulation of results and incorporate multiple approaches and thus lead to more satisfactory research findings (Flick, 2009).

The success of a study using a mixed-method approach depends very much on the care taken in designing the different components and how they are integrated. As with other research methods, it cannot be effective per se. A good combination or integration of qualitative methods with quantitative methods requires careful attention to "the compatibility of different research paradigms" (Dörnyei, 2007). Moreover, there are various ways of combination or integration. The following two models described by Flick (2009) provide an example for illustration.

Model 1

QUAL ⟶ QUANT ⟶ QUAL

(exploration) (questionnaire) (deepening and assessing results)

Model 2

QUANT → QUAL ⟶ QUANT

(survey) (field survey) (experiment)

Fig. 3-1 Models of a mixed-method approach (Flick, 2009: 26)

In the first model the qualitative method is used to explore issues and then the quantitative method is used to measure aspects of the issues explored and reveal the general trends. More qualitative data are then sought and analysed to follow up key points revealed in the quantitative data and to delve more deeply into particular issues. In the second model, the quantitative method is used first to get a general picture of a particular issue. The qualitative method may probe deeply into some specific points. Finally, an experiment may quantify the aspects of the specific points.

In the research field of social presence, the mixed approach has been popular (Swan and Shih, 2005; Tu, 2002b; Tu and McIsaac, 2002). In Swan and Shih's study, a questionnaire was delivered to find out about students' perception of social presence and online discussions were recorded and analysed with thematic units to account for general perceptions. This combination of a questionnaire survey with a more qualitative method produces a richer study than a single method. The survey identifies trends and the qualitative data provides some detailed support to the trends. Tu (2002b) intended to provide a broader view of social presence with a mixed approach as well as expanding the concept. For example, following his online questionnaire, the researcher

had a casual conversation and interview with his subjects. His survey results showed the level of social presence in three technological forms: e-mail, real-time discussion and bulletin board. He then extended the concept of social presence by including in his analysis some student comments in the context. The qualitative data from the casual conversations with students not only reinforced what the researcher found in the existing dimensions of social presence but also brought insights into new elements of online interaction. For example, in online interaction people who know each other would talk more among themselves and thus make it difficult for strangers to participate (Tu, 2002b). This overshadowed phenomenon is very similar to face-to-face situations and has nothing to do with the communication medium but is more related to a specific situation at a particular time. This interesting factor may turn our attention to factors beyond the characteristics of the medium itself which this study focuses on and encourages us to think further about personal relationships and even the larger social context which has an impact on social presence.

In social presence research there are no fixed rules for a mixed-method approach. Qualitative approaches include content analysis with recordings of online interaction, interviews and open-ended questions in a survey. A survey is combined with content analysis because it is only a snapshot of social presence at one particular point or a reflection of social presence. Recordings of online interaction reveal more of the communication process with regard to social presence. Interviews have also frequently been used for convenience because if perception or meaning is inferred, interviews

may bring a direct answer to what the interactant means. Interviewing is a preferred method because direct questions can be asked with subjects and plausible answers are presented immediately for their own actions (Edley and Litosseliti, 2010). Moreover, interviews are familiar in real life and almost all adults have experienced many interviews for educational opportunities, employment, and promotions. When interviewed, most people would find the encounter familiar and present their views according to what they have in their mind.

The problem with a mixed-method approach is how the multiple methods are integrated and how the different data sets fit with each other. Oleinik (2011) points out that finding a common denominator for both quantitative and qualitative methods is rather demanding. It is critical for a study to centre on the same focus and come up with data that support each other. A good combination of methods requires great skill and much practice. When we read a good integrated mixed method we can infer that it results from much hard work and careful planning.

3.6 The learning context for this study

3.6.1 The general context

As online education is promoted around the world, its growth has escalated in recent years. In the United States, Allen and Seaman (2011: 2) conducted a survey and found that "over 6.1 million students were taking at least one online course during the fall 2010 term; an increase of 560,000 students over the number reported the previous

year" which means that more than thirty per cent of students were taking at least one online course in the higher education sector. British universities have also been expanding online courses recently to cut costs and extend their service to overseas students and to those home students who do not find it convenient to attend a university (Lentell, 2012). This trend of distance education seems to prevail all over the world. As computer technology provides access to unlimited resources and fascinating two-way communication tools for interaction, learners can learn wherever they are with convenience and flexibility (Garrison and Anderson, 2003; Warschauer and Healey, 1998). Online learning seems to be developing faster than ever although it has already been popular for years.

In China, the national government made it a policy that online education provides life-long learning opportunities for the work force, and these working students who otherwise have no opportunities can access online courses in universities. These learners who cannot afford to leave their work are receiving higher education in distance mode while protecting their employment, supporting their families and learning. It is also true that those who live in remote areas can also have the opportunity to study through online institutions.

3.6.2 The Beiwai Institute of Online Education

Beijing Foreign Studies University (BFSU) is one of the top universities in China with a unique strength in foreign language teaching. When the Chinese national government

promoted online education nationwide, BFSU became an outpost for online foreign language education. It set up an online foreign language school in 2000, the Beiwai Institute of Online Education (BIOE), which was the first of its kind. In 2001, the first group of students were enrolled in BIOE. The online school, BIOE, grew fast along with the national tertiary online education in the country. Within five years, the number of students registered was 14,718 (Wang, 2009), although English language was the only foreign language taught as a major for a bachelor's degree and the only major that existed at BIOE before 2009.

When so many students from across the country participate in the online language program, one particular area of concern is the mediated interaction for interpersonal communication as students and teachers are geographically distant. As BIOE realised in the early stages that technology as a medium for communication created a barrier for shared understanding (Noble, 2001), they adopted a face-to-face tutorial system for their students. Generally once every two weeks students can attend a face-to-face tutorial where there are lectures or seminars but they also have the opportunity to socialise with their peers and the teacher. Apart from the contact time in learning centres across the country, the voice-based chat room and the text-based forum provide the technology-mediated communication channels between students and teachers allowing them to socialise and learn.

At present, BIOE offer the voice-based chat room and the text-based forum for the

following reasons:

1) It is a major type of channel for student-student and student-teacher interaction outside class contact time.

2) There is a feedback mechanism from teachers to students and from students to students.

3) It allows students and teachers to connect so that a sense of community can be created for online learning.

4) It is a discussion medium and a venue for students to practise their language and course learning.

In the BIOE context as well as in many other learning institutions in China, the text-based forum is a more familiar tool, and the voice-based chat room has been adopted more recently for online interaction. How it can fit best with the context and benefit learners requires research. As voice technology emerged later than text technology and the new technology has been employed at a rapid pace in the field of online education, we are not certain about the inherent properties with regard to its impact on the nature of interaction, interpersonal relationships and learner satisfaction in online learning experiences.

The voice-based chat room has been adopted to include sound in online interaction which is beneficial for language learning (Hampel and Hauck, 2004) and for socialising. When sound enters communication, new elements appear such as pitch,

tone, conversation, and turn control. The voice-based chat room combined with the text-based forum offers students more opportunities for asking questions, discussing course learning and engaging in social interaction in the online environment. The voice-based chat room is synchronous and the text-based forum is asynchronous in the BIOE context, this also means that students have a choice according to their own communication style and at a time which is convenient for them. If more channels are opened for communication, an important research question is raised. How do the voice-based chat room and the text-based forum influence communication with regard to social presence? What are the specific benefits that enhance social presence and what are the constraints that reduce the level of social presence?

Apart from the institutional interaction tools, learners in the BIOE also use a text chat service called QQ which is the most popular free instant messaging (IM) computer program in mainland China. In the first quarter of 2013, the active user accounts of QQ were 825.4 million monthly and the peak simultaneous user accounts totalled 173 million (Ruan, 2013). Currently, QQ is so widely used that almost all the young people have a QQ account and checking their QQ messages is a daily routine. As for online students at BIOE, the majority of them use QQ and it is now so common that almost every student when registered at the beginning of the term leaves their mobile phone number and their QQ account number as personal contact information. In an informal survey the researcher recently conducted, the most common form of student-student interaction was through QQ messaging. When students were asked

why they used QQ to such an extent it was found that QQ was more convenient for them to contact peers than other means as QQ was linked to mobile phones so that the instant messaging service was with them wherever they went. Moreover, QQ has more functions than the text-based forum in the school platform of BIOE. In addition to text messaging, it is also possible to create a personal space and build one's own community through a list of good friends. Not surprisingly, students of BIOE had more access to QQ than to the text-based forum.

The QQ group is a service which is particularly useful for online learners as up to 150 people can form an online community. Anybody may establish a group and attract members to join in a group where they can text chat synchronously and leave messages and send files to share with group members. QQ interaction can be multimodal, with audio and video integrated into the service in 2013, but generally students at BIOE use the text-based interaction of the service. Occasionally they send pictures, video or audio messages to enliven their interactions. At BIOE, every cohort of students has one QQ group or even more than one group for connection and on occasion their teacher may join them but usually students keep a group of their own, sharing information, discussing what they learn and building an online community within a circle.

3.6.3 The students

In recent years the number of English language students enrolled on the English programme at BIOE has been about 500 in every school term across the country with

70 per cent of them being from Beijing. Traditional universities have a tough entrance examination system to choose students and they enrol students once a year in September. Unlike traditional universities the online schools are more inclusive. They take two cohorts of students every year with their own entrance exams which are usually less selective than those of the more traditional universities. In the spring term students begin in February and in the autumn term students start in September. Compared with the traditional campus students, their entrance level is lower but students who choose to study in online schools have clear reasons and motivations.

In July, 2004, BIOE conducted an online survey to examine student motivation for learning. In total 254 students responded. Exactly 51.18% of the students said they were interested in improving their English language ability, 27.56% wanted to receive a certificate and 9.45% were interested in the mode of learning. It was observed that most of the students study online English programs because they wish to improve their English levels for personal interests and for practical purposes. For example, they want to have the ability to manage English conversations in their workplace or to talk with local people in English when they travel to foreign countries. They have specific purposes in mind with strong self-determination to study English. They are different from campus students in that they are more mature and have focused learning purposes.

Most BIOE students work in companies, government institutions and schools. More

than 70 per cent of the total student population is female. The student age varies greatly, ranging from 20 to 60. More than 60% of them are between 26 and 35. Ninety five per cent of the students have access to the internet at home and in their work place. The remaining students have to attend internet bars if they want to have access to the internet connection. As all of them are mature students, with rich life experiences and professional expertise, the advantage is that they have much to share with each other. The disadvantage is that they all have many roles to play in life; their work and family responsibilities as well as social roles involve a tight schedule and it is sometimes difficult to find time for learning and have online interaction with peers and their teachers.

3.6.4 Online courses in the BIOE

The English Language Degree Programme at BIOE is a part-time bachelor's degree programme which normally covers two and a half years. All the course materials are delivered online on the BIOE platform. In the first year students study four courses with an introductory session at the beginning. The four courses are: English in Daily Life, English at Leisure, English at Work, and English in Current Affairs. These are general English courses aimed at improving students' listening, speaking, reading and writing skills with a focus on language use for practical purposes. In the second year, students study English for Studying, Cross-cultural Communication, English in a Changing World, and English through Literature. These courses aim to improve students' academic knowledge in academic writing, intercultural communication, the

history of the English language and how it spread around the world, and finally, literary knowledge. The purpose is also to provide opportunities for students to practise language through learning these academic subjects. Apart from language practice, they also need to acquire content knowledge in specific fields. In the third year, students choose to learn professional English such as Translation, Business English, or Financial English -- subjects which are more likely to be connected with their career. Finally they write a 4,000-word dissertation to complete the degree program.

All the courses are similar in structure. Students study the course materials and complete the self-assessment exercises which will be automatically computer-graded. They also have to submit assignments on the platform and teachers will grade them and provide specific feedback on their language and analytical skills. Usually a course has eight units and each unit requires about ten hours of work. Online interaction provides learners with an opportunity for discussion and community building.

3.6.5 The instructional design of the English literature course

This study involves students who study English through Literature, a course in the second term of their second year. The course has eight units which are designed to include literary works that represent different genres and historical periods. Each of the eight units adopts a particular perspective to examine literature with some sections of literary work included as explanatory samples. For example, the first unit title ‘Ne'er So Well Expressed’ describes the distinctive characteristics of literary language and

presents a poem and an extract from a play as examples of literary language. The other units deal with characterization, plot, theme and development. The purpose of the course is to learn English as well as to acquire knowledge about English literature.

Students have a printed textbook which has 50 pages per unit. They are expected to study for 10 hours per unit. Apart from the text-book, students can also access an e-learning platform for an electronic version of the textbook. This is called courseware and the introduction is presented on the screen as follows:

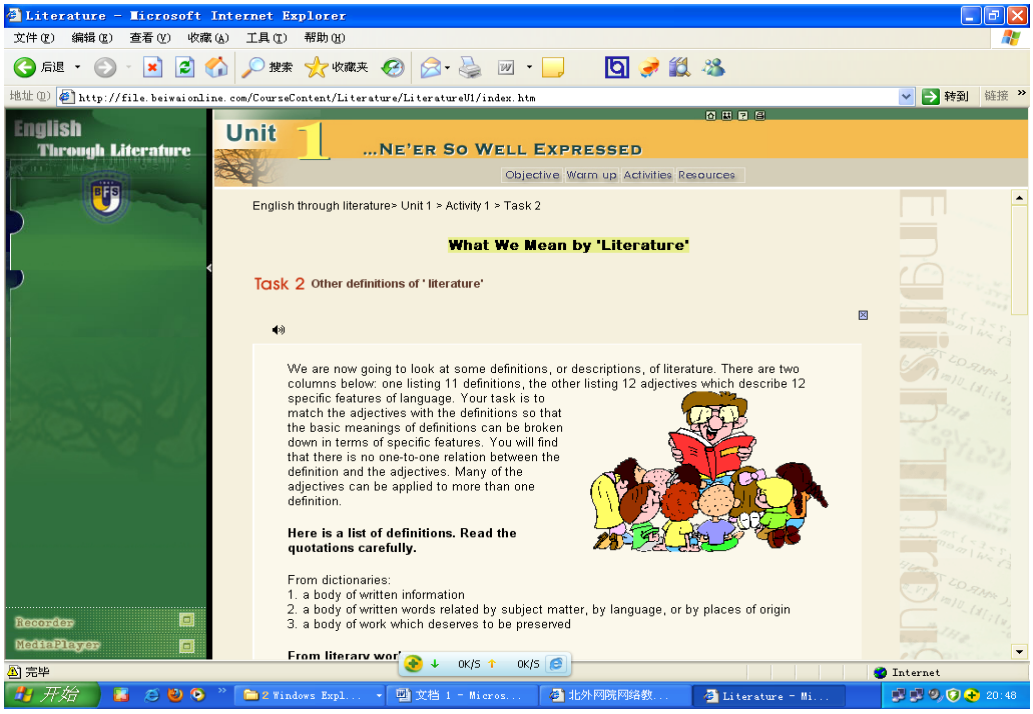

Fig. 3-2: The courseware for English Literature

The course materials are written by BIOE tutors. On the BIOE platform it is free and multimodal. It contains graphics, audio text and video clips of literary pieces which are especially useful for students who prefer an audio and visual style of learning.

The assessment of the course consists of three parts: self-assessment exercises,

assignments and the final examination. The final examination accounts for 70 per cent of the total score. The other two parts make up 30 per cent. The final exam takes place on campus which requires students to be physically present. Students submit their self-assessment exercises and assignments online. The former comprise multiple choice questions and are scored on the computer and the latter have short answer questions and essay questions and have to be marked by the tutor.

The instructional model of the courses at BIOE is similar to other online courses. For example, *English through Literature* provides four 4-hour face-to-face tutorials in Beijing with each 4-hour tutorial occurring once every two weeks. The course lasts for 8 weeks. In an 8 week period, the tutor of this course provides 4 tutorials. In every face-to-face tutorial, the teacher covers two units of the course textbook. Before this tutorial students are supposed to have prepared two units, but the reality is that only a few students complete it and many students arrive at the classroom expecting that the tutor will tell them everything and that their role is to merely receive information.

Apart from the face-to-face tutorials, students mostly study on their own. They study their textbook or the courseware on the BIOE platform as the major course content. During their learning process, students are expected to ask questions and discuss them in a text-based forum.

Fig. 3-3: The front page of the text-based forum on the platform of BIOE

When students log on to the BIOE platform (see Fig. 3-3), they have a button to click to enter the above page. On the left pull-down menu it shows a list of forums. When students have questions related to a course they are learning they may enter the course-based forum and post their questions and engage in discussions with their teacher and peers.

In addition to the text-based interaction, students can also access the voice-based chat room and use it for course learning. For every course, BIOE provides three 1.5-hour sessions as an audio class in the voice-based chat room: two sessions to guide students completing their assignments and one to prepare them for their final exam. There is

also a page in their platform to access the schedule. In Fig. 3-4, the picture in the top left is the teacher whilst the information alongside presents the time and the content. On the right, there is a button to click on to enter the voice-based chat room. Apart from tutor-led sessions, students may use chat rooms for their own sessions to practise their course learning.

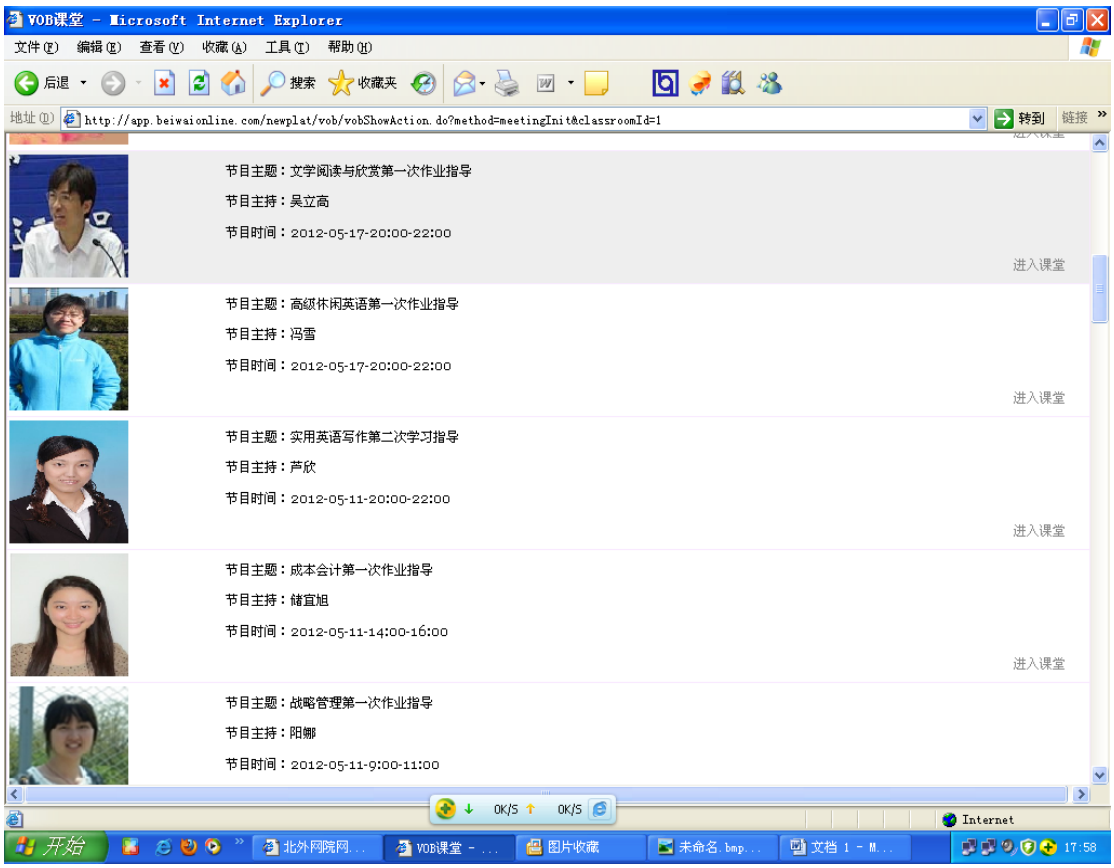

Fig. 3-4: The front page of the voice-based chat room

3.7 Research design for the present research study

The study consists of two stages. In the first stage, a pilot study was conducted on a small scale to compare the level of social presence in the text-based forum and the voice-based chat room in the BIOE. A mixed-method approach was adopted and the

measurement of social presence was based on a questionnaire survey and a content analysis of the actual interaction of learners using the text-based forum and the voice-based chat room. The survey with twenty-two questions was designed to reveal student perceptions of social presence. The content analysis with social presence categories (Rourke et al., 2001) was employed to explore students' projected social presence in online interaction. A density of social presence categories was calculated for comparison. The pilot study was also used to test the instruments that were used in the main study.

In the second stage, to increase the reliability of the study, the main study was conducted on a large scale with 108 students who participated in a questionnaire survey. In addition to the survey, more recordings of the text-based forum and the voice-based chat room were analysed using social presence categories (Rourke et al., 2001). Two approaches were adopted to conduct the content analysis: quantitative and qualitative. The quantitative approach aimed at calculating the density of social presence categories for a comparison of social presence levels similar to the pilot study. The qualitative approach was added to supply detailed contextual information regarding how social presence was created in specific situations which might be useful to practitioners teaching online courses. Eight interviews with eleven students were conducted to provide a systematic view of what students actually thought in the process of projecting social presence with online interaction. If content analysis was to infer meaning from what participants said in the communication process, the aim of

the interviews was to gain direct and fuller answers about why students behave in particular ways. It was hoped that the analysis of all of the different data sets would yield a complete view of learner's social presence in the text-based forum and the voice-based chat room in the online learning context of BIOE.

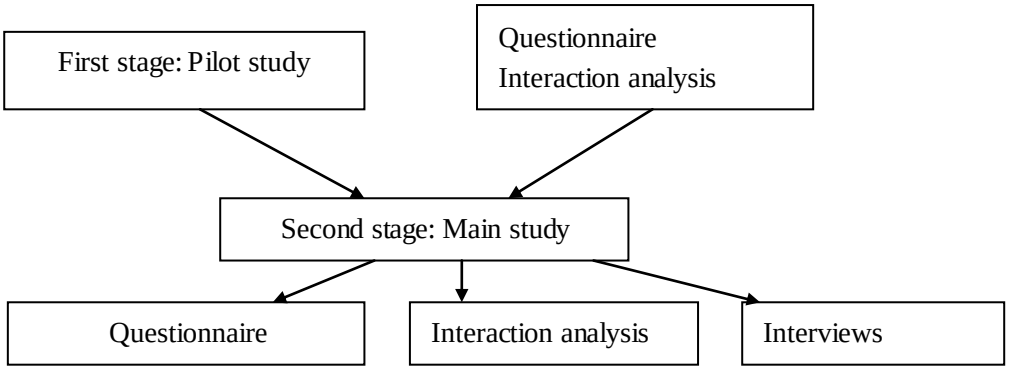

Fig. 3-5: Research design

Our research questions usually point to the type of methods chosen for a research study (Na Ubon, 2005). As the research questions in this study concerned a comparison between the level of social presence in the voice-based chat room and that in the text-based forum and explored reasons behind the differences, the issue is both a macro and micro one. On the macro level, students' perceptions of social presence with these tools need to be identified. On the micro level the process of the social presence development needs to be revealed from the students' projected social presence in online interaction. In such a situation, a mixed-method approach is adopted since a quantitative approach is useful to reveal the macro-level tendencies and a qualitative approach provides the opportunity to interpret data relating to more micro-level phenomena (Flick, 2009).

A questionnaire was designed based on the survey by Swan and Shih (2005). Questions were modified to suit the specific purpose of measuring social presence in the voice-based chat room and the text-based forum which constituted the major channels of student-student and student-teacher interaction. Students were asked to rate their agreement on a 5-point Likert scale with 1 being 'strongly disagree' and 5 'strongly agree'. The questions concerned students' perceived social presence of peers both in the voice-based chat room and in the text-based forum (5 questions), the perceived social presence of instructors with the two technological tools (2 questions), the perceived interaction with the voice-based chat room (2 questions), the perceived interaction with the text-based forum (6 questions), their satisfaction with their instructor (2 questions), their perceived learning from online interaction (3 questions), and their feelings on learning the course (2 questions). The questionnaire is in Appendix 2.

Content analysis was used to explore what students are actually involved in online interaction using the framework from social presence categories and indicators proposed by Rourke et al. (2001) mentioned in the first chapter. While the questionnaire produces results about perceived social presence, the content analysis aims to explore the projected social presence in the communication process during the term and provide an all-round picture of social presence in the text-based forum and in the voice-based chat room at BIOE. Interview questions dealt with the issues behind

the scenes. For example, when a certain phenomenon appears, students are asked about the reasons why they do it. The purpose of combining different sets of data is to have a thorough understanding of social presence in an authentic learning context.

The study was preceded by a pilot study; a questionnaire was delivered and an 848-word transcription of a voice-based session was analysed and compared with 3,260-word messages from the recording of the text-based forum. The density of social presence was calculated. The pilot study tested the instruments and the procedure planning. In the main study longer text messages and voice chat sessions were analysed in order to increase the validity and reliability of the findings. Several open-ended questions were included in the questionnaire in order to increase the amount of qualitative data. Eight interviews were conducted with eleven students. Semi-structured questions were designed to elicit what they really thought when they used the two technological tools for interaction

The research questions were answered with the three different data sets. By drawing on statistical tools using SPSS to analyse data from the survey questionnaire, significant differences in learner perceptions of social presence in the voice-based chat room and the text-based forum could be identified. The recordings of online interaction reveal the details of the projected social presence in the two technological forms. Qualitative analysis of the interaction brings interpretative views that capture the contextual elements that may broaden the views and insights of social presence in the BIOE

context.

3.8 Ethical issues

The research study involves human subjects (online students at BIOE) but does not subject them to any kind of experimental manipulation – the students were invited to complete questionnaires, to have their online interaction analysed and to be interviewed on their opinions about online mediated interaction. The researcher applied for consent from two parties. On the Chinese side, the researcher e-mailed the leaders of BIOE about the process of the research and achieved institutional approval. On the British side, before the research was conducted, the researcher wrote a letter to the Chair of the Faculty of Research Ethics Sub-Committee at UWE, explaining the research process and the data collection methods. The research was approved on December 1, 2010. The researcher then consulted the ethics guidelines from the Research Ethics Framework (REF) of the Economic and Social Research Council (ESRC) in the UK. The general principles require that the research is beneficial for the subjects and the environment. A written consent form was sent to the participants involved in the research containing information about the purposes of the research, research procedures, a description of risks and benefits to the participants, how the research information was going to be used and how it would be kept anonymous. This information sheet and consent form is included in Appendix 1, 2 and 4.

Based on the abovementioned guidelines, the researcher designed the questionnaire

with an introduction at the beginning informing the subjects of the purpose of the research and other relevant information (Please see Appendix 1 and 2). In the interview section, before the students were interviewed, they were given a briefing about the research and the protection of the subjects' rights. If they were willing to participate in the interview they either signed their names or withdrew from the research. As far as the content analysis of the data is concerned, the recorded interaction from the text-based forum and the voice-based chat room was considered carefully with regard to privacy and the harm which may result during the research process and afterwards. As the text-based forum is open to all the BIOE students the text data is less sensitive than the voice data from the private chat room. When the text data are copied from the forum, the names of the posters are deleted and the data is thus anonymised. Students would therefore not be susceptible to unfair treatment on the part of the tutor/researcher because of the messages they had written in the forum.

There are two types of voice-based chat room activities in the BIOE. One is the teacher-led classes where the teacher provides instruction helping students complete assignments and prepare for the final exams. The other type is student-student interaction where they talk to each other online to practise what they have learned in class and discuss what they are interested in. When the decision was made about recording student-student voice-based activities the researcher contacted the students to request permission and they were informed of the purpose of the research and what the recording was for. The transcriptions were sent to the students for them to review.

They were invited to contact the researcher who would delete any elements that the student(s) felt were sensitive. The text-based forum was open to the public and any BIOE student and teacher had free access to it. The researcher asked the leaders of the BIOE for permission to use the data for research purposes and permission was granted.

In the present study the subjects were BIOE students and the researcher was their teacher. There were two major issues for concern. The first issue was confidentiality. As the research could compromise participants' personal lives, protection of privacy and ensuring confidentiality and anonymity are essential (Hammersley and Atkinson, 2007; Maxwell, 2005). In online situations people are nervous about the distribution of personal information as it may spread and be psychologically or even physically injurious. In this study, anonymity was strictly adhered to. In the questionnaire students were not required to fill in their names and consequently their answers were kept anonymous. In the content analysis data, transcriptions were recorded with their names replaced with letters and numbers. Later in the thesis, their names were not mentioned at all. The same method was applied in the interviews.

The second issue in the research involves the subtle relationship between the students and the teacher. Although the researcher as teacher enjoyed an advantageous position, he respected the rights of students as individuals. With each particular data collection method, the researcher made arrangements to ensure that students were not intruded upon and they were thanked for their involvement in the research.

As far as the data from the text-based forum and the voice-based chat room were concerned certain precautions were made. In order to protect the students, the voice and text data were used anonymously in the analysis process in the thesis and would remain anonymous in any publications. In the text-based forum, students who posted had their names recorded for several reasons. They obtained a credit for posting. For example, with one posting, they achieved a certain online score, a stimulus to encourage them. Real names were used to encourage students to ensure activities were taken seriously and behave normally; pseudonyms may sometimes encourage people to cross boundaries and behave in a negative way. Although the names were recorded, the researcher did not use the names in the analysis and in the writing up. He also made it a rule that no-one could access them except the examiners of the research project. With voice messages, the names of students were also deleted in the transcription. When a student was mentioned in the thesis, rather than use a name, the epithets Student A or B were employed. In the interviews all the students' names were replaced with pseudonyms so that when the information was read later they could not be recognised by readers.

Chapter Four: A questionnaire survey for the learner perception of social presence in the text-based forum and the voice-based chat room in the BIOE

4.1 Introduction

This chapter describes how the questionnaire was designed and how it was delivered in the BIOE to investigate the perception of the social presence of learners in the BIOE context when they used the text-based forum and the voice-based chat room for online interaction. A pilot study was first implemented to check the questionnaire items as well as the format of the questionnaire. The data from the pilot study were entered into SPSS to compare the perceived social presence of learners in the voice-based chat room and the text-based forum. Questionnaire items were analysed for reliability and validity. Feedback from the pilot led to some adjustments to the questions in the main study. In the main study the revised questionnaire items were used on a larger scale and additional results were achieved for the learner perception of social presence with the two technological tools. Although the present research adopted a mixed approach this chapter focuses only on the questionnaire and results from the questionnaire which will be integrated with the results from the content analysis and the analysis of the interview data in Chapter Six.

As shown in the previous chapter, a questionnaire can reach a large number of subjects which is one advantage of this method. 38 questionnaires were collected in the pilot study and 108 collected in the main study. Although the sampling was made with the

convenience principle, this large number of students were representative of the whole population of a cohort group in the BIOE. The questionnaire was distributed when students wrote their final exam. There were two advantages to this. On the one hand, student attendance is high since almost all of the students wanted to write the final test. On the other hand, the quality of the responses may be superior to that completed on less formal occasions because such an important event as the final exam may increase the seriousness with which the questionnaire was treated.

4.2 The pilot study: questionnaire design and implementation

A pilot study was conducted in the autumn term of 2011. The purpose was to validate the instrument which would be used to measure student perception of social presence in the main study. After students had studied for an online course for a term using the text-based forum and the voice-based chat room for mediated interaction to gain knowledge and socialise with peers, at the end of the term they needed to have a perception of the tools with regard to social presence in general. The study was also piloting the procedures to be used in the main study. The feedback from the pilot study provided guidance for the main study.

4.2.1 Writing the questionnaire items

The questionnaire items were written on the basis of what the researcher had read regarding social presence research. The focus was on how learners felt about using the text-based forum and the voice-based chat room for mediated interaction, their feelings

regarding their connection with peers and the teacher using two tools and their perceived learning in the BIOE context. The questionnaire used for this pilot study (Please see Appendix 1) was adapted from a social presence questionnaire designed by Swan and Shih (2005). It was modified to suit the particular context of the present study.

The questions were written in Chinese because the native language of BIOE learners is Chinese; their level in English was intermediate but they felt much more confident in their native language. The questionnaire consisted of two parts. The first part contained demographic information and some basic information concerning how often students used the text-based forum and the voice-based chat room and where they accessed the internet. The second part had twenty-two questions designed to assess students' perceptions of social presence using the text-based forum and the voice-based chat room.

4.2.2 Sampling of the subjects and delivery of the questionnaire

The purpose of this study is to discover learners' perceptions of social presence when they use the text-based forum and the voice-based chat room for online interaction in the BIOE. The total population of BIOE learners majoring in English is about 1,600 every year. BIOE enrols two cohorts of students a year across China as a whole. Students enrolling for the spring term begin in early March and the autumn cohort of students begin in September. The participants in this pilot study were BIOE students

who took the module "English through Literature" in the autumn term of 2011. A total of 170 students registered for this course in the Beijing area. The course in the study was one of the six core courses that students took as part of their bachelor's degree in English Language. This course was studied in the first term in their second year. Convenience sampling was adopted in this pilot study as the researcher was a tutor at BIOE and taught the course, and therefore the access to the subjects was convenient.

The questionnaire was delivered to the subjects in the last tutorial of the term. There were 43 students in the tutorial and 38 questionnaires were completed. Eight of the questionnaires were invalid because of incomplete information. Among the 30 participants, 26 were female and 4 were male. As for the age range, 16 of the students were in the age group 26-35. Nine of the students were between 36 and 45. There were 5 students who were 25 or less. Again the delivery was made with the convenience principle. There are many ways to deliver the questionnaire, one way for example, is to put it online. The problem is that one cannot be certain how many of the learners will participate and if a questionnaire was put online it requires technicians to be involved. It is more convenient to print the questionnaires and bring them into a classroom. It is generally true that the teacher's presence will probably guarantee a high return rate. But the convenience principle heralds a problem with the issue of learner representation. The students who choose to attend the face-to-face tutorials are usually active students who want to spend more time on learning with the BIOE. However, this problem is difficult to solve because even if the questionnaire is

delivered online and probably active students would answer the questions. This self-selection is difficult to avoid (Dörnyei 2007).

4.2.3 Checking the reliability and validity of the questionnaire

The reliability and validity of a questionnaire are particularly important issues which must be addressed in designing questions for specific constructions of concepts (Bachman, 2004; Dörnyei, 2007). Reliability refers to "the extent to which our measurement instruments and procedures produce consistent results in a given population in different circumstances" (Dörnyei, 2007: 50). In other words, if we have measured one area in a situation with one instrument following a particular procedure, when changing to another circumstance and measuring the same area we should come to similar results. If variations are produced the instrument is not reliable. The researcher used the questionnaire both in the pilot study and later in the main study and if similar results are found it may suggest reliability for future reference. The researcher will also refer his research procedure and findings to previous research, which is also a method of checking reliability. Another approach to checking reliability is through the statistical software SPSS. When the results from the questions are entered into SPSS, the Cronbach's Alpha, a coefficient of reliability can be calculated for consistency of the questions. In the pilot study, when the results of 22 questions on social presence were entered into SPSS, the Cronbach's Alpha 0.869 was achieved. The usual acceptable level is 0.7 and thus the questions were considered to be consistent.

Factor analysis in SPSS shows that questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12 13, 14, 15, 16, and 17 are all above 0.4 and therefore can be joined together as one factor (see Appendix 5). However, later in the factor analysis these questions which were supposed to group together did not form distinctive factors. The researcher consulted experienced specialists for the possible reasons for this but did not obtain a clear answer. The later analysis had to be made on individual questions. There are a number of possible reasons for this. Satar (2010) highlighted the difference between social presence from the researcher's perspective and the learner's experience of it and encouraged a more learner-oriented approach to study social presence. This is an interesting view explaining the difficulty that the present research faced with respect to the pilot study. Perhaps students in the BIOE context were not aware of the subtle differences which had been raised by previous researchers and those factors were not obvious to the learners in the context. It is also possible that, in their eyes, the voice-based chat room and the text-based forum were quite interrelated as communication media. This was proven later in the main study as students combined the two technological forms to make communication work for practical purposes. The SPSS data also showed a high correlation between social presence in the two technological forms. This will be discussed later in the thesis.

The validity of the questionnaire refers to the fact that the questions must actually measure what they intend to measure (Bachman 2004, Dörnyei 2007). It is usual practice that designing questions requires consultation with experts and careful

thinking about their purposes. The questionnaire for this pilot study also experienced many stages. First, a draft of the questions was revised several times after consulting experts and the supervisors to the researcher. Careful reading of the existing literature on social presence research and detailed thinking about the learning context of the BIOE were the premise for the questionnaire design. Measuring social presence is a difficult task because the boundary of the concept is not clear cut and various questionnaires have been designed by different researchers (see Gunawardena, 1995; Gunawardena and Zittle, 1997; Kim, 2011; Richardson and Swan, 2003; Swan and Shih, 2005; Tu, 2002 b). The basic components of social presence have been formed however, while an adaptation had to be made to suit the context of a particular study. The focus of the present study was to compare social presence in the voice-based chat room and the text-based forum and thus the questions were designed as such. This was discussed in the first part of 4.2.1 in this chapter.

Validity is not only related to questions, which is the measurement instrument, but also to the interpretation of the findings (Dörnyei, 2007: 52) and other elements in the study process. When the data are collected from a questionnaire the usual practice is to input the data into SPSS. There are some standardised interpretations that are generally agreed. Moreover, some interpretations are bound to the context and some description of the particular situation in which the study took place is required. In the research process, some threats exist that may invalidate the research. In this particular pilot study, the Hawthorne effect (Dörnyei, 2007: 53) is the effect the researcher faced. The

Hawthorne effect refers to the phenomenon that when subjects know that they are being studied they tend to perform better. This was, in some ways, applicable to this pilot study where the researcher needed to explain what the study was about to the students in order to comply with ethical principles. The downside is that when students know they are being studied they might provide more positive responses in order to show their good-will towards their tutor. This issue has to be taken into account when analysing the data.

4.3 Pilot study: data collection and analysis

In this section, the data collection and analysis of the pilot study are described and then weaknesses are discussed and some implications for the main study highlighted.

4.3.1 Comparing the learner perceptions of social presence in the text-based forum and the voice-based chat room

Data from the pilot questionnaire survey were typed into SPSS to discover students' perceptions of social presence in the text-based forum and the voice-based chat room. A comparison was made between the two technological forms. When students were asked about how they felt connected with peers it was found that there was no statistically significant difference using the text-based forum and the voice-based chat room ($M=0.5333$, $SD=1.75643$, $t=1.663$, $df=29$, $p=0.107$). When they were asked about how they felt connected with tutors, it was found that there was no difference either with the two tools for the mediated interaction ($M=0.000$, $SD=1.083$, $t=0.000$,

df=29, p=1.000).

When a correlation was completed with the text-based forum and the voice-based chat room the result (r=0.614, p<.001) showed that there was a significant correlation between the perceptions of social presence in the two technological forms. In other words if students have a high perception of social presence in one, they also have a similar perception of the other. In reality, as the researcher observed, it was probably true that students who were active in the voice-based chat room were also likely to have much presence in the text-based forum and vice versa. When students were asked how they felt about using the two technological tools their answer was as follows:

10. I felt more comfortable with the text-based forum than with the voice-based chat room.

Q10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	1	3.3	3.3	3.3
	disagree	4	13.3	13.3	16.7
	uncertain	14	46.7	46.7	63.3
	agree	6	20.0	20.0	83.3
	strongly agree	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

Table 4-1: Frequency of Q 10 in the pilot study

The answers to this questions revealed that students felt more comfortable using the

text-based forum for contact with peers. From the observations of the researcher, students preferred the text-based forum to the voice-based chat room as a means for mediated interaction with peers. However, the reason for this was not yet clear.

4.3.2 Perceived learning and sense of community in the voice-based chat room and the text-based forum

In addition to how the students felt connected with the text-based forum and the voice-based chat room, Q 8 and 9 was concerned with how the two tools assisted the learner form a community. It was found that there was no significant difference between the two (M=-0.133, SD=0.819, t=-0.891, df=29, p=0.380). From the mean score, it revealed that students were positive that they could be useful helping them become connected as a group (Q8, mean score 3.80; Q 9, mean score 3.93). Q 14 and 15 were about how these two tools facilitated them making friends with each other. They had a high opinion of the two tools (Q14, mean score 3.90; Q15, mean score 3.67). When they were compared, there was no significant difference (M=0.233, SD=0.774, t=1.651, df=29, p=0.109). When using these tools in their learning process, students felt that both of them were beneficial (Q 16, mean score 3.83; Q17, 3.73). When they were compared, there was no significant difference (M=0.67, SD=1.230, t=0.297, df=29, p=0.769).

4.3.3 Indications of the pilot study for the main study

The pilot study had a limited number of subjects. Only 38 subjects participated in the

survey and it resulted in 30 valid questionnaires. The results regarding the perception of social presence with the voice-based chat room and the text-based forum did not show much difference. It poses a problem for a later study from two aspects. Firstly, a later study needs to include a larger body of students in order to gain a more substantial number of subjects for a significant result. Secondly, in addition to the questionnaire method, it is necessary to employ qualitative methods to explore more of the actual interaction for how students get connected in the mediated interaction with the two tools at BIOE. The pilot demonstrated that the questionnaire was positive in searching for concrete information about specific questions which could lead to a clear result.

4.4 The Questionnaire in the main study

The main study was conducted six months after the pilot study. With the limitations of the pilot study in mind, the researcher attempted to improve the quality of the research in three distinctive ways. Firstly, the quantity of data was increased. Secondly, a qualitative approach was adopted to find about the projected social presence in the actual interaction, which was aimed at broadening the views of social presence in the real learning context. Moreover, interviews were added to confirm or supplement what was found through the questionnaire and the content analysis of the actual interaction of the students.

4.4.1 Modifications of questionnaire items

Some changes were made to the question items of the questionnaire used in the pilot

study for the main study although the distribution was made in the same way. The questionnaires could have been delivered online but it might have been difficult to collect a large number of questionnaires. It was possible that the presence of teachers may have increased the seriousness of the survey and the researcher believed that more students would take it seriously and submit their questionnaires in the classrooms. Later, the high submission rate suggested this belief was correct. In the pilot study, questionnaires were distributed in a face-to-face tutorial, and in the main study they were distributed on the day of the final examination as the majority of the students would attend the examination. In this way large number of students could be guaranteed and a large number of responses to the questionnaires could be obtained.

Some changes were made to the pilot questionnaire for various reasons. One question, Q 10, was deleted because it was considered to be a leading question and to favour the text-based forum (Q10 "I felt more comfortable with the text-based forum than with the voice based chat"). Another question was thought to be double-barrelled in that in one question more than one item is dealt with and it makes the question difficult to answer (Q 6. "I felt comfortable talking or writing casually and even with humour with other participants in discussions in the text-based forum"). The altered question became: "When I saw an affective discussion in the text-based forum, I would participate." It is always important to design questionnaire items in a straightforward way and ask about one particular issue at one time as Dörnyei (2007) explains in the simple principle of the questionnaire approach. In addition, Q 11 was deleted because

it focused on an understanding of the discussion rather than the interaction ("The voice-based chat made it easier to for me to understand discussions in the course").

Five items were added to the new questionnaire to explore the interactional aspects of learners when using the voice-based chat room and the text-based forum. Two additional questions concerned the ways in which learners discerned the thoughts of fellow learners (see Q 19 and 20 in Appendix 2). Three questions covered their performance in using the voice-based chat room (see Q 10, 11, 12 in Appendix 2). Some open-ended questions were added to the questionnaire to explore the advantages and disadvantages of the voice-based chat room and the text-based forum and compare their differences (see Appendix 2). Students could thus present their opinions in more details. In answering the survey questions, there was a standard format and their choices were fixed with the given options. However, for open-ended questions, students could provide quite personal views, which varied from person to person.

4.4.2 The subjects of the main study

The subjects in this main study were second-year BIOE students who took the course "English through Literature". 152 questionnaires were distributed when they completed their final exam at the end of the term and 124 questionnaires were collected. 16 questionnaires were invalid for various reasons. For example, some students marked A or B only in all the questions and were obviously careless in making their choices and this invalidated their answers. Some students missed one or

two questions and thus the answers were not complete. In the end, 108 questionnaires were considered suitable for data analysis.

Most of the students were between 26 and 35 years old. All of the students were part-time and most of them had a full-time job. They were meant to study for ten hours a week and for every two weeks they had a four-hour face-to-face tutorial meeting the teacher and their fellow students and the rest of the time they studied on their own in their home or in their workplace. Only about a third of the students attended the face-to-face tutorials on the campus at Beijing Foreign Studies University. As for internet access, 96 per were able to do it at home or their workplace. Most of students could use the computer to communicate with other people.

4.4.3 Data collection for the main study

The basic information from the questionnaire revealed details about student age, gender and their access to the internet and the two technological tools in the BIOE platform. The data in the survey would also reveal student perceptions of social presence in the voice-based chat room and in the text-based forum. Their perception of the two tools as a communication medium and how they perceived the interaction and their learning with the tools would be compared by using correlations and t-tests. Further, more qualitative data from the content analysis, interviews, and open-ended questions would provide various perspectives for examining social presence in mediated interaction with the two technological tools when students studied the course

"English through literature".

Basic information regarding age and gender could also be utilised to examine group behaviour concerning perceptions of interaction and their performance in the text-based forum and the voice-based chat room. Correlations of loneliness with different aspects of perception could also be examined to assist teaching design at a later stage. The survey data could also be compared with data from the content analysis in this study which would compare the social presence density in the text-based forum with the voice-based chat room. The social presence density of the tools would be compared using the Mann-Whitney U Test. It would then be interesting to discover whether the perceptions of social presence are the same as the projected social presence in the actual interactions.

4.5 Results of the main study with the questionnaire

4.5.1 Descriptive statistics: basic information

Among the students who submitted questionnaires, 84 were females and 24 were males. There were three age groups: 20 students were 25 years old or less, making 19% of the cohort in the year of 2011, 70 were 26-35, accounting for 65 % and 18 were 36-45, totalling 16%. The age range is wider in an online school than in a normal regular university. As explained in the previous chapters, online students are mostly part-time and have full-time jobs. They choose to study when they feel that they have the time and can balance their studies with other aspects of their life. They tend to start

studying later in life than mainstream students. For a regular university, students usually register at a university after they graduate from high school. The age range is generally 18 to 22.

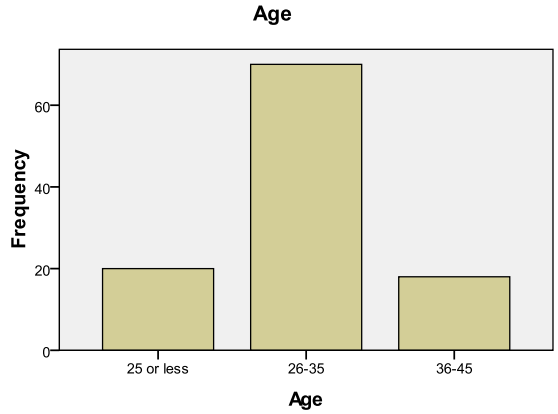

Fig 4-1: Basic demographic information of subjects in the main study

All students have access to the internet. 41% students have access both at their company and at home. 54 % have access to the internet at home. The rest attend cyber cafes to gain access to the internet. When comparing the frequency of student access to the voice-based chat room and the text-based forum, the researcher found that students accessed the latter more than they did the former. This coincides with King and Ellis' (2009) study where American students also posted more text messages. This is understandable because most students would find it is easier to use the text-based forum as the voice-based chat room is more complicated technologically. Students tend to feel more comfortable using the text-based form for mediated interaction in their learning process.

Item	often	percentage	seldom	percentage
text	57	52.8%	51	47.2%
voice	21	19.4%	87	80.6%

Table 4-2: Student access to the voice-based chat room and the text-based forum

As can be seen in Table 4-2, it was found that more than half of the students often accessed the forum whereas only 19.4 % students often used the voice-based chat room. 80.6% of students seldom used the voice-based chat room, which was very high, and there was also a high percentage of students who seldom used the text-based forum. This may well explain why in the text-based forum and in the voice-based chat room only a few students were active with most students being passive bystanders. In the text-based forum, they were many lingerers who merely browsed the forum and may never have posted. In the voice-based forum, active students not only attended teacher-led sessions but also initiated their own sessions; however, most of the students chose to watch and never spoke. In the interviews later, students explained their difficulties of accessing the chat room in terms of the technology and the need for a higher computer specification and they also explained why most of the students were passive in the text-based forum.

4.5.2 Student perceptions of social presence in the text-based forum and the voice-based chat room

When comparing the mean score of student perception in using the two technological

tools for interaction with peers it was found that they had a slightly higher opinion of the voice-based chat room which was a similar result to that of the pilot study. Question 1 concerned the perception of the text-based forum as a medium for interaction with peers and the mean score for this question was 3.64. Q 2 concerned the perception of the voice-based chat room with peers and the mean score was 3.75. However, when a t-test was completed it was found that there was no significant difference between students' perceptions of the two technological forms as media to communicate with peers (M=-0.1111, SD=0.702, t=-0.646, df=107, p=0.103).

With regard to the perception of fellow students there was a significant difference between the two technological forms (M=0.194, SD=0.803, t=2.518, df=107, p=0.013<0.001, the mean score of Q19 was 4.22 and the mean score of Q20 was 4.03). Although both tools were considered positive in discerning the thoughts of the fellow participants, the text-based forum obtained a higher rating in this aspect. Concerning the making of friends in the two technological forms there was no significant difference (M=0.148, SD=0.955, t=1.612, df=107, p=0.110), the p value was more than 0.05, the mean score of Q15 was 3.79, and the mean score of Q16 was 3.64). The mean score revealed that the text-based forum was slightly more effective in making friends with peers but not to a significant extent. However, students did not reveal positive scores on these two items; it therefore requires more exploration later in the qualitative data.

As for helping develop a sense of community, the two technological tools were both very useful (Q 8, mean score 4.28; Q 18, mean score 4.14). The text-based forum seemed to have a higher rating, but not at a significant level (M=0.139, SD=0.779, t=1.853, df=107, p=0.067, p value was greater than 0.05). Both the text-based forum and the voice chat room functioned well in helping students develop their sense of community. Most of the students studied on their own and did not even attend the face-to-face tutorial on campus although it was part of a service for them from the online school. The problem was that their first priority was their work and they did not have time for the tutorials. This increased the need for online contact and the two technological tools could serve as a link to connect them. They felt that with the text-based forum and the voice-based chat room they were included in a group and had a sense of community.

It was interesting to find that students believed that they learned more with the voice-based chat room (M=-0.167, SD=0.755, t=-2.294, df=107, p=0.024<0.001; Q7: M=4.05, SD=0.79; Q17: M=4.21, SD=0.821; the mean score of Q7 was 4.05 and the means score of Q 17 was 4.21). The mean score revealed that students were quite sure they learned more effectively in the voice-based chat room and the difference was statistically significant. However, the data have not revealed why this was the case. More explorations are needed later in the content analysis approach and interviews.

4.5.3 Student performance in the text-based forum and the voice-based chat room

Q 3, 4, 5 and 6 had a high mean score (3.82, 4.17, 3.49 and 4.08) which revealed that students perceived themselves as having frequent access to the text-based forum and if they had any questions concerning their course learning they would access the forum for learning support. Q 5 had the lowest mean score which meant that in the text-based forum many students were bystanders rather than active participants (Q5: "When I saw a question raised in the text-based forum, I would answer it"). It was true that from the recordings of the text-based forum for the pilot study and the main study, it was shown that fewer than twenty students actively posted to the forum and compared with the number of students who were registered for the course learning these active students were less than one tenth of the total number.

Q 9, 10, 11, 12 concerned students' performances in the voice-based chat room. It was shown that students participated less in the voice-based chat room than in the text-based forum. Q 12 had the lowest score in all the questions (3.00), which demonstrated a low participation rate in the voice-based chat room. This will be explored later in the content analysis and interviews to find the reasons behind it. It was impossible to tell from the questionnaire survey. In the voice-based sessions, students listened to recording more than attending the live chat (Q 9, mean score 3.59; Q 10, mean score 4.00). This result was understandable as students were part-timers and it was difficult for them to find a common time to attend a voice chat session at the same time. If they could not attend a voice-chat session they would play the recordings.

Q 13 and 14 had the highest mean score with a low standard deviation which meant that most of them had a high opinion of the two questions and high agreement with the importance of getting connected with the teacher in online interaction and when they saw postings in the forum and heard voices from the chat room they felt close to the teacher (Q13: When I saw posts from the teacher in the text-based forum, I felt close to the teacher. Q14: When I heard voices from the teacher in the voice-based forum I felt close to the teacher.). Although detached from the teacher in time and space in most of their study time students wanted to connect with their teacher in online interaction; the connection was through the postings and the voice chats. Swan and Shih (2005) also demonstrated in their study with American students that perceived presence of the instructor was more influential in determining student learning satisfaction. The focus of this study was on student-student interaction, therefore this aspect was not be included in the study although it was an interesting issue.

4.5.4 Benefits of online interaction

Students in online learning environments sometimes complain about loneliness and negative feelings that may drive them to drop out of their program (Rovai 2002). In this main study, students' loneliness was investigated in Q18, 1, 2, 3, 9, 14, 19 (see the following table 4-3). The assumption is that if students have a good perception of the voice-based chat room and the text-based forum as the media to communicate with peers and the teacher they are less likely to feel lonely in their course learning. Online students study on their own most of the time and are detached from the teacher and

their peers. They have to ask questions and discuss with their peers; if they do this in the text-based forum and in the voice-based chat room they feel that they are part of a community. It is then more likely that they perceive their learning to be more effective and are more satisfied with learning. Table 4-3 shows many interesting factors.

	Q23	Q19	Q14	Q1	Q18	Q2	Q3	Q9
Q23 Pearson Correlation	1	.311**	.278**	.390**	.303**	.280**	.331**	.225**
Sig. (2-tailed)		.001	.004	.000	.001	.003	.000	.019
N	108	108	108	108	108	108	108	108

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 4-3: Correlations between student loneliness and associated elements

Question 23 concerned students' loneliness when studied at BIOE and this question was closely related to Q 19, 14, 1, 18, 2, 3 and 9. Q 19 was about what fellow students thought from the text-based forum and Q 18 concerned forming a community with the voice-based chat room. It was understandable that students' connection with peers using the text-based forum and their forming a community with the voice-based chat room was highly related to their feelings of loneliness in their online learning process in the course. The probable result was that if they had used the text-based forum and the voice-based chat room to connect with peers and became part of an online community they would not feel lonely.

Q14 was concerned with the teacher-led session in the voice-based chat room. Q 9 was

about student-student interaction in the voice-based chat room. These two questions were also related to students' feelings of isolation. When the two questions were compared students relied more on their teacher than on their peers to feel connected to the community. Q 1 and 2 were about students' perceptions of the tools for mediated interaction. It became clear whether students were comfortable or not with the tools for interacting with peers and whether the teacher was highly related to their feelings of isolation in learning in an online course. Q 3 was about reading the posts in the text-based forum. This was also highly related to students' feelings of loneliness in their course.

However, in the basic information section students demonstrated that they participated more in the text-based forum than they did in the voice-based interaction shown in the table 4-2 in 4.5.2. From the SPSS data, it was difficult to discover why students used the text-based forum more than they used the voice-based chat room. Later, in the interviews and the open-ended questions, they would give their personal views about it. These will be described in the later sections.

4.5.5 Gender and age issues with regard to the different attitudes towards the text-based forum and the voice based chat room

It was interesting to observe that male and female students were only significantly different in two questions: Q 5 (male: 3.79, female 3.40) and Q 11 (male: 3.92, female: 3.43) (Q5: $F=4.475$, $df=107$, $p=0.037$, Q11: $F=5.720$, $df=107$, $p=0.019$). From the

results of the two questions, male students seemed to be more active than the female students but in observations made by the researcher, female students were more active than the male students. In the majority of questions, female students had a higher mean score than the male students. This might raise the issue regarding the difference between perceived interaction and the actual interaction. The fact that this issue arose may be useful for thinking about the perceived social presence and the projected social presence in online learning processes. This point will be discussed later in this thesis.

As for the age issue with all the questions, there was no significant difference, although there were slightly different attitudes towards the voice-based chat room and the text-based forum. For Q1, concerning the use of the text-based forum with peers, those students aged 25 or less seemed to adopt a more positive attitude than the other students. With Q 2 concerning the use of the voice-based chat room with peers, it was also true that the younger age group were more positive. The two age groups also revealed some small differences towards the text-based forum but seemed to have similar attitudes towards the voice-based chat room.

4.6 Open-ended questions

4.6.1 The voice-based chat room

Interaction in the voice-based chat room was synchronous with immediate interactivity which was appreciated by many students. As one student stated, “a chat room session is like a live class and you speak and get an oral reply right away”. Because of the

rapid interaction, students felt the presence of fellow students to a greater extent and would participate in discussing the content of their learning course. In the voice-based chat room participants could ask questions that would receive a reply almost instantaneously. From these responses it appeared that the synchronous nature of the interaction with the voice-based chat room enabled students to feel friendlier with each other and motivated some students to a high degree.

Students also discussed the possibility of further dimensions to the voice-based chat room. One student commented, "With the voice-based chat room, you may listen to it, and also see things". This multi-dimensional aspect of the voice-based interaction added novelty and excitement to some students. Some said that they knew more about fellow learners when they engaged in a voice-based chat room with peers. Some even said that they learned more effectively with the chat room. This voice component was a new element compared with text-based interaction and was particularly useful in foreign language learning (McIntosh et al., 2003).

The most difficult problems students discussed were time constraints and technological issues in the voice-based chat room. The synchronous voice-based interaction required students to meet at the same time which was very difficult to manage. The voice technology was not stable compared with the text technology. Two technical problems continually occurred. First, the voice technology demanded higher computer specifications which were difficult for students to manage on occasion. Secondly, the

sound quality was a problem because the internet connection was not adequate, or equipment like headphones or microphones were not up to standard, or the group size was overloading what the software could manage (Cziko, and Park, 2003; Hew and Cheung, 2012). Students sometimes complained that they could not clearly hear what other students said and sometimes they were even disconnected from the chat room for no reason at all.

4.6.2 The text-based forum

The text-based forum was open and flexible in communication. This provided an enormous advantage for online students who usually had a full-time job and a tight schedule. If they had questions they posted them and waited for responses which would arrive at a convenient time. The sharing of learning materials was extremely easy and students were generous in posting valued materials for their colleagues. The disadvantage was that the delay in the response time made the interaction sometimes difficult to bear. Students explained that the text-based forum was not updated and there was low interactivity.

4.7 Concluding remarks about the questionnaire survey

The survey found that student perception of the voice-based chat room and the text-based forum as media of communication were not particularly different. Both tools were considered useful links to make friends with fellow students and form a community. The text-based forum was rated a better tool to discern the thoughts of

students online but the voice-based forum was believed to be more effective with their learning.

Students seemed to participate more in the text-based forum than in the voice-based chat room. Although students did not use the voice-based chat room often they nevertheless had a high opinion of it as a medium for interaction with peers. This suggests that BIOE teachers might be well advised to train students in the future to use it more frequently. At that time it was difficult to explain the reasons behind the infrequent use of the tool. It was also not clear why the tools were different in discerning thoughts and improving perceived learning.

The next two chapters will employ content analysis and the interviews to explore online interaction in detail in order to discover the different levels of social presence in the text-based forum and the voice-based chat room and, some reasons behind it will also be revealed.

Chapter Five: Content analysis of learners' projected social presence in the text-based forum and the voice-based chat room in the BIOE

5.1 Introduction

In the previous chapter the perceived social presence of the learners at BIOE was explored when they employed the text-based forum and the voice-based chat room for mediated interaction in learning the online course "English through Literature". This chapter deals with a content analysis approach to probe the projected social presence of the learners when they use the same two tools in the same context. Learners' actual interaction was recorded and analysed with the framework of social presence categories and indicators proposed by Rourke et al. (2001). A pilot study was first implemented to validate the content analysis framework. A quantitative approach to the content analysis was adopted which meant that the density of social presence categories and indicators was calculated in the recordings of the online interaction. A comparison of the density of the projected social presence of learners was made between the voice-based chat room and the text-based forum. Accordingly, by analysing the limitations of the pilot study a more effective research design was designed to improve the quality of the main study.

In the main study, content analysis was employed with a larger data set and both qualitative and quantitative approaches were employed to gain a more complete picture of student projected social presence in the learning context of BIOE. A larger data set

ensured a better representation of online interaction in the text-based forum and the voice-based chat room in the BIOE setting and a qualitative approach explored interaction patterns and meanings behind the interaction.

5.2 The pilot study with content analysis

5.2.1 Choosing the data

As has been described in Chapter 3, the voice-based chat room and the text-based forum constitute the major channels for online interaction between students in the BIOE. It was then necessary to record what the students actually said and analyse their projected social presence over a period of time. If the questionnaire could elicit a reflected perception of social presence in the mediated interaction of the student learning process of the course, the content analysis could explore the projected social presence from the actual interaction of the students in learning the course. By combining the two approaches a more complete picture of social presence will be revealed in the BIOE context.

The recording was completed using the text-based forum from February 24, 2011 to March 8, 2011. During this time, six threads and 33 postings were found covering the usual topics that students engaged with in the learning process of the course "English through Literature". Typical questions were about the learning materials, some of the difficult points in the course content, and assignments and examinations. It was also believed that this part was adequate in containing almost all the social presence

categories and indicators and thus suited the purpose of a pilot study. The number of words in the text-based forum was 3,260.

There were quite a few voice chat sessions which could be chosen during the time when the text-based interaction occurred in the course forum. The actual voice chat session which was chosen demonstrated that the nature of the interaction was similar to that of the text-based forum. The topics of the voice-based interaction also concerned course learning. The interaction type was student to student which was similar to that of the text-based forum. Although in the text-based forum the researcher was a moderator, most interactions were between students about their course learning. The word number of the voice-based chat was 848. Because of the time constraints of the pilot study and the difficulties encountered in transcribing the voice-based chat, the researcher decided to choose a small section of the voice session to begin with. The length was decided by a sense of a complete unit. Learners usually use the voice-based chat room to discuss what they have learned in class and from textbooks. The usual pattern is to start by greeting and asking each other personal questions concerning learning and then to discuss specific learning materials and also add some extra materials that participants are all interested in. Finally, participants discuss personal topics before they end the discussion. The data chosen contain two sections with one section discussing a personal topic and the other about course learning. With regard to the text-based forum, there were a total of six threads with postings about course learning. As the text-based forum is open to all the greetings were different and

personal topics were usually not discussed. This will be explored in later chapters.

The voice-based activity comprised four students using both Chinese and English to discuss important points they had learned from their textbooks. This activity was initiated by the students themselves. It was not part of the scheduled class activities. They made an appointment themselves and logged on to a voice-based chat room at the same time. The names of the four students were Song, Ye, Won, and Pun (all names are pseudonyms to maintain anonymity). Song worked part-time and that gave her an advantage of spending more time on learning. Her role in the group was as leader and in the activity she talked more than anyone else. Sometimes, she acted as a teacher to instruct the rest of the group about new knowledge. The other students in the group worked full-time and found it difficult to find time for learning like most students in the BIOE. In one term they studied two other courses apart from English Literature. Therefore in the voice-based chat activity they combined all three courses.

The transcription mainly recorded the language of the interaction. As students employed Chinese and English in the voice-based chat, both languages were transcribed. Chinese and English interjections, such as ‘hehe’, ‘oh’ ‘ah’ were also recorded because they carried meaning as well as emotions, which were closely related to social presence. In the selected section, Chinese language was translated into English and inverted commas were used to differentiate the translated interaction with the actual interaction (see Appendix 3). In the pilot study, this chosen interaction was

part of an activity and the whole activity only had four students participating and consequently did not represent all of the mediated interaction using the voice-based chat room during the term. However, the purpose was to test the applicability of the framework.

5.2.2 Coding the data

The purpose of analysing the content of the interaction was to search for categories and indicators of social presence from the online interaction in the context of the BIOE. This would provide a different perspective examining social presence and hopefully strengthen the research quality by supplementing the questionnaire with language data obtained directly from real online interaction. The postings in the text-based forum were coded using the social presence categories devised by Rourke et al. (2001) (see Appendix 3) and the voice-based chat was recorded, transcribed and coded using the same template.

By analysing student online interaction using the social presence indicators and categories, the level of social presence density between the two technological tools could be compared. The density was calculated by adding the number of social presence categories and dividing the total by the number of words in the interaction and then multiplying these by 1000 to calculate a normalised rate. This method of calculation was adopted in King and Ellis' (2009) study of social presence. A comparison was made between the density of categories and indicators in the

text-based forum and the voice-based chat room. Some examples of the coding are given below with some explanations:

Categories	Indicators
Affective	• Expression of emotions (AE) • Use of humor (AU) • Self-disclosure (AS)
Interactive	• Continuing a thread (IC) • Quoting from others' messages (IQ) • Referring explicitly to others' messages (IR) • Asking questions (IA) • Complimenting, expressing appreciation (ICE) • Expressing agreement (IE)
Cohesive	• Vocatives (CV) • Addresses or refers to the group using inclusive pronouns (CA) • Phatics, salutations (CP)

Table 5-1: A shortened version of social presence categories and indicators

(Rourke et al. , 2001)

1. We will wait for you in the "Dazzling Café" room — VOB chat from 10 a.m. to 12 a.m. Friday. [CA] (This is a notice to tell other students about a voice chat activity. A CA is labelled because it has used an inclusive pronoun 'we' in it.)

2. It's such a busy new term in this new year [CP]. We have to pick every tiny-teeny minute to handle the new contents, wow~ [AE] [CA]

(The first part is like a greeting. The function is more interactive than transactional. The second part is emotional and there is a 'we' in it.)

3. 1) A: Can you hear me? [IA] (This is a question)
   2) B: Yeah, I can. [IE] (This is an agreement.)
   3) A: So how's your homework? Hehe. [IA][AE] (The first part is a question, and the hehe is a Chinese interjection which expresses some good feeling towards a fellow

student.)

4) B: Hehe. Well-done. Well-done. [AE][ICE][ICE] (Well-done is an appreciation of somebody else's work, but here it is a little strange that B talks about her own work-probably because of her limited English.)

There are more examples in the section on 'coding symbols and examples' in Appendix 3. In the above examples, the first two were taken from the text-based forum and the third one from the voice-based chat room. The unit of analysis was mainly based on an utterance which was a posting in a thread from the text-based forum and a turn in a conversation from the voice-based chat room. The researcher conducted the pilot research on his own and could not appoint a second coder to check the coding. In order to increase reliability, the researcher coded the chosen data for the second time later at an interval of one year. This double-coding also checked the coding frame. If the two rounds of coding produced similar results the coding frame was considered reliable (Schreier, 2012). The intrapersonal reliability was found to be 82.5%, which meant that the coding was within the acceptable level and the coding frame was feasible. Inter-rater reliability is generally considered acceptable if it is 80% or above (Neuendorf, 2002: 143).

5.2.3 Data analysis

After the data were coded the categories of the text-based forum and the voice-based chat room were inserted into a table (see Table 5-1). AE, AU and AS are all affective categories with AE representing the expression of emotions, AU the use of humour, and AS representing self-disclosure. All the categories beginning with I are interactive categories and the rest are cohesive categories. The detailed information is listed in

Appendix 3, which also includes specific examples for all the categories.

Social Presence	Voice	Text
AE	10	5
AU	1	3
AS	5	33
IC	30	5
IQ	0	0
IR	0	1
IA	22	11
ICE	4	17
IE	7	7
CV	3	20
CA	0	10
CP	0	2
Total	**82**	**114**
Words	**848**	**3260**

Table 5-2: Social presence categories in the voice-based chat room and the text-based forum

In Table 5-1, it can be seen that voice and text messages are able to be coded with the social presence template and social presence density can be calculated for a comparison although the data are too limited to produce a convincing result. However, this method reveals that the method of comparing the two data sets is feasible. A larger data set may result in something more definitive.

Table 5-2 and 5-3 reveal that a comparison between voice and text messages is also possible when social presence is broken down into separate categories. The density of each category can also be calculated using the same method.

Item	Length of text	Affective	Interactive	Cohesive	Social Presence Density
voice	848	16	63	3	96.70
text	3260	41	41	32	34.97

Table 5-3: Comparison of social presence in the voice-based chat and in the text-based forum

When examining Table 5-3, we may arrive at a conclusion about the comparison of social presence and the three separate categories of social presence in the text-based forum and the voice-based chat room.

Item	Affective	Density	Interactive	Density	Cohesive	Density
voice	16	18.87	63	74.30	3	3.54
text	41	12.58	41	12.58	32	9.82

Table 5-4: Comparison of social presence in the voice-based chat room and in the text-based forum with regard to separate categories

In terms of cohesive categories, the text-based interaction had higher density scores than in the voice-based interaction but in terms of affective and interactive categories, the voice-based chat is higher than the text-based forum. At this stage, it is difficult to come to a conclusion with such a small data set. However, it is certain that such a method may lead to grasping the different features of the text-based forum and the voice-based chat room which is likely to provide insights for understanding social presence using these tools and to provide a suggestions for instructional design in the future.

5.2.4 Reporting about the results of social presence differences

Content analysis using a quantitative approach could produce a clear result of social

presence density for the text-based interaction and the voice-based chat room (see Table 5-2). It is also possible to calculate the affective, interactive and cohesive categories and compare their density (see Table 5-3). The interpretation of the results using a quantitative approach is fairly straightforward. Generally, if the voice-based chat engenders a higher density of social presence then it has a higher level of social presence. It is also true with the three categories of social presence. This result will be compared with the questionnaire result to identify whether the perception of social presence is similar to the projected social presence or not. These results can also compared to the results provided by King and Ellis (2009) as they provided a comparison of social presence in the text-based interaction and the voice-based interaction using the same method. At this stage the quantitative approach of the content analysis does not provide examples to illustrate what the actual interaction provided and thus it is difficult to explain the meaning of it.

In the BIOE situation, the voice-based chat room is synchronous and the text-based forum is asynchronous. The result of my pilot study tends to support the view that the voice-based chat room is a useful tool to socialise with peers because it has a high level of social presence. Nevertheless, the text-based forum contained more cohesive categories and indicators of social presence. This clearly indicated that further exploration was required in the main study. In the existing literature, it is believed that synchronous tools are often more effective in informal, interactive conversations and thus useful for the social side of education whereas asynchronous tools have been

considered more useful for serious discussion as they allow participants time to think. (Ingram, Hathorn, and Evans, 2000; Motteram, 2001).

Moreover, this result contradicts the findings of King and Ellis (2009). In their study, social presence is higher in the text-based messages than in the voice-based messages with the former containing more affective and interactive categories and the latter more cohesive ones. The present pilot study showed that the text messages had more cohesive categories and the voice messages had more interactive and affective categories which is the opposite to King and Ellis' conclusion. Currently the data size is small and more data are required to explore the difference. In addition, the voice-based chat room was similar to a private room whilst the text-based forum was public. The privacy issue has been researched by Tu (2002b) who stated that with learners who experienced greater privacy, social presence could be enhanced. This idea is easily understandable as when students have a sense of privacy they tend to feel more relaxed and are thus more at ease, talk more and produce more social presence.

As for the technological issues, it is true that voice is new, compared with text. For students, it is more complicated to manage voice-based interaction than to cope with text-based interaction. It also requires higher computer specifications to cope with voice-based communication. However, text technology has been in use for a long time and can be considered stable and mature. In addition, voice-based chat is synchronous in the BIOE and it requires students to gather simultaneously in a chat room to talk to

each other. In distance learning situation, this is a difficult task. Distance students have multiple roles to play in their lives. They have to work full-time and they have family roles as well as other roles in society. They may be resident in different parts of China which is a huge country. To negotiate a time for them to meet is quite difficult. Perhaps this is why there are more participants in the text-based forum. It is true that in both the BIOE situation and in King and Ellis' context, students produced more text messages than voice messages. Therefore, voice messages were taken from self-selecting students who were probably more active or more enthusiastic than their peers. This raises a question. If the social presence is higher in one tool in my pilot study, is it because of the medium's characteristics or is it because of the participant's characteristics? No decision in this regard has yet been reached. The contextual factors seem to influence the nature of interaction. All these factors need to be explored further in the main study.

5.2.5 Lessons learned from the pilot study and indications for the main study

In the content analysis part the data collected from the text-based forum and the voice-based chat room are limited in scope and this small amount of data can only reveal some features of online interaction; how much it can reveal is still an unanswered question. The coding of data using the content analysis of social presence is another limitation to this study. Currently, the researcher collected the data and analysed it himself. In the main study he employed a colleague to complete the second coding with him and then inter-rater reliability could be obtained. In this pilot study,

the second coding was completed by the researcher with a time interval of one year. If a second coder completed the coding, the other issue would be to acquaint the coder with the categories and to ensure that time was allowed for the coding.

In this pilot study, the variables were controlled by the researcher. For example, the students who completed the text-based interaction and the voice-based chat were nearly all the same students. Both types of interaction were student-to-student. However, there was still an issue which could not be managed in this pilot study which was that the comparison was between the asynchronous text-based forum and the synchronous voice-based chat room. In other words, this could be comparing like with like. In the main study, some data from synchronous text chat would also be included to explore the possible impact of synchronicity on online interaction.

As the content analysis was quantitative, the positive benefit was that the categories and indicators could be calculated and thus they could be compared in terms of social presence density. The negative side of the quantitative method was that categorical analysis did not produce much interpretation of the communication content (Nunan, 1992). Consequently, in the main study, the researcher adopted a qualitative method to content analysis in order to arrive at a deeper interpretation of the online interaction and produce a more effective picture of social presence in the learning context of BIOE.

Because analysing the content of the interaction is more interpretative and the meaning is more inferential, the research will also use interviews to ask the students direct questions to obtain some further explanations of the communication process. Open-ended questions will function in the same way as the interviews as students provide their meaning directly. Hopefully, by combining the mixed methods with different data sets, the main study will make up for the shortcomings of the pilot study and reveal further evidence of the ways that social presence is enacted in the text-based forum and the voice-based chat room in the Chinese learning context.

5.3 Data collection of the main study

The main study was conducted six months after the pilot study. With the experiences gained from the pilot study, the researcher worked to improve the quality of the research in three distinctive ways. Firstly, the quantity of data was greatly increased. Longer recordings of the text-based interaction and the voice-based interaction were made to represent the two types of interaction in the learning context of BIOE. The later sections parts will describe the detailed information. Secondly, a qualitative approach to the analysis of the data collected was adopted to discover more about the projected social presence in the actual interaction. This aimed to provide a more profound understanding of social presence in the real learning context. Thirdly, coding was conducted by two raters and therefore an inter-rater reliability was achieved. The researcher expects that these three adjustments to the methods tested in the pilot study will provide a more useful picture of social presence in the text-based forum and in the

voice-based chat room in the BIOE.

5.3.1 Content analysis of the voice data and the text data

With content analysis, the researcher employed the social presence categories and indicators (Rourke et al., 2001) previously employed in the pilot study to analyse the recordings from the text-based forum for the English literature course and the voice-based chat room where students initiated activities for learning the course. The recordings from the text-based forum were taken from the threads dated August 31 to November 18, 2011, covering the time when English literature was studied in the BIOE. During this time, 15 threads were chosen and two threads were deleted because on the one, there was just one posting by the teacher and there was no reply, therefore the researcher believed that there was no interaction and thus the message was not suitable for the data set. The other discarded thread had two postings by one student. It was a monologue rather than a dialogue and therefore was not considered as data for interaction.

The text-based forum was the place for students to ask questions about their course learning and discuss learning issues. Students often accessed it and in the survey it was found that 52 per cent of the students reported attending more than once a week. However, as there was no requirement for posting in the forum as part of course assessment, participation was not high and most of the students only read the postings. Generally, in the text-based forum, students posted more than the teacher and

consequently most of the interaction was student-student. The composition of the data chosen for the main study is listed in Table 5-4:

Item	Postings	English words	Chinese words
1	3	86	242
2	2	61	0
3	2	140	72
4	13	6	338
5	3	30	79
6	3	2	110
7	4	0	178
8	2	444	85
9	4	0	180
10	8	0	142
11	3	4	42
12	6	0	144
13	5	100	22
14	3	207	671
15	35	166	1263
Total	96	1246	3509

Table 5-5: The text data for the main study

Voice-based interaction in the BIOE is of two types. One is the teacher-to-student voice chat class. For every course, there are three sessions scheduled and recorded for play back. In these classes, the teacher talks most of the time and there is not much conversation. The other type is the student-to-student voice chat activity. These are initiated by the students themselves. It is more conversational and students are more active in expressing themselves with their peers. Considering the nature of the text-based interaction in the forum, which is mostly student-to-student, the researcher decided that student-to-student voice chat activities should be chosen in this study.

The voice data came from three activities that students engaged in reviewing what they

had learnt from the textbook and to practise English language skills. The recordings of the activities were transcribed. A draft transcription was produced and recordings were checked against this initial transcription a second time to refine it. Thus, a more accurate version of what was actually said was obtained. Occasionally the recording had to be listened to repeatedly to hear the real interaction. At times it was almost impossible to capture what was said and the researcher was obliged to ignore it. Generally, the transcription was considered to be a sound reflection of the real interaction but the researcher could still not guarantee that it was the real interaction. The three sessions lasted for 122 minutes, 21 minutes, and 49 minutes respectively with 7 students actively participating in the conversations. Other students were passively involved in the activities and were silent. They did not speak at all and that made it difficult to analyse their performance. These activities were initiated by the students themselves. They were not part of scheduled class activities. They made an appointment themselves and logged on to a voice-based chat room on the BIOE platform simultaneously.

The 15 files chosen from the three voice-based sessions are listed in Table 5-5. A1 refers to Activity 1. As this was a long activity, 10 files were taken from it. A1-1 was the first part of Activity 1 and the same principle applied to the other sections of the activity. In the second activity, which was short and mainly the practice of reading a play, there was no natural conversation and only 3 files were taken from the conversational part. Two files were selected from the final activity.

Item	Turns	English words	Chinese words
1(A1-1)	30	49	377
2(A1-2)	26	422	0
3(A1-3)	15	923	269
4(A1-4)	5	420	1224
5(A1-5)	11	478	586
6(A1-6)	14	857	236
7(A1-7)	21	710	896
8(A1-8)	19	740	365
9(A1-9)	39	767	469
10(A1-10)	28	62	788
11(A2-1)	26	169	77
12(A2-2)	39	153	861
13(A2-3)	41	67	873
14(A3-1)	15	5	148
15(A3-2)	18	521	616
Total	311	6412	7785

Table 5-6: The voice data for the main study

The recording was made with sound only and in actual interaction; there was text chat occurring simultaneously. As the text part was missed, the researcher could focus on the voice part and had to ignore the text part in this study. However, the researcher acknowledges that without the text part in the voice-based chat room the complexity of the interaction is reduced and the real texture of the conversation is sacrificed in some way. The transcription of the recorded voice data was conducted with some loss of the real interaction. The transcription recorded the content of the interaction. The pitch, stresses, pauses and other prosodic features were not noted in the transcription. What

students said in the conversations was written down. Both Chinese and English interjections, such as ‘hehe’, ‘oh’ ‘ah’ were also recorded because they carried meaning as well as emotions. The following example gives an indication of the features which arose. The numbers are the markings for the conversation turns. A and B indicated students to enable them to be anonymous.

Example 1

36 A: Do you know the story ‘hearts and hands’? About the marshal? He was taking a criminal on the train…
37 B: Yeah.
38 A: Yeah. Hehe. So we three acted, acted out a play.

The first activity was a two-hour activity and the whole transcription was 18,000 words long. In order to choose 15 samples which represented the voice-based interaction of BIOE students the researcher tried to select data from more activities and include more students. The data from the first activity may be adequate in terms of words but not in terms of student numbers and activity types. The researcher decided to choose ten parts from Activity A from the beginning, middle and the end.

When the researcher examined this, it was found that this lengthy activity clearly had some independent sections. For example, in the first section students discussed general questions or technical issues like “Can you hear me?” and other issues like “Have you got registered for the final exam?” These questions served as a warm-up section for the whole activity. In the second section, they began to discuss the content of the BIOE courses. In the next section they discussed an important concept in their textbook. Apart from reviewing what they learnt in the textbook they also discussed current

world news which they thought was more interesting than their textbook. In the end they spoke to each other about their personal lives. The ten selected parts from this activity were felt to retain the texture of a complete activity and that a particular pattern was revealed which was, perhaps, a regular pattern that this group often adopted for voice-based activities.

The second activity was conducted on May 24, 2011. It was a language practice session with two students reading a play in the voice-based chat room. BIOE organised an event to promote English learning among students. Students could choose to read a text from the textbook or read anything they had written themselves. Students recorded their reading and sent their reading files to the BIOE platform. The teachers would then listen to their reading and provide a score. High achievers won prizes.

In the session, the two students read a play written by Student B, Song. It was a fictitious story based on a story from their literature textbook. There were three roles in the play, and they originally planned to have three students read the three roles respectively, but because one student had to work overtime at short notice and did not attend this session, Student A, Ye read two roles. When coding, the researcher found it was impossible to code their reading part with the social presence categories and indicators, therefore that part had to be excluded. In the session, Julia, who was Song's daughter, was also recorded and transcribed. She was not part of the learning activity, but took part incidentally to provide a picture of Song's life and offer some

background information for the session.

This third activity was conducted on May 13, 2011 with four students. They were reviewing Unit 2 of the course “English in the Changing World”, a parallel course to the “English Literature” course. In this session, Song acted as a teacher. She talked a great deal and perhaps dominated the session. She presented other students with opportunities to talk in the way a teacher would do in the traditional classroom. As the purpose of the study was mainly to compare student-student interaction, two sections were selected from this activity.

5.3.2 Representation of the text-based forum and the voice-based chat room

In the pilot study, a portion of a 3-week text-based forum was chosen with 6 threads and 33 postings. For the voice-based chat, a 5-minute section was chosen from student-student interaction with four students participating in a voice-based chat activity; the interaction comprised 35 turns of a conversation. The representation was not adequate. Six threads of text messages did not represent the text-based interaction of the course “English Literature” and the 5-minute voice message with only four people was only a small proportion of the voice-based interaction.

In this main study, an increased number of postings was obtained from the text-based forum and more from voice-based chat in order to increase the validity and reliability of the research. The part chosen from the text-based forum occupied two months while

the “English through Literature” course was 8 weeks long. In fact, the chosen section is the whole of the text-based interaction in learning the course for one term. For the voice-based chat room, three sessions of student-student interaction were chosen. This was also a large part of the voice-based interaction with the students when they learn the course.

5.3.3 QQ data

QQ data was recorded from the cohort of students in the spring term of 2012. 2,964 words were selected in the group chat with 2,540 Chinese characters and 424 English words and emoticons. Because QQ is mainly synchronous, the inclusion of its data adds another dimension to the text data the researcher had gathered and consequently improves the quality of the comparison between the text-based interaction and the voice-based interaction. When social presence is compared in the text-based and voice-based interaction, it is not always clear whether the difference is related to the medium or to synchronicity. The synchronous QQ interaction may be used in a comparison with the asynchronous text-based interaction to suggest an answer to the impact of synchronicity.

QQ interaction is a recent technology. When the researcher realised that it was the tool that everybody used for online mediated interaction, it was 2011. This is why the QQ data was recorded in the spring term of 2012. As BIOE enrolled students who had completed the same entrance exam, the students were very similar in English level

each year. The researcher assumed that QQ data was comparable to the text-based interaction in the autumn term of 2011.

5.3.4 Coding the data: process and examples

After the data were selected, the researcher decided to code the data with two coders to increase the reliability. The researcher was one of the coders and the other coder was an English teacher at the Beijing Institute of Technology, a neighbouring university to the Beijing Foreign Studies University where the researcher works. The second coder had seven years of online teaching experience and a research interest in applied linguistics. Since the researcher had been an online teacher for 12 years and with a research interest in computer-assisted language learning, both coders had a common background and that assisted them in their discussion of problems and the reaching of an agreement on the coding process.

The researcher had been involved in this social presence project for three years and read extensively on the subject. He felt confident about identifying social presence categories and indicators in the data collected. In order to ensure that the coding process went well with the second coder they agreed that the second coder studied social presence categories and indicators and some of the important articles concerning social presence research. A pilot coding practice took place before the main coding process and their agreement was found to be quite high. Both coders kept their files with coding records and the tables of figures. The inter-rater reliability was calculated

later. The researcher's rating was used to compare the social prescience density between the text data and the voice data.

The social presence framework used in the coding had three categories: affective, interactive and cohesive and each of the categories contained specific indicators (see Table 1-1 in the first chapter). In the coding process, some disagreements arose. For example, the second coder in the A1-9 file had less AS (self-disclosure) than the researcher. When they discussed the issue, the second coder said that she thought that this category was to express vulnerability, but in the original template by Rourke at al. (2001), it just included the presentation of details of life outside class. Both later agreed that expressing vulnerability was a form of self-disclosure. Another disagreement occurred with regard to addressing the group as 'we, us'. In Chinese we have '我们 Wo Men, 咱们 Zan Men' and '大家 Da Jia' for 'you and us'. However, later, when the coders discussed this, they agreed that 'Da Jia' should be excluded because it referred to 'you' in the plural form mostly. In '我们 Wo Men and 咱们 Zan Men', it is actually the latter which indicates a more intimate relationship; however, there was no degree of social presence measured, so it was just treated as one indicator.

In the addressing of participants, the researcher coded some names as CV, that is a vocative in the cohesive category, but the second coder pointed out that certain names were not as a directly addressed. For example, "And this time people there feel so proud, yes, very proud, because, just as XX said, this is the first time in the history that

there is a US president who visited the small place because of this special reason, right?" Both of the coders later agreed that this was a 'Quoting from other's messages and not a CV. They also checked each other's calculation of figures as the data were quite large and that definitely improved the quality of the data analysis.

Example 2 was taken from the text-based forum (see below in the next page). "Thread 3" was added in the beginning and this was used for a number of different purposes. For referencing, it is easy to refer to when it is mentioned in the thesis. For making comparisons, the data result can easily be inserted into a table and may possibly be compared item by item. Under 'Thread 3', III was inserted before the subject line although it was not coded for category and indicator because in the text-based forum the titles were usually very concise and used as a guide in the front page to the message in the later page. The following message was posted by a student and the English translation was added in inverted commas to make it easily understood for English speakers. In this thread, there were two postings which were numbered 1 and 2. In Posting 1, 'brother and sisters' is the polite Chinese way of addressing peers. It is similar to an address term and therefore coded as a CV, that is a vocative in the cohesive category. Then the student asked a question. It was an IA (see Appendix 3). At the end of the posting it was a 'thank you' and was coded as an ICE, expressing appreciation (see Appendix 3). In the second posting, the student related her story of losing points in the final exam and that she had not read enough and written little, therefore it was coded two AS indicating a self-disclosure at two points, one for the

first sentence where she did not do well in the final exam in a particular item and the other for the second sentence where she said that she thought she had read adequately (see Appendix 3). This posting was also a continuation of the above topic. It was coded with one more IC, meaning 'continuing a thread' (Please see Appendix 3).

Example 2

Thread 3:
III. 学本课程， 是看电影呢还是读原著呢？ "To learn this course, what should I do, to watch related films or read original literary works?"
1 有哪位学哥学姐在百忙中指导一二呢？先谢了。[IA][CV][ICE]
"Can anybody spare me some time to give some suggestions for the above topic, brothers and sisters of my course-mates? Thank you in advance."
2 我觉得我在期末考试小说改写那道题失分可能很多，总结一下，可能是平时阅读量和写小说的量都太少。[AS][AS]
"I think I lost many points in the story rewriting in the final exam. To sum it up, I haven't read enough and written little in term time."

In the text messages, some special emoticons like  , and signs like ~~~~~, were treated as serving communicative purposes, for example, the first type as an AE and an AU, as this sign was used to express emotion and also this sign was funny in a way and therefore was coded as an AU meaning expressing humour and the second type as the expression of emotion only and coded as an AE.

There were some special areas which were difficult to code. For example, as in the text-based forum, some students posted pictures which were the equivalent of many words. Because different people may have quite different understandings about them it was very difficult to attribute specific categories and indicators to the pictures.

In the voice-based chat room, students' conversations were recorded and transcribed (see the following example, Eg. 3). A1-1 was the name of a file to show this was one piece of an activity. The numbers 1, 2, 3 and 4 indicated the conversation turns. Following this coding was completed on the transcription. For example, in the following four turns of conversation, Student A said, "Can you hear me?" This was obviously a question and therefore it was coded as an IA which means asking a question. Student B agreed, and said, "Yeah, I can." She agreed and therefore it was coded as an IE, which means expressing agreement. These two indicators were self-evident. However, in the next turn, there was a Chinese 'Hehe'. This was the laughing sound and was coded as an AE meaning an expression of emotions. In the fourth turn, Student B said, "Well-done. Well-done" meaning that she had finished her homework and it was good to have completed it. An ICE was given, indicating an expression of appreciation. Turn 3 and 4 may cause controversy because in English 'hehe' does not have a meaning and may not have a value. However, in a real life context, the students were Chinese and felt quite happy when they said it. It definitely carried a strong feeling. Turn 4 did not seem to be natural English. In English 'well-done' is not used this way, but this was an example of student's interlanguage which is very close to the Chinese phrase "Zuo Hao Le" meaning "Finished". If the student employed a correct usage like 'I've finished it', was it still an ICE? But that is only an inference. The words here were 'well-done', and showed a feeling of appreciation and therefore two ICE were given in the coding.

Example 3

A1-1

1 A: Can you hear me?
2 B: Yeah, I can.
3 A: So how's your homework? Hehe.
4 B: Hehe. Well-done. Well-done.

Special signs in the voice messages were recorded and coded such as laughing and interjections. For example, in the above example, 'hehe' was treated as one language sign which expressed emotion. At other times, interjections like "啊 A，哎哟 Ai Yo"，were also transcribed and coded as an AE. These were typically spoken signs, similar to emoticons in written messages. One challenge was that these interjections may be pronounced differently and produce different effects. For example, if '啊 A' is spoken with a rising tone, it may mean surprise, but if it is spoken in a flat tone, it probably means an agreement. For these interjections, it takes time to think and decide.

5.3.5 Inter-rater reliability

The two coders coded the files independently and exchanged coding results. After reviewing each other's coding, any differences were examined and an online discussion followed using Skype. An agreement was reached and considered as the final decision. The numbers of their coding categories were entered into SPSS where an inter-rater reliability was achieved. For the files with the text-based interaction, the Cronbach's Alpha was 0.995, which showed that there was a high level of agreement between the two coders' coding.

When the inter-rater reliability was calculated, the results were recorded as shown in

Table 5-6. For each of the voice files, the reliability rate was above 0.8, which showed that all the 15 ratings with the two raters were acceptable. One of files was below 0.8 but was very close; as discussed before the result was modified as two raters could negotiate and came to agreement and the rate increased accordingly.

Item	**Rater 1**	**Rater 2**	**Inter-rater Reliability**
1	40	44	0.91
2	42	51	0.82
3	47	42	0.89
4	33	33	1.0
5	25	21	0.84
6	26	23	0.88
7	39	40	0.98
8	44	33	0.75
9	87	93	0.94
10	61	62	0.98
11	40	42	0.95
12	67	69	0.97
13	68	78	0.87
14	20	18	0.9
15	61	69	0.88

Table 5-7: The inter-rater reliability of the voice data

5.4 Results from the content analysis

5.4.1 Is projected social presence different in the text-based forum compared to the voice-based chat room?

This question was raised in Chapter Two as Research Question 1. A response follows from a quantitative content analysis point of view. When the text data were compared with the voice data as a whole the sum of social presence density was higher in the voice messages than in the text messages and the mean of social presence density was also higher in the voice messages (see Table 5-7). The result in SPSS demonstrated that the density of social presence was not significantly higher in the voice-based data than in the text-based data (Mann-Whitney U=103, Z= -.394 and p value is 0.694, which is far above 0.05). The quantitative result supports King and Ellis's (2009) assertion that there was no difference between the two tools in terms of social presence categories and indicators in general. The projected social presence in the two tools is therefore not different to a large degree.

A qualitative analysis, however, is needed to explore the detailed information as other researchers argue that the voice-based interaction has the capacity to enhance social presence (Ice et al., 2007; LaPointe et al., 2004; Mayer et al., 2003; McIntosh et al., 2003). The strengths of voice-based interaction will be explained later in the more qualitative analysis of the actual interactions and in the interviews with the students at BIOE. There is evidence which will be explained in Chapters 6 and 7.

Item	Text	Voice
Mean	85.95	89.18

Table 5-8: Comparison of the mean score of social presence

5.4.2 How is projected social presence different in the text-based forum and the voice-based chat room?

The previous section showed that the voice-based interaction had a slightly higher projected social presence, but not at a statistically significant level, than the text-based interaction. In order to show a clear picture of what the statistics actually present, the researcher input all the figures of the 15 text files and 15 voice files into SPSS, including the total density of social presence for each file and the separate affective, interactive and cohesive density with the files. A comparison by a one-to-one match across all the files was made to find about the level of the three categories of social presence. In the normal distribution test, it was found that these data were not normally distributed (skewness = 2.7 and kurtosis = 9.997 with both figures far above zero). Thus a Mann-Whitney U Test, a nonparametric test, was used to compare text and voice data in terms of the separate categories of social presence.

When the two data sets were compared in terms of categories of social presence, they showed a detailed picture of each specific aspect of social presence. The density of affective and cohesive indicators was higher in the text data whereas interactive indicators had a higher density in the voice data.

Item	Categories	Affective	Interactive	Cohesive
Text	No. of categories	57	123	45
	Density	12.23	26.41	9.66
Voice	No. of categories	77	508	114
	Density	5.42	35.78	8.02

Table 5-9: Affective, interactive and cohesive categories in the text-based forum and in the voice-based chat room

When the interactive category was compared using SPSS, the social presence density scores in the voice data were shown to be significantly higher than in the text data (Mann-Whitney U=12, Z= -4.182 and p=0.000). In terms of the cohesive category, the text data were significantly higher than the voice data (Mann-Whitney U=55.5, Z= -2.415 and p=0.016). When affective categories were compared, it was found that the text and voice data were not significantly different (Mann-Whitney U=91.5, Z= -.910 and p value is above 0.05). Interestingly, the density of affective categories appeared to be two times higher in the text data than in the voice data (see table 5-8), but when all the files were compared these categories were found not to be significantly different. This will be discussed further in 5.4.4 of this chapter.

5.4.3 Interpretation of the interactive features of the text-based forum and the voice-based chat room

The mediated interaction in the voice-based chat room had more interactive categories

of social presence than the text-based chat room (see Fig. 5-1).

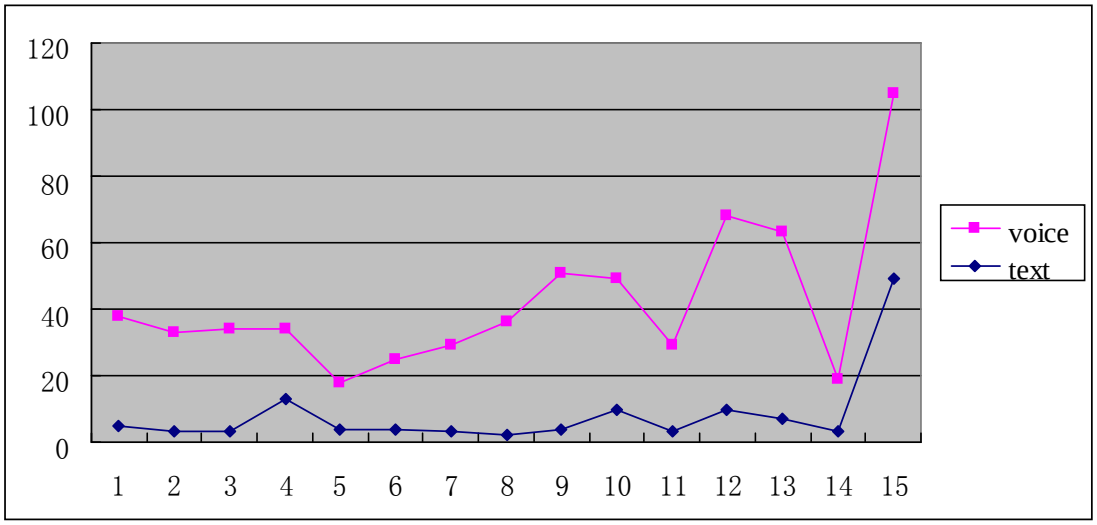

Fig. 5-1: Comparing the interactive categories in the voice-based chat room and the text-based forum

If we study the actual interaction from the voice-based chat room, it is found that this type of interaction has more two-way interaction than the text-based forum. For instance, the following example demonstrates the feature. Because the voice-based chat is synchronous, it requires a quick tempo of interaction. With this feature, participants may ask questions about sensitive issues and then responses occur almost immediately to continue the conversation. Consequently many turns in a conversation occur in a short time.

Example 4

3 A: So how's your homework? Hehe.
4 B: Hehe. Well-done. Well-done.
5 A: Oh.
6 B: 亲爱的，你报名了吗?
"Darling, have you got registered?"
7 A: 什么东西?
"What is it?"

8 B: 考试，预约考试。
"The exam, the registration for the final exam."
9 A: Yeah, I did that.
10 B: 你预约了吗？
"And you?"
11 A: Yeah.
12 B: 我还没有报呢？
"No, I haven't."

In this voice-based conversation, learners were talking about their final exam and assignment which were part of the course assessment. This was quite a sensitive topic, and for sensitive questions, participants needed an immediate answer. In the asynchronous text chat it is difficult to talk about such issues. This has been researched in other studies using synchronous interaction for emotional support (Motteram, 2001; Xie, 2008). When participants are emotionally involved in the mediated interaction, they need immediate responses. In such a situation, synchronous interaction is a suitable choice to meet their needs. In contrast, asynchronous interaction is a slower paced and does not satisfy such a need.

When the text-based interaction is compared, because it is asynchronous, the advantage is that it gives students time to think and thus the complexity of information may be increased in the interaction at one posting (Swan and Shih, 2005). However, the tempo is slowed down and two-way communication reduced. It is also true that when a reply is delayed, the participant may lose interest or patience to continue. When all the text files were combined, the average number of postings for a thread was 6.4. If the longest thread with 35 postings was not included (that one was especially

long because it was an old posting lasting for almost a year), the average number of postings was even less. However, in the voice-based chat room, one question with 5 or 6 turns was normal.

In the present study, the interactive categories were found to be higher in the voice-based chat room. This result was contradictory to what King and Ellis (2009) found in their study. Their result showed that the text-based interaction had a higher density of interactive categories, but their voice messages were asynchronous. The researcher thought that synchronicity might be an important factor responsible for the difference. In the present study, some QQ data were included to search for a possible link between synchronicity and interactive features. When the text data from the synchronous QQ and the asynchronous text-based forum were compared, it was found that the synchronous QQ was much more interactive than the asynchronous forum (see Table 5-9).

Item	Categories	Affective	Interactive	Cohesive	Social Presence
Synchronous text (QQ)	No. of categories	61	143	14	218
	density	20.58	48.25	4.72	73.55
Asynchronous text (forum)	No. of categories	57	123	45	226
	density	12.23	26.41	9.66	48.53

Table 5-10: Affective, interactive and cohesive categories in the text-based forum and in QQ text chat

The density of interactive categories was much higher in the QQ chat than in the text-based forum. Although the two types of interaction are both text-based, QQ is mostly synchronous while the forum is asynchronous, and the synchronicity of the interaction may have allowed QQ to be more interactive than the forum. If we examine the actual interaction, reasons for this can be found.

Example 5

1 明天，在哪儿个教室上课?
"Where shall we have class tomorrow?"
2 明天有课么?
"Do we have class tomorrow? "
3 不是下周?
"Not next week? "
4 天~
"My God~~"
5 我在老家~~
"I'm still in my home town"
6 502 教室
"Classroom 502"
7 明天有课
"We have class tomorrow"
8 8:30,502
9 大家晚安
"Good night, folks"

In this QQ conversation, students talked about the face-to-face tutorial that was going to take place the following day. BIOE students were dispersed all over the city of Beijing and various parts of China and one student asked a question about the tutorial they were going to have the next day. This question was followed with 8 replies in a short time, which revealed the highly interactive features. This interactive feature was seldom seen in the forum. It is clear that the nature of the conversation was quite urgent and the question posted required a quick response from peers. Postings 2, 3 and

4 were posted by the same student because she was worried that she had forgotten the tutorial and she was far away from Beijing at the time of the conversation and probably could not attend it. Posting 6 was a reply regarding the tutorial session. Posting 7 confirmed that there would be a tutorial the following day. Posting 8 responded providing even more detailed information about the time and place of the tutorial. The last posting wished peers well.

The thread that had the most postings in the asynchronous text-based forum (see the following Eg. 6) was a special one. Usually a thread had a few replies and it ended, but this one sparked an interest in students and attracted many responses. The researcher posted a notice announcing a plan for a field trip with his students in the virtual world, "Second Life", which is a user-created virtual environment with 3-D graphical representations of people, space, motion, objects, topography, and tools. When entering the virtual world, each person takes the shape of an avatar, a small cartoon, to walk, to jump and to fly in the virtual world. Apart from images and movements, participants who want to communicate in "Second Life" may type on the screen and talk over the microphone. The first 9 postings are shown as an example:

Example 6

1 我们是网络教育，现在在网上有一个虚拟空间叫 second life 的，我想约一些人过去游一个地方，做一、二个大家认为开心的事。
请感兴趣的人在这里回复。可以先看一下这是什么，能做什么。
也欢迎知道这个虚拟空间的同学介绍一下经验。
"We are doing online learning. We have a virtual world called 'second life'. I plan to have a field trip there with those who are interested in going, and do something for fun."
2 这个有意思呵
我想回到十六岁可以么？虚拟一下，重回学校的感觉。
"That is fun, he

I want to return to age 16, to a virtual world when I'm 16, the old school days."
3 难道是一种游戏吗?
"Is it a virtual game?"
4 是在网上游一个地方吗?
"Is it a trip to a virtual place?"
5 我刚才进去看了，没声。
"I've been there just now and there was no sound."
6 virtual sociaty awaiting the mind person to explore your expection and to fill in your blank。
7 interesting enough, I like it. !
8 那个地方网速太慢，很难进去。是不是对硬件也有要求?
"The virtual world is slow on the internet, and it is difficult to go. Does it also require specification for a computer?"
9 interesting enough, I am looking forward to have a try with anyone!!!
10 yanying4:
Why are you did not set aside tonight's activity?
So busy or forget this?
I had reconnect my network now, so I could to support your activities again to learn knowlodges and practice myselfs skills with you...

Even if this thread had many postings, it seems to contain different features with Eg. 5 and Eg. 4 as mentioned above. In Eg. 4 and 5, when a question is asked, a direct answer follows, but this conversation in the text-based forum did not obey this rule. In Eg. 4, A asks, "So how's your homework? Hehe." B replies, "Hehe. Well-done. Well-done." In this same conversation, there are three other direct questions and answers (see table 5-10).

Questions	Answers
So how's your homework?	Well-done. Well-done
Darling, have you got registered?	No, I haven't.
What is it?	The exam, registration for the final exam.
And you?	Yeah.

Table 5-11: Direct questions and answers in Eg. 4

In Eg. 5, it is also true and direct answers arrive soon after the questions. However, in the text-based forum, it takes time to obtain a direct answer. A participant may follow a question with irrelevant replies or simply ignore the question and starts to ask another question. In Eg. 6, when observing Posting 3, we find that one student asked the question, "Is it a virtual game?" Instead of answering the question, the next posting did not answer the previous question and asked another question. Posting 5 was a sensible response but was not a direct answer. Paulus (2007) also discusses the features of asynchronous text-based interaction stating that when a quick decision is needed, synchronous chat may be a more effective choice than asynchronous tools. Students in the interviews also expressed the view that as they are more aware of each other, they feel more connected to each other and therefore make more effort to continue the conversations. The interactive feature will be explored more in the interviews in the next chapter.

5.4.4 Findings regarding the affective features of the text-based forum and the voice-based chat room

Social presence density in terms of affective categories was higher in the text-based forum than in the voice-based chat room (see Table 5-8 in section 5.4.2). In this category, expressions of emotion (AE) accounted for most of the indicators (25 out of 57, 43.86%) in the text-based interaction. In the voice-based interaction AE has an even higher percentage (43 out of 77, 55.84%). When the actual interaction was

checked, it was found that in the text-based interaction, signs such as   , arrangements of punctuation like ~~,~~~~(>_<)~~~~, ! ! ! , smiling faces and imitations of the laughing sound 'hehhhehehhehehe' are counted as expressions of emotion. The text-based forum has long been used in everyday situations, people have rich experiences and different ways of expressing feelings. Crystal (2001) and Walther (1992) have described the interpersonal effects that text-based interaction may produce on the participants in conventional ways with smiling faces, signs, and the like. Moreover, emerging newly invented effects are always appearing at a fast pace. It is believed that text-based interaction can be a personal and warm communication medium for participants (Crystal, 2001; Walther, 1992).

In comparison with text-based online interaction, voice-based interaction is a new technology and people have less experience using it. However, recent years have witnessed the increasing integration of sound into computer-mediated communication. If the technological barrier is overcome, voice-based interaction has a greater potential to benefit communication as it is connected with the long tradition of human oral communication. In the voice-based chat room of this study, BIOE learners have employed many features, such as 'hehe', a laughing sound, 'oh' 'no', and many other prosodic features. Because the transcription of these features was problematic, they were left unnoticed. For example, the rising tone, the high pitch of a particular word, the modification of a sound for a word certainly serve the purposes of communication

but were not recorded in the transcription.

Affective categories such as expression of emotion, humour and self-disclosure are subjective in some way. Unique signs which are amusing to one person may not have the same effect with another. Affective features need to be checked with the users. This is why some interviews were conducted in this study with the objective of discovering what learners thought of the affective features in the text-based forum and the voice-based chat room. This will be elaborated upon in the next chapter.

5.4.5 Findings regarding the cohesive features of the text-based forum and the voice-based chat room

The density of cohesive categories was higher in the text-based forum than in the voice-based chat room (see Table 5-8 in section 5.4.2). The detailed information regarding the indicators reveals that in the text-based interaction, vocatives (CV) and inclusive pronouns (CA) constitute the majority of the indicators (CV 17 and CA 25 out of 45, 93.3%). In the voice-based interaction, vocatives and inclusive pronouns account for 68.4% of the cohesive category (CV 43 and CA 55). When we examine the particular files which are high in the cohesive category (see Fig. 5-2), some interesting points emerge.

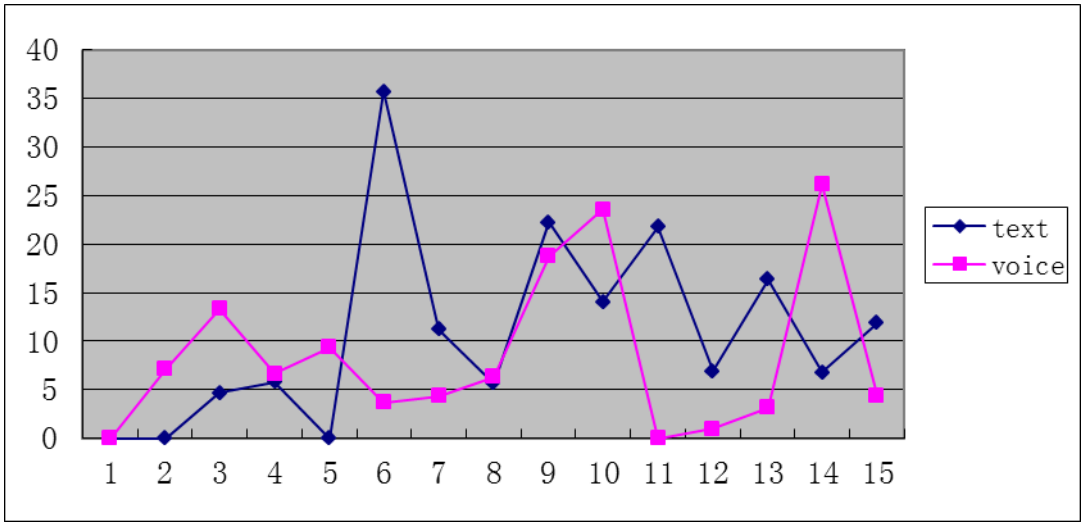

Fig. 5-2: A c**omparison of the cohesive categories in the voice-based chat room and the text-based forum**

The cohesive density of text file 6 is 35.71 and is the highest score of all the files. When the actual interaction is analysed two addressing terms are used, "teacher" and "Chenchaoyi". "Teacher" is a polite addressing term used in China to address anyone who is a teacher or anybody in an administrative position at a school. There is no specific name attached to the title. Chenchaoyi is the name of a student who asked a question. At BIOE, students use their real names as the user names for logging into the BIOE platform when they learn an online course. In the first question, Chenchaoyi asks the teacher to post the electronic book of *My Fair Lady* in the text-based forum because in their course textbook, there is an extract of the play used as part of a lesson. She seems to represent her peers to initiate the request. In response to the question the teacher suggested Chenchaoyi to watch the film which is easier to understand. Clearly the teacher provided the answer to Chenchaoyi, but he also meant to help all of the students and consequently uses an inclusive noun 'us'.

Example 7

File 6 of the text data:

1 老师，您是否可以提供卖花女的电子书给我们呢？最好中英文都有的。
"Teacher, can you possibly give us the electronic book of Fair Lady? If you have the bilingual version, that would be the best."

2 我这里没有，相信你们同学有人会有的，咱们等着看看，好吗？
"Sorry, I don't have it. I believe one of your course-mates may have it. Let's wait, all right?"

3 Chenchaoyi, 你可以在网上看看电影 Fair Lady 啊，中文名叫《窈窕淑女》，改编自肖伯那的话剧《卖花女》。或许对我们的阅读有些帮助。
"Chenchaoyi, you may watch the film Fair Lady online. The Chinese name of the film is "Yao Tiao Shu Nv". It is adapted from the play by Bernard Shaw. It may perhaps help us understand the reading of the extract in our textbook."

The cohesive density of voice file 14 is 26.14 and is the highest point of all voice files. It is the initial section of a voice chat session. Student A is talking to everybody else to check if they can see what she has placed on the screen of her computer. Here it is apparent that these students know each other quite well. They call each other by their first names (the researcher has anonymised them), indicating an intimate relationship between them.

Example 8

File 14 of the voice data:

1 A：XX，能看哈? OK。呃，XX，那你能看到吗？
"XX, can you see it? OK, hey, XX, can you see it?"
2 B：她说能看到。
"She said she can see it."
3 A：能看到哈。
"So you can see it."
4 B：嗯。
"En."
5 A：XX，你也能看到哈？
"XX, can you see it?"
6 B：我能看到。
"Yes, I can."
7 A：OK，good。

It is interesting to find that vocatives (CV) and inclusive nouns (CA) constitute the majority of the indicators in the text-based interaction. In the voice-based interaction there are also many vocatives but it also contains phatics and salutations which account for 32.6 per cent.

5.4.6 Contextual features revealed in the voice-based chat room

As the voice-based chat room comprised synchronous communication it captured the background information of the interaction and even the noise and sometimes personal life was revealed. This aspect naturally gave the participants an effective opportunity to know each other. For example:

Example 9

7 A: Your imagination is magnificent.
8 B: Without boundary. What, Julia?
9 C: Ah, ah.
10 B: What's the matter, Julia?
11 C: Ah, ah.
12 B: 我撤退，撤退。
"I'll retreat, retreat"
13 C: 唠唠叨叨。
"Nagging, nagging."
14 B: 啊，唠唠叨叨，我撤退。女儿要造反了。我把电脑抱走。幸亏我的电脑电池好， 超长，唉，sir。
"Ah, nagging, nagging. I'll retreat. My daughter is rebelling. I'll move my computer. Luckily, I've got a good battery, which lasts for a long time. Eh, sir."
15 C: 把门关上。
"Close the door."
16 B: 关门，关门。遵命，遵命。嗯，她要睡觉了。
"Close the door, close the door. Yes, I will, I will. En, she is going to bed."
17 A: You make noise, and…
18 B: Actually, I have no, no special study room of myself. I had a table just opposite her bed. So, OK?
19 A: Oh.

The above conversation was interesting because when two students, A and B, were having a conversation, another person, C, was making a noise which interrupted them. The story occurred when student B was talking to another student A, one evening at home. When they began the conversation, B's daughter, C, protested about the conversation stating that it made it difficult for her to sleep in the room. B had to move her computer to another room. She later referred to the room as her husband's study

room. Her husband was away on a business trip that night so she could use his study that day. Usually B did her voice-based chat activity at a table near her daughter's bed while her daughter was in bed. Her daughter usually did not complain but if the voice-based chat session was late she could not bear it because she wanted to sleep.

This story said much about B, although she may not have meant to share her personal story. The background information and the noise her daughter made reveals that she is married and her husband is on a business trip at the moment. It also says something about her living and learning conditions. Compared with the text-based interaction in the BIOE platform, the voice-based chat room seems to reveal more of personal information about the students when they use it for connecting with each other. This may explain why students know other students better with the voice-based interaction.

5.4.7 Topics in the voice-based chat room

Students seemed to have an enhanced understanding of fellow students in the voice-based interaction not only because the synchronous conversation revealed their personal life in the background but also because they discussed much in the online mediated interaction. In the following example, when the voice data are analysed, we find they discussed personal topics:

Example 10

5 A: Well, that depends on the visa application, because right now she is preparing all the documents, and she has not submitted the application to the embassy yet. So it is still depending. But right now my visa is already approved and Pun is waiting for the answer from the embassy. So you can see we three actually are at different stages, right?

6 B: I know. Good luck.
7 A: hehe…
8 B: Good luck.

This example shows that students have discussed their travel plans, which is a personal topic but it is not a suitable topic in the text-based forum as not everyone is concerned with a fellow student's personal life especially when the number of learners is large and many students are strangers. In the voice-based chat room students usually connect with a small number of fellow students and see more of each other and thus develop a close relationship within a small circle. As a result they feel comfortable discussing topics about their private lives. When these topics are discussed, quick and direct answers are needed. This would also enhance relationships and interaction between them. These topics are also discussed because the chat room is a private place and consequently they share their private lives in a safe environment within a small circle of friends.

In the voice data, there are examples which show that the topics covered in the voice-based chat room included discussion about homework and final exams apart from the example mentioned above about travelling. There were more off-task topics outside the curriculum, for example, news and some other interesting topics where they had a common interest. These topics are not included in the textbook and therefore are usually excluded in the text-based forum. As the students have developed a close relationship in the voice-based chat room, they are able to cross the boundary and discuss something beyond their normal learning tasks. For example,

Example 11

30 A: …So, Yufang, have you joined the reading competition? Beiwaionline reading competition?

31 B: No, no.

32 A: No, OK. Yeah, I did. Actually we three together, we joined as a team to play out a short play.

Example 12

34 A: …I know that just beside the UK there is another kind of natural phenomenon, do you know the volcano in Iceland? Yeah. 在冰岛的火山又爆发了 ("There was another volcano in Iceland.")。

35 D: Oh, yes.

36 A: You can imagine that there is another very huge mushroom in the clouds, the mushroom of ash, right?

Example 13

39 C: Yeah, so it is fun to see my neighbour, two weeks ago, she bought seed and sow it into somewhere at her home. Yeah, she planted seed on her balcony. He made the DIY. He wants to eat the good vegetable. It's so funny. .

40 A: hehe…..ok.

The above examples are a variety of off-task topics covered in the voice-based chat room. Eg. 11 is about an extra learning activity outside the curriculum. BIOE organised a competition to motivate English learning among students. This was designed for those who wanted additional exercises to work on English apart from their own course work. Students could choose to read a text from their textbook or read anything they wrote themselves. Students recorded their reading and sent their reading files to the BIOE platform. The teachers would then listen to their reading and give them a score. Those who received the highest scores could win prizes. Student A asked B if she participated in this activity. B said she had not and then A explained what she would do in the activity.

The second example, Eg. 12, is a discussion about news. In everyday life, people are always interested in knowing the latest news. The students are the same. Here the interesting aspect was that they combined it with their English learning. They discussed English news to practise their target language and satisfy their curiosity simultaneously. The third example, Eg. 13, is about their everyday life. Student C talked about her neighbour who bought seeds and produced her own food at home. The issue was a hot topic in China where everybody was concerned about food safety and many serious problems were reported about food quality in the public media.

All these off-task topics are important in everyday life situations but quite complicated to discuss. In an online school studying part-time, students usually have a tight schedule, and talking about off-task topics is usually not possible requiring close relationships involving each other. The off-task topics here demonstrated a positive sign in regard to close student relationships in the voice-based interaction and which are difficult to find in the text-based interaction.

5.4.8 Trusting relationships and extended interaction in the voice-based chat room

Examining the data of the content analysis and the interviews, the voice-based chat room is considered to be not only a more effective tool for learners to perceive peers, but also more effective in developing trusting relationships. Consequently interaction is extended. The sound features of the voice-based chat room and its synchronous nature provide a considerable opportunity for learners to know each other

and steer the interaction in the right direction for mutual benefit. Moreover, the voice-based chat room is a private venue where students make appointments to meet each other in small groups and where they usually become friends. Their interaction is usually not recorded. For the research purpose, the researcher obtained students' permission and recorded a few sessions.

As a result of this private space, students tended to have more interaction and talked about a greater variety of topics including private topics and sensitive issues. In an interview, Won said, "Every time everybody talks about what is going on in their life. We start by asking 'How are you?' We may get different answers of course, for example: "frustrated, happy, bored" and so on. From their answers, we get a picture of their life and start to know them better." As they came to know each other, not only as peers, but also as friends, they built trust among themselves.

An interesting aspect that the researcher found regarding voice-based interaction was that sometimes students had a significant influence on each other. On one occasion, two students were talking about registering for the final exam which was a tough decision to make. One student did not feel ready for the final exam and wanted to take the exam in the next term, half a year later. After talking with another student, she took the advice of the student and then changed her mind and decided to take the final exam at the end of the term. Such an important decision is only possible when trust is built in the relationship. The following is the example of the important decision. The two

students began to discuss the final exam, which was a sensitive topic.

Example 14

6 B: 亲爱的，你报名了吗？
"Darling, have you got registered?"

7 A: 什么东西？
"What is it?"

8 B: 考试，预约考试。
"The exam, the registration for the final exam."

Student B continued to ask A the reason why she did not register for the final exam and explained the consequences of not registering. After many conversational turns of, Student A thought carefully about it and said:

Example 15

9 B: 我都预约了，我都考吧。
"I have just registered for the final exam. I'll take it.

Student B registered for the final exam online while she was talking to A. This was a significant decision. From this conversation, it can be seen that their peer relationship had developed to such a degree that they trusted each other and advice was taken seriously.

Another issue was the extended interaction in the voice-based interaction. The privacy factor and the close relationship provided a good foundation to cover various topics. It was also a condition for an extended conversation. For example, in the above conversation, Student B began to ask A if A had registered for the final exam. They then continued the conversation for over 26 turns to discover why A had not yet registered – consequently some advice was offered by B. Finally, A changed her mind and decided to register for the final exam. Such a long conversation about one

particular issue was almost impossible in the text-based forum. On another occasion, Won said in her interview with the researcher that she had consulted over many issues with another student called Song outside her coursework. She developed a trusting relationship with Song although she had never met Song in person. They also engaged in long conversations.

The text-based forum was an open space. When students posted something, it was accessible for a long time and all the other students could see it. The public nature of the text-based forum produced a business-like atmosphere. Students asked questions about text-books, exams and learning issues. They rarely talked about their private lives which made it difficult for them to know each other in the text-based forum. When a student from Shanghai was asked about making friends with others in the text-based forum, he said that it was difficult to know his fellow participants, although he was one of the most active students in the forum. The content analysis of the text-based forum also demonstrated the business nature of the interaction in this forum. The text-based interaction seemed to run parallel rather vertically. In other words, when a post appeared, a reply was made to express agreement or appreciation but it was difficult to discuss in depth as was the case in the voice-based chat room. For all the 15 files of text messages, there was only one thread exceeding 26 rounds, but that thread lasted for two school terms. Students also talked about the delay in the text-based interaction and when they had a question in mind they posted it immediately, but after some time had passed it no longer came to mind.

5.5 Some tentative conclusions

The content analysis concluded that social presence was higher in the voice-based chat room than in the text-based forum although not at a significant level. The interactive category of social presence in the voice-based chat room was significantly higher than in the text-based forum. This was possibly caused by the synchronicity of the voice-based interaction in the BIOE. Learners were aware of other students at the other end of the conversation and thus talked about sensitive issues that increased the tempo of the communication. The synchronous nature of voice-based chat room encouraged two-way communication and that made the voice-based chat more interactive than the text-based forum. Another important reason related to the small number of students engaged in the voice-based chat room. When they performed voice-based activities, they involved a small number of students and continued the activities on a regular basis. In this way, a close relationship developed among them and thus interaction was enhanced.

The affective category was higher in the text-based forum as learners seemed to have considerable experience in showing emotion in the text-based forum through use of emoticons, punctuation and other graphic signs. The voice-based interaction can also be affective, but currently the transcription may prevent some of the affective points from being apparent. Scores for social presence density in the cohesive category were higher in the text-based interaction as the language can be polite and also because the

text-based forum can be an effective venue to share information; there is quite a sense of community in that regard.

In terms of cohesive categories in social presence, although people often discuss the spoken characteristics of text-based interaction (Crystal, 2001), voice-based interaction is definitely more like spoken language with phatics and salutations. Even when the vocatives and inclusive nouns are counted in numbers, the text-based interaction seems to have polite addressing terms, which is different from voice-based interaction.

Chapter Six: Interviews

6.1 Introduction

The previous chapter demonstrated how content analysis was used to research projected social presence in the text-based forum and the voice-based chat room in the BIOE context. It was found that projected social presence was higher in the voice-based chat room than in the text-based forum although not at a significant level. The interactive category of social presence in the voice-based chat room was significantly higher than in the text-based forum while the affective category and cohesive category were higher in the text-based forum. However, as the data was limited in quantity and in particularly in terms of time in the voice-based chat room, some students were interviewed to discover their contribution to enhance social presence with the two technological tools in order that a more complete picture of social presence could be observed in their learning processes. In this chapter, the way in which the interview questions were formulated is discussed as well as how the students were chosen and what their responses were to the interview questions. The experience of using the technology, according to some researchers, is rather a personal construction (Coelho et al., 2006). The purpose of the interviews is to uncover the personal stories behind the students' use of the two technological tools in their learning processes on the English literature course.

6.2 Conducting the interviews

The interview questions intended to cover the three categories of social presence: affective, interactive and cohesive, as described by Rourke et al. (2001). The affective category concerns how the students express their feelings and how they care for each other in order to draw closer to their fellow students and make friends with them. The interactive category concerns how they communicate their ideas and respond to what fellow students think. The cohesive category covers learners' strategies when using the voice-based chat room and the text-based forum for building a learning community in the BIOE. The wording of the questions was simplified to aid understanding to elicit as much information as possible (see Appendix 4). The first question was a warm-up question obtaining general impressions on the students' experiences of the two technological tools during the term they studied the literature course. The remaining questions concerned the three categories of social presence as mentioned and also their perceived learning and sense of belonging in relation to the two tools.

All the interview questions were conducted in Chinese as the students' native language is Chinese and their English language is inadequate when expressing their views fully. It was thus more appropriate to use their native language to conduct the interviews. The interviews were recorded and transcribed. As there was much information certain sections were selected to illustrate the points related to social presence categories.

Interviewees could be chosen by random sampling of the student name list at the BIOE. One problem arose where students who were chosen had never used the text-based forum and the voice-based chat room. In this situation they could not answer the interview questions. Online students are scattered around a large area of the country. It would not be convenient if students who could not attend the interview session were chosen. This would waste time and effort. Eleven students were chosen in the face-to-face tutorials of the English literature course. Those students who came to the tutorials were usually active students not only in the text-based forum but also in the voice-based chat room. They were chosen using the convenience principle as explained in the third chapter. With regard to the online interaction in the BIOE most students were passive. In the text-based forum most of the students were merely reading postings and did not post much. The voice-based chat room was similar in that only a few students were active with most being silent. Content analysis was completed on the interaction of those active voices recorded; it was also true in the interviews that self-selected active students were chosen for this research. The representation of the learner population comprised those whose action could be observed in the context.

From October 23 to December 1, 2011, eight face-to-face interviews were conducted with a digital sound recorder. During the interviews the researcher acted as an interviewer. He was also the tutor on the course and knew the students well. The advantage was that the close relationship would elicit lively conversations and much

useful information about the interviewees' interaction with the two technological tools in the BIOE context. The disadvantage was that they may exaggerate a little to produce a good impression on their tutor, therefore their views may have to be examined with some reservations.

The interviews were semi-structured with the interviewer following the main themes of the questions as guidelines but asking questions using different wording with each interviewee. In the eight interviews, five interviews were conducted with individual students and three with a pair of students. The reason why the three pairs of students were grouped together was because it was difficult to meet online students face-to-face. When two students met for an interview, the interviewer decided to interview them at the same time otherwise one student had to wait for about an hour. As the students knew each other well they were relaxed in a group and the interviews were very useful.

6.3 Narratives of the interviews

6.3.1 Processing interviews

Each of the eight interviews lasted for about an hour. As mentioned, the interviewees knew the interviewer well, they tended to speak a great deal and therefore they sometimes went beyond the topics that were related to the themes of the interviews. After the interviews were recorded, transcribed and translated, the researcher examined the interviews repeatedly and decided to select the parts which were closely linked to the interview questions which would greatly reduce the amount of information and

may also improve the quality.

For example:

> Interviewer: Since you often attend them (referring to the text-based forum and the voice-based chat room), tell me how you benefit from them and is there anything you don't feel good about?
> Interviewee: I've had much benefit. For example, ... and previously ... and me, we studied together through voice chat activities. Communication with course-mates has offered much benefit that you can't have if you study alone. At the beginning, I studied on my own. I thought I worked hard, but when you talked with other people, you found something you haven't covered and actually you should have. You got the stimulation to learn. One dissatisfaction is that interaction through voice chat is not as natural as talking face-to-face, especially at the beginning. As time passes, if we meet our course-mates in the face-to-face tutorials, or we meet each other in our daily life situations, we then feel quite good talking online as if we are old friends, with no distance between us.

The relevant selected narrative information such as, "Don (pseudonym of the interviewee) said it was useful to interact with peers because it provided motivation for him to learn. Using the voice-based chat room at the beginning was not natural, but when he knew his fellow students, he felt close to them like old friends." The information would be reorganised according to the structure of the themes but it remained loyal to what interviewees actually said.

6.3.2 Don's Narrative

Both the text-based forum and the voice-based chat room were useful to Don. With the text-based forum he could overcome the barriers of time and space to interact with the teacher and his fellow students. He lived in Cangzhou, a city which is about 200 kilometres from Beijing in the east. He visited Beijing for face-to-face tutorials only once every two weeks and the rest of his time he stayed in Cangzhou where his family

lived and his company was located. However, he could use the forum wherever he had access to the internet and had interaction with his fellow learners and the course teacher at BIOE.

Don was active both in the text-based forum and in the voice-based chat room. He developed many practical strategies to draw closer to his fellow students and the teacher in online interaction. In the text-based forum the three strategies he used to express his personal emotions were: 1) language use, such as, 'I'm feeling great today.' 2) using emoticons to show his feelings. 3) editing pictures to express various emotions. He said, when using text for interaction, that if you did not have anything to say, a smiling face or any sign which was interesting would sound friendly to other participants. Sometimes he saved downloaded pictures and then sent them with a little modification to represent emotions or provide some humour. In text-based interaction, interactivity is an important issue. A positive method to get closer to other peers was a quick and relevant reply. The problem with the text-based forum was the time delay in a response which may cause learners to lose interest. If they waited for a day or two for a reply, learners may then post less often.

In the voice-based interaction, Don said that he may change his intonation or speed of conversing to express emotions apart from language use. He may also judge the other person's feelings by voice volume or the length of the pause in the mediated interaction. It was the awareness of his peers' attitudes that made him feel well

connected to fellow learners. In addition, the immediate feedback from peers in the voice-based chat room provided him with a chance to adjust to other fellow students in the communication so that the conversation suited the immediate purpose. In the voice-based interaction peers may have in-depth discussions about what they learned from the textbook depending on common interests and participant levels. As the literature course was difficult, it was necessary for peers to discuss complicated features together to obtain various views and share the views to create new understandings of those points. Moreover, the voice-based chat room offered an important opportunity to practice their language with peers which was particularly beneficial for improving listening and speaking skills.

As voice-based interaction was synchronous and conversing with peers seemed to take less effort than writing for most students, more ideas emerged in the discussions in the voice-based interaction. Don mentioned that the spontaneity in the synchronous voice-based chat enabled him to feel confident in the conversation. It was similar to talking with fellow students in face-to-face situations. He found that some of his peers had the same interest in practising English in the voice-based chat room and they then often made appointments to have English conversations in the voice-based chat room.

The problem with the voice-based chat room was the technological difficulties with sound quality and unstable internet connections being the two common problems. When two people were talking in the voice-based chat room the sound quality was

usually adequate. However, when a third person joined in, the noise increased and sometimes it could be difficult to hear what was said. The internet connection was affected by bandwidth or even by the location from which learners accessed the internet. It may also be affected by the number of people who entered the chat room. If there was a large number of students, the connection was weakened.

In the voice-based chat room, Don said that when he first talked with peers whom he did not know well, he felt strange as if he was talking to the screen and not to real people. The conversation was not natural. As they became friendlier their conversation became more natural. Another difficulty for voice-based chat was the timing. Online students were mostly part-time and finding a common time to suit the participants involved was very challenging.

6.3.3 Won's narrative

The text-based forum was beneficial because of its flexibility. Online students at BIOE with a busy job found it to be particularly useful because learners could access it wherever they were or at any time. If students frequently travelled, flexibility was a great advantage for them to access the forum and ask questions when they had difficulty with learning. Won had a tight schedule and in the forum she could find many interesting useful postings about course content at the time when she was available – maybe late at night or early in the morning. She also wanted to reply to questions when she believed that she had answers. She said that it would be useful for

her fellow students to see responses posted to their questions.

Won said that the text-based forum and the voice-based chat room were crucial for them with regard to overcoming learning difficulties, obtaining motivation and for language practice. The voice-based chat room provided opportunities for her to talk to her peers. She said that it was a great opportunity to practise and improve her spoken English. Won regularly attended voice chat sessions in a group which she had never met in person. They attracted her because their English was very good in her view. She noticed that learners in the voice-based chat room were usually excellent students and were enthusiastic English learners.

Concerning sound features, Won believed that they showed directness and trustworthiness in mediated interaction. Won said:

> …people are silent when typing. If you don't speak it out, you seem to be lacking an organ or a procedure. … You seem to avoid something and you don't speak out frankly. … Of course, speaking is more direct than writing. You have your way of speaking and prosodic features. You have more freedom to express. I personally think that speaking can be more real than writing.

In the voice-based chat room learners had a clear focus on course learning and English practice. In the voice-based chat room, they went over the course content, discussed current news and stories of their personal lives, which made them feel very close to each other. She said that the group leader, Song, began to talk about her family and her personal life one day. She was then not only a fellow learner but also a personal friend. Won was amazed at how hard Song tried to improve her English. She said that Song

set a good example as a role model. She started to build a trusting relationship with Song. Later she occasionally consulted Song about her son's education.

She could always remember that when she joined voice-based chat activities with some of her peers she found that their English was far above her level and she felt intimidated; this motivated her to spend more time on her English. At the same time she felt close to these peers who kept encouraging her to practise more and gave her opportunities to talk in the voice-based chat room and that helped her a great deal.

Won also believed that the voice chat was more authentic than the text because of the simultaneous nature of the communication. She said that when an idea occurred to her, she just expressed it. Immediately, other participants understood it and responded to what she had said. She said if she could receive a quick reply she would want to say more. The quick pace of the interaction thus encouraged more interaction and more exchange of ideas in this type of mediated interaction. On the other hand, in the text-based interaction, the participant could not immediately obtain a reply from fellow participants. Students may post a text message that they thought would be suitable for the previous message but perhaps the time delay moved the conversation along in a different direction because the participant who posted the original message lost interest in the previous posting and moved on to something else. This explained the disconnection in some answers that followed the questions as discussed in the previous chapter. This may explain why text-based forum seemed to cover a wide range of

different topics. However, the disadvantage was that it was difficult to find a coherent line of thought in the text-based interaction in the forum.

6.3.4 Song and Ye's narrative

Ye and Song used the voice-based chat room more often than they did the text-based forum. Ye thought that her purpose in organising an activity in the voice-based chat room was a practical one. She could not attend the face-to-face tutorials for the literature course. In the voice chat sessions those who attended the tutorials could transmit the information they had learned to the ones who could not attend them. In other words the voice-based chat room could serve a specific purpose for a particular group of students. The text-based forum was open to all the students. When any postings appeared in the forum they were meant to be helpful to a large number of peers.

Song said that she used the voice-based chat room as a great tool to practise her English and also to exchange ideas with her peers. For a voice-based chat activity, a group of students joined in with the same interest and enthusiasm. It was easy to know her fellow students well since it was a small group. Before she had a voice chat activity, Song prepared carefully not only in terms of content but also in terms of participant characteristics. She posted an outline in the text-based forum or sent the document to her fellow students before the activity and wrote a summary after the activity in the forum. She treated her group members as close friends and she said she was proud that

she had had a pleasant group of fellow students around her. They began to be attached to each other as a close-knit learning community.

Song developed many strategies to draw close to her group members in the voice-based chat room. Addressing them by first names was a strategy. She said that they were learning peers and they wanted to develop an informal relationship. Calling fellow learners by their first names made them feel relaxed. Carefully preparing the content and developing a suitable communication style was a beneficial strategy to respect peers in that small group. Their time was precious and their purpose was to learn the English language in the voice-based chat activities. Letting them learn with maximum benefit was the best way to satisfy their learning needs. To understand participant characteristics and then find something interesting for each person was an efficient way to maintain the interaction moved in the right direction. She had techniques such as encouraging fellow students to talk and had some fun talking about what they were interested in. Because she knew her group members well, it was easy for her to find common topics they were all excited about and she said that she knew interesting ways to present the topics so that they would be fascinated by them.

Song said that sound revealed much about participants in the voice-based chat room. From the way the speaker talked, one gained an impression of their personality. She said that if you listened carefully you could judge the speaker by the speech speed, tone of voice and other sound features. She also discussed some interesting stories

about knowing her group members through what they had discussed. Their group was quite active and engaged in a wide range of activities.

Ye liked Song as a group leader. She said a group leader was particularly important to maintain group interaction in the voice-based chat room. In the group, members cared for and encouraged each other. Everybody needed encouragement from others so that they could continue with their online learning. She said that their group members became close friends and they went on trips with them with pleasurable activities and taught each other some practical skills.

Ye and Song had some difficulties however. Ye talked about some technical problems with the voice-based chat room. For example, students went offline automatically from time to time and they suddenly could not hear other people. Ye said that if she were the chairperson, they waited for her to talk, but if she was not there they did not know why. All the participants became frustrated. The problem was that you were unable to pass the microphone to somebody else so that they might continue without you. The only choice was to cancel the activity which was a challenge that had to be resolved. Another problem related to finding a suitable time for everyone to meet. Mobile phones were used to send text messages to make an appointment. Mobile phones were the most efficient tools to make arrangements because everyone had a mobile. She complained that sometimes too many messages were sent with regard to deciding on an activity and countless messages followed to reschedule if there was a change.

The text-based forum was also an aid for Song and her group members to organise voice-based chat activities. They posted their schedule and activity outline in the text-based forum to make an announcement or to attract fellow students to join them. When Song and Ye were asked about how they used the text-based forum they said that the time delay made them hesitate. Song said that when she posted and received a late reply she would think: "If I reply, who cares?" This discouraged her from participating in the text-based forum. But, she noticed that information-sharing was convenient in the text-based forum. Once she downloaded a song in the forum and shared by a peer. It was titled "Auld Lang Syne", which she often played to cheer her up. However, sometimes sharing too much information may have created an overload and was therefore a problem.

6.3.5 Leo and Zen's narrative

Leo and Zen said that sharing information was a great advantage of the text-based forum. Students in the BIOE, for example, posted learning materials and some peers' learning techniques and occasionally they shared their learning difficulties as well as joyfulness in the text-based forum. This sharing had helped their learning not only with regard to content, but also in motivation. They said that in the text-based forum, interactivity was quite an important issue. If a response occurred quickly to a question in the forum, the poster would feel very pleased. If the teacher responded to that question, the poster's joy was even higher. Leo talked about some helpful strategies to

post in the text-based forum, such as sending a short message, a video, or an emoticon like a smiling face. Online students at BIOE were mostly part-time students. They usually had a busy life. A short message was appreciated. A video presented vivid information which was different from the usual text message in the forum. Emoticons were also interesting and produced a pleasurable moment for online fellow students.

Leo said that in the voice-based chat room the voice of the teacher and classmates added new dimensions to the interaction which helped the participants feel friendlier with each other. The voice features revealed aspects of an interactant's personality and therefore it was easier to develop a trusting relationship between participants. In contrast, he said that text-based interaction might hide personal information which prevented participants from trusting each other. Leo related a joke about an old lady chatting to a young man and making him believe she was an attractive lady. The man even fell in love with her and they decided to arrange a date. When the young man found that the lady was about 20 years older than him he could hardly believe his eyes. The young man also learned a lesson about the extent to which text messages could conceal personal details. Compared with the text-based forum, the voice-based chat room revealed more personal information due to the sound features.

Zen said that the sound of a voice was powerful in attracting attention and seemed to cost less effort. He said that when he listened to voice chat while he was completing housework he could still understand what other people said but when reading and

typing text he needed to employ both his hands and his mind. Both Zen and Leo agreed that the voice-based chat room was particularly helpful for practising spoken English and in the literature course it was easier to understand the characters in a novel or a drama when their voices were heard. That was why they shared audio materials in the text-based forum to help them understand literary work more effectively. In the voice-based chat room, because the communication was synchronous, there was an immediate response. Leo said that if he received instantaneous feedback about what he did, he remembered the learning content well.

Leo also said that in the text-based forum the delay may cause a problem. For example, you may want to ask a question, but you did not have access to the forum on a computer. If you waited for another opportunity you may forget it. If the forum did not have many people participating in it, that might be another problem. If a question was asked and no reply was soon made, some participants lost interest and did not want to post any more. QQ was more immediate than the forum. Consequently many peers were connected to each other through QQ groups. If a question was raised in QQ there was usually a rapid reply and that motivated participants to access it more frequently.

Leo found that a sense of belonging was difficult to produce online. He believed that a physical environment had a much more powerful impact on people. When sitting in the classroom it was easier to feel that you and other peers were well connected in a community. Nevertheless, for online interaction, although the voice-based chat room

was more authentic than the text-based forum and a sound problem with the voice-based chat room may be frustrating.

6.3.6 Yin and Yang's narrative

Yang was one of the best students at BIOE. Before she started her online programme, she studied English in Australia for two years. She spent much time reading and posting on the text-based course forum. She felt happy to share her knowledge with her peers. She said that when she noticed a question in the forum to which she knew an answer she would post a reply. If she did not have an answer she would wait for an answer from someone else. As a result of other peers' questions, she was motivated to practise English and learn something new. She believed that the text-based forum was a good venue to connect with her fellow learners. Yang talked about a problem regarding posting. She said that she wanted to be clear and had to write long messages. However, reading long postings was time-consuming and her lengthy messages were annoying to some of her peers.

Yin said that she would access the text-based forum when she had free time. On one day she might spend a few hours reading all the postings in the course forum and post replies. Her access to the forum was utilitarian as she described it. She said that she was pleased to obtain cumulative points to her online account every time she posted a message. Compared with Yang, Yin liked to post short messages and emoticons. One short message or an emoticon was worth the same amount of credit as a long message.

Yin liked to use emoticons to express support with her fellow learners especially those whom she knew. However, Yang said that she found the emoticons useless.

Both Yin and Yang said that the voice-based chat room and the text-based forum were useful in expressing emotions. Immediate feedback was an advantage for voice chat. Yin said that the voice-based chat room was pleasant when a small group used one chat room but if there were more than twenty participants the noise quality depreciated and control of turn-taking became complicated. The opportunity for the participants to talk was therefore reduced and for some participants there was no talk at all. In terms of interactional content, Yang felt content to discuss what they had learned from their textbook. However, Yin said that she wanted to practise whatever interested her. She talked about an experience where she and her peers role-played an American soap opera called 'Friends'. She said that she became very animated and read her role 20 times in advance to feel ready to read it fluently in the chat session with her peers.

6.3.7 Hong's narrative

Hong's experience with the text-based forum and the voice-based chat room was positive. She thought that the text-based forum was more convenient to use because it was constantly available. She said that she could raise questions whenever she had complications. However, the voice-based chat room could only be used at certain times. If she wanted to meet fellow students she had to make an appointment as after the meeting time fellow students were unavailable. The student interaction in the

voice-based chat room was not recorded and thus what they had discussed only remained in their memories. The advantage of the voice-based chat room was that using a microphone she could talk to the teacher and fellow learners. The sound features were effective for improving spoken English.

In the text-based forum, Hong said that she wanted to encourage her peers. She thought that she was mostly in isolation when learning part-time with fellow students dispersed geographically and trying to build a feeling of community was challenging. She had a desire to become connected with her fellow students. In order to express affection for her fellow learners she used emoticons such as a smiling face or any signs that displayed support. She would also post interesting pictures to encourage them or use language which directly expressed appreciation and goodwill. The online mediated interaction with actions made her feel that she was part of a community. When she encountered difficulties she would imagine that others were in a similar position and that comforted her. She felt in such a situation that intelligent peers might offer her practical help and resolve her difficulties.

The technology in the voice-based chat room was more complex than in the text-based forum. She recalled that when she used the voice-based chat room for the first time she did not know that she had to install certain software. Without the appropriate software she could not access the room and she contacted one of her friends who was proficient in technology who used a remote control technique to resolve her problem. When she

finally accessed the room the voice session was almost completed.

6.3.8 Ma's narrative

In Ma's view, the text-based forum and the voice-based chat room provided a learning track. Reading the postings in the forum and participating in the voice-based chat sessions enabled him to calculate the timing of the course learning. If he studied in isolation, it was difficult for him to identify the pace of learning for a course. For example, he would not know when he should learn the first two units and when he should finish his first assignment if he learned the course on his own. Although there was a schedule somewhere on the platform, working with fellow learners was a better way to know the learning pace than just reading the dates. When the final exam was approaching, he could access useful information that the teacher and other students had posted in the text-based forum. At the time there was also a special voice-based session to help them with the exam. The provision of useful information and the shared feelings of anxiety drew the separate students into a close community.

Ma thought that the literature course was difficult. Previous students had asked questions and posted them in the text-based forum which could still be useful for the current students because they had studied the same course. He could browse the questions and answers and solved some of his learning problems. Alternatively, when he had new questions he could raise them and wait for a response. Ma said that he used the voice-based chat room to practise English language skills with a group of fellow

learners. With sound features, the voice-based chat room was a very useful tool for practising spoken English, pronunciation and reading aloud. However, it was difficult to persist with his habit of practising regularly in a group. He could still remember that he had a language partner to perform role plays. Selecting a conversation from their text-book, he and his language partner would choose two respective roles to play, which was entertaining. But as part-time students, making arrangements to meet at the same time was an enormous challenge. They later changed to QQ, a text chat service, to interact with each other. A message could be posted for a response when fellow students had time available eliminating their need to be online simultaneously.

Ma was surprised that he often had technical problems with the voice-based chat room. He either could not enter the room or he was asked to leave it. He phoned the technical support service at BIOE who solved his problem through remote desktop control.

6.3.9 Ron's narrative

Ron believed that online interaction provided an environment which enabled students to feel that they were part of a group. When she was in the voice-based chat room she said that it reminded her of the face-to-face tutorials. With the same teacher and the same classmates she could imagine that she was in the real classroom. The text-based forum was beneficial, but she did not use it often. When she posted a question, it took a day or two to receive a response and this was too long. She moved to a QQ group where the response was faster. The interaction of QQ group was of student-student

type and fast paced and had an informal communication style.

The text-based forum had too much information for Ron and not all the information was useful. She deliberated whether the forum coordinator could cancel postings which were not necessarily useful for her and other learners. She said the text-based forum was a site to exchange ideas with the objective of supporting course learning. Sharing personal feelings was not appropriate in the forum and in her view those postings should be deleted. When asked about using emoticons she said that she had only used two: a smiling face and a waving hand. A smiling face was meant to demonstrate friendliness and a waving hand to signal farewell for now. The written language in the forum did not contain sound to express subtle feelings. Ron said that it was not as vivid as the interaction in the voice-based chat room.

6.4 Interpretation of interactive features of social presence in the text-based forum and the voice-based chat room based on interview narratives

6.4.1 Peer awareness with sound features in the voice-based interaction

From the interviews, students seemed to have higher peer awareness in the voice-based chat room which caused more two-way interaction than in the text-based forum. Don discussed voice volume and the length of the pauses in the conversation which provided useful feedback about fellow learners' attitudes and which was very useful to the mediated interaction. It provided extra dimensions to understand fellow learners and also signs for adjusting the later conversation. Won also discussed sound features

in the voice-based interaction that could enable conversations to be more direct and trustworthy. This point encouraged her to believe that she was more aware of her fellow students in the mediated interaction using the voice-based chat room than using the text-based forum and that she and her fellow students developed more intimate relationships using the former tool.

Other BIOE students expressed similar views on how sound features affected the mediated interaction. Leo and Zen described how the voice-based interaction could reveal more of the other participants and thus trusting relationships were more easily developed. Song also talked about understanding fellow students from the way they spoke on the voice-based chat sessions. She seemed to know her fellow members extremely well since she had many voice chat sessions with her group members. She believed that sound features revealed participant personality which was probably true. In the group there was one student whom she had never met before in a face-to-face situation – she still felt confident in knowing her interests and character.

6.4.2 Fast pace with sound features and student practice of spoken English

In the voice-based interaction Won believed that as it was synchronous, the pace of the interaction was rapid and it stimulated and motivated her to interact with her peers. She seemed to make more effort to talk to the target audience when using voice as a medium and worked hard to make them understand her. On the other hand, she also received much information from the other person because she had heard their

conversation. In a synchronous conversation for most people, speaking was usually faster than typing. Moreover, the rapid exchange of information improved the quality of the mediated conversation.

All interviewed students mentioned using the voice-based chat room for practicing spoken English. Currently at BIOE, an important purpose of learning English is for improving oral communication. Practising spoken English was a priority for many students. Integrating the voice-based chat room offered a great chance to BIOE students to practise their oral English with peers.

6.4.3 Technological constraints in the voice-based chat room

Although the voice-based chat room was considered a good tool for mediated interaction, its technological constraints caused some problems for learners at BIOE. All the interviewed students experienced technological difficulties with the voice-based chat room, such as sound quality, internet connection, and software repair. Ye talked about one session when she acted as a chairperson and a technical problem occurred. She was off- line and could not log into the chat room. The progamme was rigid and nobody else could replace the chairperson. Other participants just waited and finally had to leave the room. The session had to be cancelled. Hong mentioned the software repair in the voice-based chat room. For some students who did not know they had to install software before they used the voice-based chat room, the first session would be problematic.

Even when the voice-based chat room was in technically sound condition, it required some knowledge and skills to control it. In a voice-based session, turn-taking was controlled by a chairperson who allocated the microphone to other speakers. If anybody wanted to speak, they had to apply for the microphone first and wait for their turn. Both participants and the chairperson had to adjust to the new code of conduct. If more than twenty participants were in the chat room it was difficult for all the participants to be fully involved. Yin and Yang believed that a small group would be useful for conducting an adequate conversation.

The technological problems and the new code of conduct in the voice-based chat room, as the interviewees explained, prohibited the natural interactive features of conversations. When the sound in the chat room was sometimes not clear enough to enable the participants to hear each other well, they had to bear with it or abandon the situation. Hong mentioned that her first experience of using the voice-based chat room was unpleasant. She admitted that it was her fault. She should be well prepared for the session in the first place. However, the frustrating experience had a negative impact on her later use of the voice-based chat room.

6.4.4 Reduced peer awareness in the text-based forum

Compared with the voice-based chat room, in the text-based forum, students' awareness of their fellow students was reduced to some degree. When she talked about

her feeling using the text-based interaction, Won believed that the voice-based interaction revealed more complete information about the speaker and contrary to what she thought, the written information was indirect and some important information was missing that made understanding more difficult. In her view, in a text-based conversation she did not feel that the other person was present in the communication and this made it difficult for her to set a target for the interaction.

Text messages present meaning in a different way to voice-based interaction. Don believed that text-based communication only presents the word meaning in the text format and does not show the way in which the words are spoken. It thus gives less information about the speaker, thus the awareness of the participant in the communication is decreased. Song stated that tone, intonation, and laughter revealed personality and psychologically reduced the distance between people in the communication. This point was also discussed in Ice et al.'s study (2007). When they studied voice feedback to students it was found that students preferred voice messages as they understood their teachers more effectively through sound, which expressed subtle meanings in the way the words were pronounced.

Text-based interaction has the advantage of overcoming time and place barriers. The asynchronous nature of the interaction was convenient for BIOE learners. This significant point was also a double-edged sword. On the one hand, it was convenient to deal with the message at a later time. On the other hand, the pressure of peer presence

was relieved. The fellow learner moved further away from sight and was left behind. This convenience was mentioned by Don and Won for its flexibility of access. Don lived in a city 200 kilometres away from Beijing. He could access the text-based forum easily at home and had learning support from tutors and peers. That made his life convenient. Won described her busy schedule as well as that of her fellow students and the flexibility of using the text-based forum was an important advantage. She also mentioned the technological advances that made postings rich in modes. She thought the postings were very attractive and refreshing.

Nevertheless, the delayed response could also be problematic. Don mentioned the time delay which sometimes caused some participants to lose interest. If this occurs an interaction may cease. The time delay made Song think that: "If I reply, who cares?" This discouraged her from participating in the text-based forum. This could explain why the recordings from the text-based forum did not contain many postings. Students explained that they used QQ more than they used the forum because QQ was synchronous and an immediate answer could be obtained.

6.4.5 Synchronicity of the mediated interaction

Apart from the sound features, synchronicity was also a key factor that impacted the mediated interaction. In the interviews, most of the students stated that the voice-based chat room revealed more about the other person in the interaction and thus produced more tailored messages to suit the audience. This point was supported by the results

from the content analysis in the previous chapter. In the present study, the voice-based chat was synchronous interaction in which participants talked online to each other simultaneously. This simultaneous interaction was one of the important reasons for the differences in peer awareness. Johnson (2006: 47) described a similar view of synchronous communication as having "the advantages of providing a greater sense of presence and generating spontaneity". The interaction medium which produces more 'salience of the other person' (Short et al., 1976) is the one with a higher social presence and is a more effective medium to enable students to know each other better. From the interviews in this study and from Johnson's research, synchronicity was a factor which increased peer awareness in the mediated interaction between learners.

The asynchronous nature of the text-based forum produced useful information to support student learning at a time convenient to them if they were situated in different geographical areas. The interaction was inclusive because it overcame time and place barriers, but the time delay in the text-based interaction could sometimes cause problems that posed a challenge for students with regard to peer presence. Fellow learners were not present and therefore not a priority. Interaction with them was a second choice and could be postponed.

6.5 Interpretation of affective features of social presence in the text-based forum and the voice-based chat room

In the interviews, students discussed using both the text-based forum and the

voice-based chat room to express affection using multiple strategies. The use of emoticons, for example, was typical in the text-based forum. Don said that a smiling face or a special sign worked well for the text-based forum to reveal support for fellow students. Yin was enthusiastic about emoticons and she liked to use them to express various emotions such as happiness, encouragement and sympathy. Ron did not use many emoticons except for a smiling face and a waving hand. A smiling face represented happiness and a hand wave farewell for the time being. Although most students expressed positive feelings about using emoticons to express affection in the forum, Yang, in the interview, disagreed with the function of the emoticons. She said that emoticons did not mean anything to her. Posting emoticons was wasting other students' time. This was an extreme view but some emoticons may seem to be obscure in affective expressions. The point was illustrated in Amaghlobeli's study (2012) who stated that emoticons were inconsistent in meaning and served no purpose in communication. Nowadays software with special affective signs provides language labels to those signs. Therefore, users can access the meanings of emoticons as if they do in a dictionary. Creative users sometimes post inventive emoticons which may still mean people need to guess what they actually mean.

Apart from emoticons, the written language and pictures, in addition to video, were employed to express affection in the text-based interaction. Don mentioned in the interview that he saved interesting pictures or occasionally video clips in his computer and then at certain times he posted them to amuse others. In the text-based forum and

in the QQ chat, other students behaved in a similar fashion to Don and achieved fascinating effects.

When voice-based interaction was compared, language use was the main means of expressing affection. The sound features were the rich elements that added affectional variety in the mediated interaction. It was disappointing that the existing social presence framework was not able to recognise them. In addition to the signs of affection in the linguistic form, there was also a form of affection that lay hidden in the mediated interaction. When Song talked about her strategy of drawing close to peers in the voice-based chat room, she mentioned her careful preparation for the planned activity in the voice-based chat room. Online students studied part-time and their study time was limited. If some learning experience brought them much benefit, it would be a pleasing experience. Understanding the peers and tailoring activities to suit the participants' needs enabled everyone to enjoy the interaction and produced affection that could be long-lasting.

In the text-based interaction, sharing an experience that had relevance to peers' interests or purposes could also be very emotional. Song talked about one peer who shared a beautiful song "Auld Lang Syne" which made her very happy. The remembrance of it was very pleasing. Yin liked music and one day she found a song in the forum and spent a day learning it. Sharing is easy in the forum and it can be exciting when it is relevant to the participant's needs. However it may also become a

problem if too much information is overwhelming and s not serving a useful function.

6.6 Interpretation of cohesive features of social presence in the text-based forum and the voice-based chat room

Song described her strategy of using first names to address her peers to produce a positive cohesive effect. She said that in the learning environment people's relationships were informal and referring to peers on a first name basis would remind them of their informal relationship and encouraged them to relax. Ye agreed with Song.

The text-based forum was an open venue where learners could access a huge number of students and consequently it was difficult for them to know all their fellow students by their first names. The names appearing in the text-based forum were Chinese Pinyin, a Romanised sound recording system of the Chinese language which is different from the Chinese characters. Learners may call each other by the Pinyin names or they may call the teacher using a general term 'teacher'. For example,

chenchaoyi posted 2011-10-17 15:42

1 老师，您是否可以提供卖花女的电子书给我们呢？最好中英文都有的。
"Teacher, can you possibly give us the electronic book of Fair Lady? If you have the bilingual version, that would be the best."

Twuligao posted 2011-10-18 14:55

2 我这里没有，相信你们同学有人会有的，咱们等着看看，好吗？
"Sorry, I don't have it. I believe one of your course-mates may have it. Let's wait, all right?"

When this student was addressed as 'chenchaoyi' and the teacher as 'Teacher', the cohesive effect should be different in one way or another. But when the coding template social presence was used, these general terms had equal value with the use of

first names. In addition, in the text-based forum, students tended to use more vocatives, inclusive pronouns but features of small talk like phatics and salutations were more often used in the voice-based chat room.

The students commented on the cohesive effects of the text-based forum and the voice-based chat room. They tended to emphasize the content of the language rather than the specific linguistic forms. Don explained that in the voice-based chat room, when they talked about the new electronic products that might be used in English learning, he felt close to the group. After sharing more ideas in common, he believed that they had a great sense of community. Won mentioned the small talk they shared in the voice chat sessions. They asked each other about their travel plans and what they did in their spare time and Won said that sharing the personal lives of fellow learners made her feel a part of the other group although she had never met them in person.

6.7 Intimacy and immediacy with other students and online learning

At BIOE, students were mostly separated physically and temporally. Forming a community and developing intimate relationships with fellow learners to overcome isolation was extremely important to them. The interviews with the students revealed what they have actually experienced when they used both the text-based forum and the voice-based chat room to cope with the problems of isolation and improve their learning experiences.

Won, a female student in her second year at BIOE, was active both in the text-based forum and in the voice-based chat room. She said that she wanted to post in the forum because she wanted both to support her peers and be supported by them. She was later actively involved in a chat group with six other students. They met regularly and became close friends. After forming a close community, they had voice-based chat sessions reviewing what they learned from the textbook and practising English. She believed that she was motivated by her fellow students. She explained that when she began to participate in voice-based group activities and found that the English level of her peers was higher than hers, she was humiliated and she decided to work harder. Knowing fellow students' levels of English was a starting point for competition although she had never met them in person. Moreover, working together with other learners offered her significant opportunities to practice English and improve her level. Won said that she knew the group members well by talking to them through voice chat because apart from their course learning, they talked about their personal lives. She even consulted Song in the group about her son's education because she thought that Song had more real life experiences than herself and she trusted Song. Won also mentioned that Song acted as a role model for her which helped her move forward in her learning process.

Don was also in the second year in the BIOE. He maintained online contact with his peers and developed an intimate relationship with a number of students. He also believed that intimacy was developed with peers when he obtained interesting ideas

and gained motivation from them just as Won had. Don thought that the intimate relationship made it possible for them to discuss a wide range of topics and the intimate feeling between them brought responsibility to encourage each other and share with each other their sufferings and struggles, which was particularly useful for online learning. Song and Ye also talked about the intimate relationship they developed through the voice-based chat room. The intimacy was also related more to learning than anything else.

When students posted in the text-based forum they seemed to develop a lower level of intimacy with other peers. Many examples could be found to show that students knew each other well in the voice-based chat group but it was difficult to locate students who knew fellow students well only through text-based interaction. The asynchronous and open nature of the text-based forum was the probable reason that hindered emotional exchanges of complexity and the social side of the interaction. In the existing literature it is also believed that synchronous tools are often more effective in informal, interactive conversations and thus useful for the socialisation of students whereas asynchronous tools have been considered more useful for serious discussion as they allow participants to have time to think about what they say (Ingram, Hathorn, and Evans, 2000; Motteram, 2001).

6.8 Concluding remarks on the interviews

The interviews revealed that in the voice-based chat room students were more aware of

the peers in the communication process than in the text-based forum. This high peer awareness encouraged learners to spend more effort on tailoring their communicated intention to suit the target audience. The sound features and the synchronous nature of the voice-based interaction were the probable reason for the high peer awareness in the mediated interaction. In contrast, in the text-based forum, the awareness of peers was lower and thus led to reduced efforts in the mediated interaction. However, the voice technology was not stable and provided constraints that challenged students' ability and patience. The text-based technology was more mature than the voice technology which offered a quite stable environment for students to post at ease. Students shared excellent multimodal information which was sometimes valuable to many of them.

Synchronous voice-based chat had the advantage of high interactivity but for online students finding a common time to meet synchronously was problematic. The asynchronous text-based forum had the advantage of overcoming time and space barriers and consequently a higher number of students could access it easily from a large area. However, the delay in time was occasionally a problem for students in the interaction, which may inhibit posting.

Students reported that they developed an enhanced relationship in the voice-based chat room if the interaction went well and if the student number was small. This point was reflected in Levin et al.'s research (2006) where they conducted a comparative study of synchronous and asynchronous interaction for learning on an online course. The BIOE

students believed that in the chat room they could discuss sensitive topics and their personal lives which gave them an opportunity to develop even closer relationships. In contrast, the text-based forum was more functional than social.

Chapter Seven: Triangulation of research findings from three data sets

In the previous three chapters, the findings were described using three methods of research. In Chapter 4, the questionnaire explored the learners' perceptions of social presence using the text-based forum and the voice-based chat room in the BIOE context. In Chapter 5, content analysis showed the actual projected social presence of the learners in the context using the two tools. In Chapter 6, the interviews explored real life stories that some students narrated about how they used the two tools to create social presence in the BIOE. This chapter integrates the three data sets and triangulates them in order to present a complete picture of learner social presence in the BIOE context.

7.1 Student perception of social presence in the text-based forum and in the voice-based forum at BIOE

When student perception of social presence was compared in the BIOE learning context, BIOE learners had a similar and positive view of the two tools as communication media. As for the perception of fellow students in the learning process, they rated the text-based forum as a better tool to interact with fellow learners. They perceived the text-based interaction as positive with regard to discerning the thoughts of their peers. The reasons may be revealed from different perspectives.

In the basic information section of the questionnaire, it revealed that students had more

frequent access to the text-based forum. Therefore, when a large-scale survey was undertaken, students overall had a more positive perception of the text-based forum than of the voice-based chat-room. The actual situation was that most of the students used the medium to interact with their peers in their learning process. But when we observed the actual interaction and read the transcripts of the recording, we saw a different picture. When students were engaged in the actual interaction, they were dynamic in the voice-based interaction and they developed closer relationships. The interviews also provided evidence to support this view .

The tentative conclusion may be reached that, although most of students seemed to have a better perception of the text-based forum in terms of interacting with peers, establishing friendships and building a community, the voice-based chat room is a better tool to communicate dynamically with fellow learners if they have the skills to handle it. A small number of BIOE students considered the voice-based chat room to be a better place for learning their literature course. This point is interesting and deserves more exploration in the future.

7.2 Student projected social presence in the text-based forum and in the voice-based forum at BIOE

When student projected social presence was compared as a whole, there was no significant difference between the two tools in the BIOE context. However, when the affective, interactive and cohesive features were compared, differences began to

emerge. Students projected more interactive features in the voice-based chat room and more cohesive features in the text-based forum. As for affective features, there was no significant difference.

Different interactive features and the reasons behind

When the actual interaction was analysed, it was found that in the voice-based chat room students had a faster pace of mediated interaction and their questions and answers were more closely related to each other. Both the results of content analysis and interviews revealed that the voice-based chat room was more interactive than the text-based forum and it was found that sound features and the synchronous nature of the interaction played an important role. As discussed in Chapter 6, in the synchronous voice-based interaction, the communicative needs of the other participants were immediately recognised and would probably be met. In contrast, in the text-based forum, fellow learners who were not present appeared to be, in a sense, remote and therefore, interaction with them was sometimes postponed and may be stopped.

The content analysis method demonstrated that the voice-based chat room had obviously more interactive features than the text-based forum as discussed in Chapter 5. From the examples of actual interaction and from the interviews it was found that sound and synchronicity were the key issues promoting the enhanced interactive features. Open-ended questions in the questionnaire produced similar results in support of this point. The students explained that the voice-based chat room was more direct

than the text-based forum. One student said, “The voice-based chat is more direct communication, in contrast, you have to wait for a long time to get an answer if you post in the text-based forum and it’s also possible that your post may get lost among many other postings and never get a reply.”

Compared with the asynchronous text-based communication in the forum, the synchronous voice-based chat has a constant flow of sound and thus is more likely to produce a faster paced interaction. The synchronous nature of the voice-based chat room has increased the interactive features. The existing literature expresses similar views that in synchronous voice chats the participants are able to articulate deep feelings and concerns amongst themselves and thus interaction is enhanced (Xie, 2008). LaPointe et al. (2004) also state that synchronous voice chat produces an engaging and empathetic community and thus more interaction is encouraged.

The enhanced interaction had an impact on learner performance. When two tools were compared, students practised more English in the voice-based chat room (see Table 7-1). In both modes, students used more Chinese than English which was understandable. Most of the BIOE second-year learners had an intermediate English level and it was easier for them to use their native language. However, students seemed to use far more English in the text-based chat room than in the text-based forum.

Item	English	Chinese
Text	1250 words	3407 characters
	27%	73%
Voice	6412 words	7785 characters
	45%	55%

Table7-1: Use of English and Chinese in the Voice and Text Forums

It is possible that the interactive features produced an intimate relationship between learners. When students trusted each other they were more likely to take risks in language practice. The learning purpose of the BIOE students in this study was to improve their English level and literary knowledge as explained in the learning context section in Chapter 3. If they practised English to a greater extent in the voice-based chat room they had more opportunities to improve their level. This might be the reason why BIOE students reported in the questionnaire that they learnt more effectively in the voice-based chat room.

Moreover, if students were aware of their fellow students in the voice-based interaction, they may think more about their learning objective of practising English and that reminded them that it was more appropriate to speak more English in the voice-based chat room. In the text-based forum, students may want to use the English language but since they were less aware of their fellow students it was less likely that they went the extra mile to post English messages. The asynchronous nature of the text-based forum was the reason students had less interaction with the tool. The other reason was probably the public nature of the forum. As it was lengthy and open to the public, it

felt threatening for many students. If they made an error they lost face. It might be easier for them to take risks before a small number of friends whom they knew well but before such a large number of students it was impossible to take any action. This may explain why BIOE students used much more Chinese in the forum as they felt confident posting Chinese messages and many students chose to be silent and did not post at all.

Nevertheless, in a study conducted by Marriott and Hiscock (2002), asynchronous voice interaction was believed to be unnatural and thus prohibitive to interaction between learners. The turn-taking in asynchronous voice interaction was not continuous and a conversation became a monologue. Although synchronous voice chat was different from natural conversation in a face-to-face situation, the strong sense of the other participant at the other end of line stimulated the conversation and some input from the other participant may enrich the conversation. When there were several people participating in the conversation, turn-taking occurred regularly in the voice-based chat room and although the chairperson distributed turns, the conversation could continue comfortably for some time.

It is the same story if we compare synchronous text interaction with asynchronous text. When analysing the QQ chat, the researcher inferred that synchronicity was a reason for the difference in interactive features. As both the forum and the QQ chat were text-based interaction, the latter was more interactive than the former. This was

probably caused by synchronous nature of the interaction and this was also confirmed by the interview data.

This may explain the difference in findings between this study and King and Ellis' study (2009) in which the voice messages were asynchronous. When interviewed students at BIOE explained their immediate response to their peers their friends were on the other end of the line expecting their answers while in King and Ellis' research students posted voice messages as they did text messages. In their asynchronous interaction, students did not need to reply immediately. As explained in the previous paragraph, when in asynchronous interaction, students are not urgently in need of responding and in most situations they postponed their response or did not reply. It was not unusual in their study to find that the interactive features of voice message were reduced and their density lower than that of the text messages.

The extra dimensions of voice offered in the interaction were crucial for learners to perceive more of the other participants in the communication. Voice can provide extra information in addition to words, which, as some students explained in the interviews, made it easier to understand each other. This point was also confirmed in Ice et al.'s study (2007) in which voice was shown to express subtle meanings through its expression. In the open-ended questions, students also discussed further dimensions to communication in the voice-based chat room. One student said: "With the voice-based chat room, you may listen to it, and also read the screen. But with the text-based forum,

you can only read the messages." The extra sound factor was lauded by many students as a plus factor to connect other participants in the mediated interaction.

In an interview, Leo talked about the effect of sound on the maintenance of the interaction. He said that when he listened to audio messages he could concentrate on them because the sound reminded him of a real person before him. Like a friend talking to him face-to-face, the friend was impossible to ignore, but when he read text messages he could be distracted sometimes. He said that he could abandon the interaction without being noticed. Leo would choose to accept a large amount of information in the voice-based interaction and said that that would be more effective for him in understanding the information he received.

Affective features in the two tools and the problem with the theoretical framework

Concerning affective features, the researcher found that learners at BIOE used language, emoticons, pictures and video to express affection in text-based interaction, while in the voice-based interaction their affective expression was in their use of language and sound features. In terms of the value recognised by the existing social presence framework, the text-based tool had a slightly higher density of affective categories although not at a significant level. However, some sound features that may enhance social presence could not be identified in the mediated interaction.

When students were asked about how they express affection or when their online interaction was analysed in the voice-based chat room and the text-based forum they acknowledged and demonstrated that they had different strategies but they seemed to be confident to express emotions in online mediated interaction using the two tools. This aspect was also reflected in the questionnaire, in the interviews and in their casual talk with the researcher. In the text-based interaction, signs such as   , arrangements of punctuation like ~~,~~~~(>_<)~~~~, ！！！ , smiling faces and representations of laughing sounds ‘hehhhehehhehehe’ account for the majority of the strategies employed in the expression of emotion. In the voice-based chat room, ‘hehe’ (a laughing sound), “oh, no”, and any words that may have a particular rising tone or a high voice may possibly have affective effects. From the content analysis in this study, the text-based interaction had a higher density of affective categories than the voice-based interaction, which agreed with the result in King and Ellis’ study (2009). As explained in the literature review, the social presence template was developed in the text-based environment and it might be that recognising affective categories in the text-based interaction is easier than in the voice-based chat room. When the voice-based interaction was recorded and transcribed, the tone, timing and pitch were difficult to transcribe. If these elements which were used to express emotions are lost in the interaction data, the measurement of the affective categories may not be accurate for the voice-based interaction.

Both voice-based and text-based interaction encounter problems with the existing framework as an increasing number of strategies are adopted to express affection in both types of mediated interaction. In the text-based interaction, students saved some images or videos and posted them for affective expression. They may provoke a strong emotional response. However, the social presence template did not have a clear-cut category for this type of expression and it was therefore difficult for the researcher to code them and they were not included in this study.

For example, currently the text-based forum integrates images, audio and even video to enable text-based interaction to exist in a combination of modes which may enrich its information delivery and emotional expressions. The following motion picture (see Fig 7-1) was taken from the QQ group chat, which showed the emotions of the participant who posted it. The exaggerated action of the girl in the picture was probably the reflection of her cheerful emotional stance. It also expressed a sense of humour. Because the use of computers has become so common an experience, students nowadays save interesting images, motion pictures, audio and video files for later use when they chat with fellow participants. When they post them, the individualised and refreshing pictures or video may produce a significant effect on fellow participants. A good picture is worth a thousand words but is difficult to analyse with the existing social presence framework.

Fig 7-1: A motion picture of a happy girl

If the blurring of the boundary between modes is an issue because the computer environment combines text, audio and video to make a rich context, other issues may also appear as new challenges. In text-based interaction, synchronicity and asynchronicity can also be relative. Paulus (2007) described in his study that students used an asynchronous text-based forum as synchronous communication when they wanted to come to a quick decision. They logged on to the platform at the same time and used the forum with other fellow students online simultaneously. The following QQ conversation gives another example of synchronous interaction, but it is also true that one message may just be left there and it remains unanswered until someone else does the next day. Then the synchronous interaction becomes asynchronous.

1 I'm Wu Ligao, tutor of the Literature course. Hope to know all of you and have some good time with you guys.

2 热烈欢迎吴立高老师加入 10 秋专升本一班群

🤔 “Tutor Wu is welcome to join the cohort group of 2010 autumn.”

3 

4 Thanx

5 Wang Tao and Gang Lulu

6 

我代表今年车展的全体车模向您表示热烈的欢迎.
“I’m representing all the car models to welcome you to join in.”

QQ is a quite recent technology in China which has existed for the past five years. It is popular particularly with young people. Most learners at BIOE are quite young and they use it frequently. With more and more fellow learners logged onto it simultaneously, they can have very lively conversations and there are definitely more emoticons in the conversation than in the text-based forum. The above conversation revealed that the tutor joined the QQ group for the first time and the students welcome this. It was simple, but in the QQ conversations, more signs are used and in line 6, this sign is unconventional and rarely used in the text-based forum in the BIOE platform. When this kind of sign appears, the meaning has to be guessed. This student does not use his real name and adopts the name of a notorious car model at that time in order to be sarcastic and humorous. That is why he said, “I’m representing all the car models to welcome you to join in.” From the context, the sign may signify a joke to amuse other participants in the QQ group. However, this means it will be difficult to analyse if the researcher has no background knowledge.

When we compare the text-based interaction with the voice-based interaction the

voice-based chat room is a mixture of text and voice. The voice-based chat room has a screen in it like many other voice chat tools. Students may write on the screen and talk simultaneously. When there are numerous people in the room and someone wants to talk, but is unable to be allocated a turn by the chairperson, he or she may type it on the screen and everybody in the room can see it. The following conversation was taken from a voice chat session in which students were checking to discover they could observe the information on the screen.

1 A：XX，能看哈? OK。呃，XX，那你能看到吗?
"XX, can you see it? OK, hey, XX, can you see it?"
2 B：她说能看到。
"She said she can see it."
3 A：能看到哈。
"So you can see it."
4 B：嗯。
"En."
5 A：XX，你也能看到哈?
"XX, can you see it?"

This study focused on comparing the level of social presence in the voice-based chat room and in the text based forum, but actually the boundary between the two modes was blurred and the combination of the synchronous and asynchronous interaction may remind us that the distinction was made for research purposes. The voice-based chat room has the functions for participants to text chat with each other. In the text-chat, students may also send audio, video and motion pictures which are complicated and make the communication rich. Therefore, it becomes a challenging task to provide a clear cut analysis of text and voice message with regard to social presence categories in the two tools.

In the interviews, students also talked about the interesting aspect of mixture of modes and combination of the synchronous and asynchronous interaction which produce affective features for their fellow learners, which were difficult to recognise with the existing social presence framework. In the voice-based chat room, when students used rising and falling tones and similar prosodic features to express emotion, these elements were not recognised either in this study for affective indicators.

Cohesive features and their contribution to social presence

When cohesive features were compared in the text-based forum and the voice-based chat room, it was found that although the former had a higher density of cohesive features, there was a different pattern in the two tools. The text-based forum had a higher percentage of vocatives and inclusive pronouns while the voice-based chat room had a higher percentage of phatics and salutations. Regarding vocatives, the text-based forum had more polite addressing terms while the voice-based chat room had more intimate addressing terms.

This study shows that the cohesive categories exist in the text-based forum and were of a higher density than in the voice-based chat room. The result contradicted what King and Ellis (2009) found in their study. This issue may be related to synchronicity. If the cohesive features are examined with regard to their contribution to social presence, it presents a picture which may offer an explanation.

Swan (2002) found changes in the types of text-based social presence indicators employed over time in a school term at an American university. As the course progressed, the use of cohesive indicators decreased while the use of interactive indicators increased. Affective indicators, the most frequently used, remained at about the same level throughout the course. She concluded that the more cohesive indicators did not necessarily mean a shorter distance among students. It was probably true that when students became friendlier, the need to use cohesive categories was reduced. This may indicate that students were more intimate in the voice-based chat room and did not need to use many cohesive categories.

An interesting challenge exists here. Is it possible that cohesive categories promote immediacy and intimacy and if they are appropriate for communication tasks, they might not necessarily increase? This is why in Swan's study as the term progresses and students get to know each other better the cohesive level is reduced. If this is true, it is reasonable to believe that in the voice-based interaction at BIOE, students know each other quite well and therefore the cohesive level is lower than in the text-based interaction. This may also account for the low level of cohesive indicators for the text messages in King and Ellis's study (2009), in which the text messages have a higher social presence than the voice messages.

In this study, students in the interviews demonstrated that they had a good relationship

in the voice-based chat room. Firstly, because it was easier for them to know fellow students as voice revealed more of their personality and their lives generally. As the voice-based interaction was synchronous communication they tailored their conversation so that more interaction was produced and that provided increased opportunities for them to know each other. Therefore, they did not necessarily employ many cohesive indicators in the interaction.

7.3 Match between students' projected social presence and their perception of social presence at BIOE

When results from the three methods were integrated it was interesting to find some similar conclusions resulting from the three data sets. The questionnaire revealed that generally students at BIOE had a similar perception of social presence both in the voice-based chat room and in the text-based forum. This agreed with the result in the content analysis which also revealed that the projected social presence of learners was similar in both tools. In the interviews and the open questions almost all the interviewees were positive about the use of the two tools in their learning process and they were happy with their connection with peers.

When a mixed-method approach was adopted to reveal the level of social presence in the text-based forum and the voice-based chat room, the similarity of the results showed that almost all students had a positive attitude towards both tools for online interaction. In the learning process they were separate from each other and they

demanded computer-mediated interaction for connection so that they formed a community for knowledge construction and meaning making. This also confirms the development of social presence as discussed in Chapter Two. The technological tools as communication media provide the foundation for online interaction where social presence is created. The key issue is how learners employ them. Learner characteristics and the strategies they use are crucial in fostering social presence.

However, in reality 80 per cent of the BIOE students seldom accessed the voice-based chat room. Although the voice-based chat room was thought to be a more effective tool for communication and students who had used it said it was a more effective tool for becoming more knowledgeable about fellow students, most BIOE students did not use it often and therefore did not receive the benefits. The text-based forum was a more common tool for BIOE students to use and this explained their responses regarding the text-based forum where they stated that that they discerned the thoughts of their fellow students more easily and that it was more likely they make friends with them and developed a sense of community, not because the text-based forum was a better tool, but because they accessed it more than they accessed the voice-based chat room.

The three methods yielded similar results regarding student perceptions of learning. The questionnaire revealed that students believed that they learned more in the voice-based chat room. Analysing the data of the content analysis, students seemed to have more interaction and covered more topics in the voice-based chat room. In the

interviews, students discussed high peer awareness in the voice-based chat room. They believed that the synchronous nature of the communication made them more aware of their fellow students and thus there was more interaction. It might be true that this high level of peer awareness and the instant feedback from peers encouraged them decide to tailor their interaction to suit the needs of the fellow participants to maintain continuous communication in order to improve their learning.

7.4 Discrepancies between students' projected social presence and their perception of social presence at BIOE

In general, the student perception of social presence and their projected social presence were at a similar level in the two tools at BIOE. When the detailed components of social presence were examined differences appeared. The questionnaire's results regarding the perception of social presence, revealed that students at BIOE were able to understand peers' thoughts in the text-based forum more effectively than through the voice-based chat room and it was also easier for them to create friendships with their fellow learners in the text-based forum. However, the interviews produced a different result. Most of the students interviewed preferred to use the voice-based interaction for communication and understanding fellow students and developed a close relationship with voice-based interaction.

The content analysis also showed the differences in cohesive and interactive features in the voice-based chat room and in the text-based forum. The interviews also revealed

the differences and some reasons behind them. In addition, this study revealed that the voice-based interaction was more interactive and less cohesive than the text-based interaction which was contrary to what King and Ellis (2009) found.

Technological constraints of the voice-based chat room

If sound features and synchronicity were strong factors in the voice-based interaction with regard to enhancing social presence, the technological constraints were probably the negative factors for the mediated interaction. At the very beginning of almost every session in the voice-based chat room the following was a typical opener:

1 A: Can you hear me?

2 B: Yeah, I can.

The question checks the quality of sound in the chat room and whether the addressee can hear the speaker. This question is constantly repeated and perhaps several times before a conversation begins or at any time when a participant is silent for a short time. The technical issue in the chat room seems to be much more complicated than in the text-based forum. In the interviews there were often complaints about the technological difficulties in the voice-based chat room but no complaints were made about the text-based forum. It is true that text-based interaction has a longer history in computer technology and therefore text-based interaction has been developed to the extent where a stable environment is ensured. When people use text online, they usually do not have to be concerned that the text message will not be received. The success rate of text communication is so high that it is taken granted that it will be

successful. However, with voice-based interaction, it is not necessarily true that voice-based chat is also stable in the computer environment.

In the interviews there were two complaints which were often repeated regarding technological difficulties. The first point concerned the entrance to the voice-based chat room. Unlike the text-based forum, the voice-based chat room required software to be installed before it functioned. Students constantly experienced difficulties meeting the requirement. It was not unusual to find that some students had studied at BIOE for one year or two years and did not know how to access the voice-based chat room. Although there were step-by-step instructions for students to follow they were still unable to manage it. At BIOE there was a large technical team to support students. They may often use high-tech strategies to assist students. But there was still a small number of students who were simply unable to use the voice-based chat room. In the interviews, some students mentioned the difficulties of using the chat room. Hong said when she was first told about a voice-based chat activity she just clicked the box representing the voice-based chat room. She thought it was like clicking on any other hyperlink in the website and it would allow her access but it did not. She tried many times and asked her peers. She finally found that she had to install some software to make the voice-based chat room function. She was finally successfully but the voice-based chat session was nearly finished. She said she learned a difficult lesson in using the voice-based chat room. Some other students expressed similar problems.

The second point was that students sometimes found that the sound quality was not good enough to hear what others were saying. Alternatively they may be asked to leave the chat room for no apparent reason. In the interviews, students spoke about this situation repeatedly but it was difficult to explain. Students attributed some problems to the internet connection. When the broadband was not adequate the sound quality was affected. Occasionally students would adjust their own computers to resolve the situation. It was always helpful advice for online learners to utilise common sense in technology to ensure a sound voice-based interaction.

The technological problems may also serve as an important reason to explain why students posted fewer messages in King and Ellis' study (2009) and had less access to the voice-based chat at BIOE. In my study the voice-based interaction was synchronous and therefore students were talking to each other at the same time and in the same space. In King and Ellis' study (2009) there was another issue of accessibility through technological means. If their students did not interact in the same space they had to listen to the voice messages by clicking on them. They had to expend more effort to hear each other. This technological effort may also have reduced the interactive feature in the voice-based interaction.

Two conditions for effective voice-based interaction

In voice-based interaction, students had a higher awareness of each other. Because of high peer awareness, the mediated interaction was enhanced and students developed a

closer relationship with each other but it was interesting to notice that some students seemed to require two conditions before beginning a sound voice-based interaction: a small group size, and knowing the participants.

The voice technology related to turn-taking in a conversation is still clumsy. Turn-taking is usually allocated by a chairperson in the voice-based chat room and it is time-consuming allocating every turn. If too many students participate in the voice-based chat room, a participant might wait for some time for one turn of conversation. Students have to prepare well psychologically and technically to produce an effective voice chat. A small group would usually have more opportunity for a quality conversation. Palloff and Pratt (cited in Kötter 2001) suggested that a maximum of five to ten was the proper group range. In an interview in this study, a student suggested that the group size be small to ensure an productive voice chat although she did not specify the size.

In an interview, a BIOE student, Don, suggested they get to know the other students before the voice-based interaction. He felt uncomfortable talking to strangers. In the text-based forum, he did not have this difficulty. This was an interesting issue. This suggestion needs more evidence to confirm its value. but it is reflected in the casual talk between the researcher and his colleagues. Some students found it difficult to converse with strangers in the voice-based chat room, but felt it was suitable to post in the forum although the number of students was huge and many of the students were

strangers. A question is then raised: Is it true that when there is a high level of social presence, the entrance point is higher for the participants? There is insufficient evidence in this study to support this point but it is probably a good starting place for a different study.

Personal preference for modality and its impact on social presence

When social presence in the text-based forum was compared with the voice-based chat room, it was interesting to find that personal preference had an impact on the choice of a particular type of interaction. This was pointed out by Homer et al. (2008) who conducted two studies examining the use of video in multimedia learning environments and found that learners chose a modality because of their previous experiences and their preferences and a significant result was produced on their learning and social presence. Learners who have their own personal preferences for a specific modality would find it easier to cope with, and feel happier to interact with peers and have more social presence with them. This is confirmed by the researcher's findings with some of his students who had a preference when choosing a technological tool in communicating with peers.

In an interview with a student, Song said that she used both the voice-based chat room and the text-based forum to interact with peers. She preferred the chat room for more meaningful communication. She would not post anything in the text-based forum if she was busy, but her activity in the voice-based chat room was extremely regular and

it became a routine activity for her. She developed a habit of conducting a voice chat session with her peers every week. She was passionate about the activities. Before the activity she posted an outline and prepared in a meticulous way. As we have noted in Chapter 5, after the activity she wrote a summary and circulated it within her group members. When asked about her learning friends, she seemed to make close friends in the voice-based chat room. The text-based forum was only a tool to enable her to produce announcements and post a summary of her voice-based chat sessions with her peers. She did not seem to have a clear perception of other people unless some of them happened to enter their circle in the voice-based chat room.

Interestingly, when the researcher talked to a colleague, a chair tutor at BIOE, she stated that she did not like the voice-based chat room because it occupied more time and she preferred to keep a distance with her students because that could save her time. She also talked about the recycled nature of the text-based forum which was also an advantage in an online teaching environment. She said that she saved all the text files she made and might use them repeatedly and that saved a great deal of time and effort. The text messages could be kept there as a record. Audio was more difficult to manage. In this respect, she seemed to have a friendlier attitude in the text-based forum where she felt relaxed and less threatened than in the voice-based chat room, where she felt pressured and did not feel comfortable with the participants.

In the interviews, it was also interesting to discover certain individual characteristics of

learners' methods of dealing with the text and voice messages which had an impact on the social presence categories. One student, Yin, said that she liked emoticons so much as they represented her emotions and attitudes. She wanted to show her affection to her peers in that way. Another student, Yang, said that emoticons were just a lethargic way to post. They did not mean anything and were a waste of the poster's time and fellow students' time. In her postings, she never used any emoticons. As for her, emoticons were more negative than positive and most probably could not be counted in the social presence category in her view.

Chapter Eight: Conclusions and suggestions for future research

In Chapter 7, findings were integrated using three methods of research. Student perception of social presence and their projected social presence were compared when they used the voice-based chat room and the text-based forum to study the literature course at BIOE. Similarities and differences were explored and explanations offered in the practical learning context. In this chapter, some conclusions will be presented regarding the investigation of social presence in voice-based and text-based interaction at BIOE when students learn an online course titled, English through Literature. Analysis of the strengths and limitations of this study will be discussed with some suggestions made for future research concerning social presence in mediated interaction.

8.1 Concluding remarks about social presence with the voice-based chat room and the text-based forum

When social presence was investigated in the voice-based chat room and the text-based forum with a mixed-method approach, student perception of social presence and their projected social presence were very similar when they used the two tools in studying the literature course at BIOE. When interactive features were compared, the voice-based chat room appeared to be a more effective tool than the text-based forum with regard to enhancing mediated interaction and building an intimate relationship between learners, especially when they have a preference for the voice-based chat

room and when they conduct learning activities in small groups. As the former was synchronous with sound, peer awareness was higher and understanding each other was easier. Students perceived more of their fellow students in online mediated interaction and therefore were more involved and engaged in the communication and thus a higher sense of community among the participants developed.

The text-based forum had a higher density of cohesive features than the voice-based chat room. Sound features and synchronicity also produced a significant impact. Students seemed to know the other participants better because the voice-based interaction with sound produced the delivered information with more dimensions than text messages and the subtle meanings in the communication could be understood. As a result, the participants began to develop a closer relationship and thus had less need for cohesive features in the mediated interaction.

However, the voice-based chat room had technical problems from the investigations of this research in the BIOE context. The technical constraints made it difficult for a large group of students to participate in a voice-based chat session at one time. Therefore a small group size was recommended in the voice-based interaction for a discussion activity. Moreover, in normal situations, students in the voice-based chat room experienced technical barriers, such as sound quality problems and disconnection. These problems demand strong support for learners if an online learning programme is established with voice-based interaction for connecting students. In the meantime,

students have to be taught to cope with the problems, or at least they need to be aware of the problems, such when they occur learners are likely to be prepared in one way or another. The voice-based chat room also requires a computer with high specifications, which places pressure on users. All these technical constraints would challenge users, administrators and tutors. The users have to understand the constraints and act to the best of their abilities accordingly. Administrators and tutors should think carefully about these situations and include the voice-based interaction appropriately in the instructional design of online courses.

8.2 Strengths of this study

The strengths of this study lie in the mixed-method approach where social presence was investigated from three perspectives. Firstly, student perception of social presence was examined in the questionnaire and 108 subjects were involved in the examination. This significant number of subjects represented a population of a student cohort in the BIOE context; this group of students would be similar to other cohorts of BIOE students, since every year BIOE uses a similar method to enrol students and the social context remains quite stable in China. Therefore, it may be true that the findings and conclusions may apply in the BIOE context for other students.

Secondly, in content analysis, the actual student interaction was recorded to discover how they projected social presence in their learning process. When the linguistic data were coded, two coders were employed to code them with social presence categories.

On the one hand, the dual coding tested the reliability of the framework and also improved the objectivity of the research. Linguistic analysis may sometimes be criticised for its subjectivity. However, by using two coders to apply the same framework to the same data, to a certain degree, objectivity could be achieved. Based on the coding, analysis and interpretations were conducted with the three categories of social presence: affective, interactive and cohesive, as proposed by Rourke et al. (2001). When this template is used, it is possible to compare social presence density scores with that of other studies of a similar kind. It is also possible to replicate the study in similar or different learning contexts to investigate social presence. This replicability is an important issue in the research field.

Finally, interviews were conducted as a supplement to ask people who are involved some direct questions about how they projected social presence with their adjusted behaviours in online interaction with the text-based forum and the voice-based chat room. The interviewed students would retell what they actually thought behind their actual interaction. This method could surpass the inaccurate picture of student perception of social presence and the inadequacy of the language data available for analysis as online interaction data were extensive and it was almost impossible to choose all the data, and selecting a part of the interaction as a sample was always the practical solution. When these three methods were integrated the quality of the results could be improved and a complete picture of social presence was provided.

8.3 Limitations of the study

The limitations of the study need to be highlighted. When the research topic of comparing the social presence in the text-based forum with the voice-based chat room was first proposed, doubt was raised by critical readers about the issue of comparing like with like. The text-based forum is asynchronous while the voice-based chat room is synchronous. Moreover, students employed them for various tasks at different times. Many elements could play a role in the process. For example, the combination of synchronicity and sound effect in the voice-based chat room made the research issues complicated and difficult to control.

When the questionnaire was delivered, considering the ethical issue of anonymity, student names were removed and this made the tracing of individual students impossible in the later stage of the study. If certain answers were interesting, the researcher could not contact the students for more detailed information. This made the connection difficult between the questionnaire method, the content analysis and the interviews.

For the content analysis, the data were limited in this study and therefore it requires further study on social presence projection. The data from the text-based forum contained 4755 words and the data from the voice-based chat room 14197 words. This data could be larger. But the time and cost constraints made it difficult for the researcher to expand the data size.

The data subjected to content analysis mostly contains the interactions of active students and the interviews were also conducted with active students. This produced a problem of representation. The situation in the BIOE context is that most students were silent in the text-based forum and in the voice-based chat room. This poses a challenge in investigating social presence in the online interaction for all the students, rather than just the serious and engaged ones. The researcher used convenience sampling to select the data for content analysis as well as which students to interview in order to ensure the present research is realistic. However, the limitation that these students are not necessarily representative of the whole student body is clear.

8.4 Implications of the findings for practical instructional design

Universities across the world are promoting online learning as it is cost effective and convenient. As so many professionals are engaged, many changes appear and interesting ideas are created in the field. When more and more students register for online courses, it is natural that innovative expectation will increase. One major challenge for online learning is that universities tend to enrol too many students for online courses and teachers have to develop strategies to encourage student-student and student-computer interaction so that learners become more independent in their learning process.

Student-student interaction is crucial in all online courses. Investigating social

presence is important for understanding online learners in mediated interaction using technological tools like the voice-based chat room and the text-based forum. This knowledge enables one to explore how students project their social presence so that a community is launched to establish learning. Such knowledge is useful for training forthcoming online students. If students improve their skills to project themselves online and to understand fellow students better, their learning experience will be improved and efficiency achieved. Practical knowledge will also assist teachers to improve the instructional design of online courses.

8.5 Suggestions for future research

Concerning social presence research, there are two suggestions for future researchers. Firstly, social presence is a broad topic which covers a large area in online interaction. This makes it difficult for researchers to maintain a clear focus. It is recommended that in the future social presence research should be divided into smaller specific areas which help explain more clearly what each part is about in the conceptualisation and construct of the concept. For example, among the affective, interactive and cohesive categories, any one area could be interesting. Alternatively, as social presence is evolving in the communication process, it is possible that each of the particular categories could be examined with specific tasks in a specific context. When the specific situations are pinpointed, it will be more useful for guiding instructional design when a certain technological tool is put into actual use.

Secondly, when the existing social presence framework is adopted for multimodal interaction it needs to be expanded. As new tools with creative uses are employed, it is difficult to predict what will happen in the actual interaction. When applying longstanding theories to new situations, researchers may encounter problems. This may explain why my questionnaire was not as incisive as expected and that in the content analysis, some elements were not recognized in the existing framework. If further studies are conducted, some questions would need to change in order to acquire more accurate information on key aspects that suit the context. The social presence categories will also have to be modified to capture new elements in the mediated interaction with new tools. If I return to my two models of quantitative and qualitative studies, discussed in Chapter 3, I would recommend Model One for future research:

Model 1

QUAL ⟶ QUANT ⟶ QUAL

(exploration) (questionnaire) (deepening and assessing results)

It might be more effective to have conducted the qualitative aspects first so as to develop a more incisive questionnaire focusing on the new elements that are relevant in the practical context. A questionnaire survey may examine the scale effect of the elements. Following the survey, more in-depth results may be achieved.

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Appendix 1: Social Presence Questionnaire (Pilot Study)

Thank you for sparing some time to fill in this form for me. This is a form to search for information on how you use the text-based forum and the voice-based chat room for our course learning. If you fill in the form, it means that you agree to allow the information you have provided to be used for research purposes. All the information is kept anonymously with the hope to encourage you to reveal your true thoughts.

Part I

Gender:
A. Male B. Female

Age:
A. 25 or under B. 26-35 C. 36-45 D. over 45

The tool that you use for online interaction with the teachers is _____.
A. text-based forum B. voice-based chat room C. if other, please specify_____

The tool that you use for online interaction with the course mates is _____.
A. text-based forum B. voice-based chat room C. if other, please specify_____

In the text-based forum, I _____
A. only read postings B. post sometimes C. am very active
D. if other, please specify_____

In the voice-based chat room, I _____
A. listen to assignment guidance B. listen to test preparation C. practice what we have learnt D. if other, please specify_____

Where do you access the internet? _____
A. at home B. in work place C. in a net bar D. if other, please specify_____

Part II: Please indicate if you Agree/Disagree with each statement as it relates to your online class discussion (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree, 5=strongly agree).

1. I felt comfortable conversing through the text-based forum with course mates.
   1 2 3 4 5
2. I felt comfortable conversing through the voice-based chat room with course mates.
   1 2 3 4 5
3. I felt comfortable asking questions in the text-based forum if I didn't understand a point in the course learning.
   1 2 3 4 5
4. When I saw a question in the text-based forum, I would answer it.

1 2 3 4 5

5. When I saw an affective discussion in the text-based forum, I'll express my views.

1 2 3 4 5

6. I felt comfortable talking or writing casually and even with humor with other participants in discussions in the text-based forum.

1 2 3 4 5

7. I felt that participation in the text-based forum encouraged me to learn the course.

1 2 3 4 5

8. The text-based forum enabled me to form a sense of community with other course mates.

1 2 3 4 5

9. The voice-based chat enabled me to form a sense of community with other course mates.

1 2 3 4 5

10. I felt more comfortable with the text-based forum than with the voice-based chat.

1 2 3 4 5

11. The voice-based chat made it easier to for me to understand discussions in the course.

1 2 3 4 5

12. I felt comfortable conversing through text-based forum with tutors.

1 2 3 4 5

13. I felt comfortable conversing through voice-based chat with tutors.

1 2 3 4 5

14. I was able to make friends with other course mates through the text-based forum.

1 2 3 4 5

15. I was able to make friends with other course mates through the voiced-based chat.

1 2 3 4 5

16. The voice-based chat helped me with my course learning.

1 2 3 4 5

17. The text-based forum helped me to find about how others do their course learning.

1 2 3 4 5

18. I was stimulated to do additional readings if I saw some interesting topics discussed in the text-based forum.

1 2 3 4 5

19. Participating in the text-based forum was a waste of time.

1 2 3 4 5

20. Participating in the voice-based chat was a waste of time.

1 2 3 4 5

21. I felt isolated doing this course.

1 2 3 4 5

22. I have decided to withdraw from this course.

1 2 3 4 5

Appendix 2: Social Presence Questionnaire (Main Study)

Thank you for sparing some time to fill in this form for me. This is a form to search for information on how you use the text-based forum and the voice-based chat room for our course learning. If you fill in the form, it means that you agree to allow the information you have provided to be used for research purposes. All the information is kept anonymously with the hope to encourage you to reveal your true thoughts.

Part I: Basic information

How often do you use the text-based course forum?
A. often (more than one time a week) B. sometimes C. never

How often do you use the voice-based chat room?
A. often (more than one time a week) B. sometimes C. never

What do you do with the text-based forum? (You can have more than choices)
B. only read posts B. post sometimes C. very active
D. if other, please specify_____

What do you do with the voice-based chat room? (You can have more than choices)
A. listen to assignment guidance B. listen to test preparation C. practice with other course mates D. if other, please specify_____

Where do you access the internet? _____
B. at home B. in work place C. in a net bar D. if other, please specify_____

Gender:
A. Male B. Female

Age:
B. 25 or under B. 26-35 C. 36-45 D. over 45

Part II: Social presence

Please indicate if you Agree/Disagree with each statement as it relates to your online class discussion (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree, 5=strongly agree).

1. I felt comfortable conversing through the text-based forum with course mates.
   1 2 3 4 5
2. I felt comfortable conversing through the voice-based chat room with course mates.
   1 2 3 4 5
3. I felt comfortable asking questions in the text-based forum if I didn't understand a point in the course learning.

1 2 3 4 5

4. When I saw a question raised in the text-based forum, I would read it.
   1 2 3 4 5
5. When I saw a question raised in the text-based forum, I would answer it.
   1 2 3 4 5
6. When I saw an affective discussion in the text-based forum, I would participate.
   1 2 3 4 5
7. I felt that participation in the text-based forum encouraged me to learn the course.
   1 2 3 4 5
8. The text-based forum enabled me to form a sense of community with other course mates.
   1 2 3 4 5
9. I would attend live chat learning sessions in the voice-based chat room.
   1 2 3 4 5
10. I would play back the recordings of the live chat learning sessions in the voice-based chat room.
    1 2 3 4 5
11. In the voice-based chat room, I would try to ask the teacher questions.
    1 2 3 4 5
12. I participated or initiated chat learning sessions in the voice-based chat room to have interaction with course mates.
    1 2 3 4 5
13. When I saw posts from the teacher in the text-based forum, I felt close to the teacher.
    1 2 3 4 5
14. When I hear voices from the teacher in the voice-based forum, I felt close to the teacher.
    1 2 3 4 5
15. I was able to make friends with other course mates through the text-based forum.
    1 2 3 4 5
16. I was able to make friends with other course mates through the voiced-based chat room.
    1 2 3 4 5
17. I felt I learnt a lot from activities with the voice-based chat room.
    1 2 3 4 5
18. The voice-based chat enabled me to form a sense of community with other course mates.
    1 2 3 4 5
19. I could find what other students think in the text-based forum.
    1 2 3 4 5
20. I could find what other students think in the voice-based chat room.
    1 2 3 4 5
21. Participating in the text-based forum was a waste of time.
    1 2 3 4 5

22. Participating in the voice-based chat room was a waste of time.
1 2 3 4 5
23. I felt isolated learning with Beiwaiolnine.
1 2 3 4 5
24. I have decided to withdraw from Beiwaiolnine.
1 2 3 4 5

Part III: Open questions

1. Please give me your views on the advantages and disadvantages of the text-based forum.

2. Please give me your views on the advantages and disadvantages of the voice-based chat room.

3. When you compare the text-based forum and the voice-based chat room, what are the differences between them?

Appendix 3: Coding the data from the text-based forum and the voice-based chat room for the pilot study

1. Social presence categories and indicators with examples

Categories	Indicators	Examples
Affective	• Expression of emotions (AE) • Use of humor (AU) • Self-disclosure (AS)	We have to pick every tiny-teeny minute to handle the new contents, wow~[AE]. Haha. Time, time and time. If I have enough time and strong learning desire, I can do it well…….to love learning and I will have more time [AU]. I just watched Hamlet, of course the film, too. One word to say: excellent! I paid too much attention to the Chinese sub-titles due to my poor listening skill[AS].
Interactive	• Continuing a thread (IC) • Quoting from others' messages (IQ) • Referring explicitly to others' messages (IR) • Asking questions (IA) • Complimenting, expressing appreciation (ICE) • Expressing agreement (IE)	If you do not have time, the most basic thing is to learn the textbook, like I did [IC]. The major activities of "Café" learning group tomorrow: Unit 1 of "English through literature" and Domestic and International News Billboard [IQ]. Back to your question, I think reading the original work is a good way to make up for the lack of reading[IR]. Can I find the English original works on the internet? [IA] I like YANYING's method. That's very thorough, thank you[ICE]. Totally agree [IE].

Cohesive	• Vocatives (CV) • Addresses or refers to the group using inclusive pronouns (CA) • Phatics, salutations (CP)	fangyu7, you may borrow some literary works from tutors in your learning centre [CV]. Brothers and sisters, who can give me some suggestions? [CA] It's such a busy new term in this new year [CP].

2. More examples from the text-based forum

文学作品的电影相关链接 "Links of related films in our literature textbook" (topic title)

Tluxin posted 2010-6-23 08:22

1 通过看电影来了解文学作品是个有趣有效的办法，下面提供给大家一些文学作品的电影链接…

"It is an interesting and effective way to understand literature by watching related films. The following are some related films' links for you guys…"

yanglili4 posted 2011-2-17 14:56

2 无一能用,都不能用呀

"No links work, they can't be used." [IC]

youjinzhi posted 2011-2-24 11:17

3 谢谢共享资源

"Thanks for sharing those links with us." [ICE][IC]

3. More examples from the voice-based chat room

1 A: Can you hear me? [IA]
2 B: Yeah, I can. [IE]
3 A: So how's your homework? Hehe. [IA][AE]
4 B: Hehe. Well-done. Well-done. [AE][ICE][ICE]
5 A: Oh.
6 B: 亲爱的，你报名了吗？[IA][CV]
"Darling, have you got registered?"
7 A: 什么东西？[IA]
"What is it?"
8 B: 考试，预约考试。[IC]
"The exam, the registration for the final exam."
9 A: Yeah, I did that. [IC]
10 B: 你预约了吗？[IA]
"And you?"

11 A: Yeah. [IC]
12 B: 我还没有报呢？[IC]
“No, I haven’t.”

Appendix 4: Interview Questions

Thank you for sparing some time to answer some questions for me. This is to search for information on how you use the text-based forum and the voice-based chat room for our course learning. If you answer these questions, it means that you agree to allow the information you have provided to be used for research purposes. All the information is kept anonymously with the hope to encourage you to reveal your true thoughts.

I assume you understand what the research is about and is willingly participating the interview.

Sign your name _____
Oct 23, 2011

Interview Questions:
1. How do you feel about the text-based forum and the voice-based chat room in Beiwaionline?

2. Can you compare the text-based forum and the voice-based chat room for interaction? Which one do you get more interaction, why?

3. Which one do you think is more useful for getting close to your course mates?

4. Which one do you think is more useful for course learning?

5. When you use the text-based forum, what strategies do you use to get close to your course mates?

6. When you use the voice-based chat room, what strategies do you use to get close to your course mates?

7. Do you feel a sense of bonding with others and Beiwaionline? Are voice-based chat and the text-based forum useful in building a sense of bonding with others? Why or why not?

8. In terms of technology, is voice chat more difficult than the text-based forum? If yes, how does it affect your voice chat classes and activities?

Appendix 5: Questionnaire SPSS data

1. Factors shown in SPSS component matrix for the pilot study

Component Matrix[a]

	Component					
	1	**2**	**3**	**4**	**5**	**6**
Q1	.599	.477	.186	-.251	.053	.228
Q2	.599	.176	-.203	-.071	-.356	.250
Q3	.806	.110	.096	-.070	.031	-.408
Q4	.500	-.490	.033	-.194	.166	.397
Q5	.563	-.557	.352	-.096	-.120	.129
Q6	.598	-.139	.047	-.195	.461	-.237
Q7	.807	-.226	.149	-.117	.189	.009
Q8	.624	-.049	.351	-.302	.160	.214
Q9	.868	-.068	.001	-.006	.243	-.036
Q10	-.073	.477	-.357	-.258	.662	-.057
Q11	.510	-.093	-.460	.412	-.138	-.042
Q12	.553	-.021	.285	-.305	-.375	-.442
Q13	.565	-.158	-.426	-.298	-.162	-.465
Q14	.521	-.288	-.267	.019	-.493	.179
Q15	.663	-.096	-.430	.162	.036	.197
Q16	.630	-.084	-.453	.277	.238	.143
Q17	.426	.564	.021	-.320	-.258	.112
Q18	.386	.706	-.058	-.264	-.280	-.113
Q19	.199	.068	.813	.392	-.043	-.042
Q20	.419	.092	.415	.643	.231	-.104
Q21	.286	.767	-.118	.203	.119	.041
Q22	.202	.525	.272	.563	-.093	.298

Extraction Method: Principal Component Analysis.

a. 6 component extracted

2. Descriptive statistics of SPSS in the main study

Descriptive Statistics

	N	minimum	Maximum	mean	Std. Deviation
Q1	108	1	5	3.64	.932
Q2	108	1	5	3.75	.887
Q3	108	1	5	3.82	1.049
Q4	108	2	5	4.17	.730
Q5	108	1	5	3.49	.803
Q6	108	1	5	4.08	.877
Q7	108	2	5	4.05	.790
Q8	108	2	5	4.28	.653
Q9	108	1	5	3.59	.938
Q10	108	1	5	4.00	.917
Q11	108	1	5	3.54	.901
Q12	108	1	5	3.00	1.094
Q13	108	2	5	4.44	.645
Q14	108	2	5	4.41	.656
Q15	108	1	5	3.79	.996
Q16	108	1	5	3.64	1.063
Q17	108	1	5	4.21	.821
Q18	108	1	5	4.14	.859
Q19	108	2	5	4.22	.753
Q20	108	1	5	4.03	.891
Q21	108	1	5	4.23	.982
Q22	108	1	5	4.21	.977
Q23	108	1	5	3.99	1.046
Q24	108	1	5	4.36	.932
Valid N (listwise)	108				

3. Paired samples test of SPSS in the main study

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair1 Q1-Q2	-.111	.702	.068	-.245	.023	-1.646	107	.103
Pair2 Q7-Q17	-.167	.755	.073	-.311	-.023	-2.294	107	.024
Pair3 Q8-Q18	.139	.779	.075	-.010	.287	1.853	107	.067
Pair4 Q15-Q16	.148	.955	.092	-.034	.330	1.612	107	.110
Pair5 Q19-Q20	.194	.803	.077	.041	.348	2.518	107	.013

Table: Paired sample test

Appendix 6: Mann-Whitney U test of comparing text and voice data

1. Social presence density

Ranks

	type	N	Mean Rank	Sum of Ranks
density	1	15	14.87	223.00
	2	15	16.13	242.00
	Total	30		

Test Statistics[b]

	density
Mann-Whitney U	103.000
Wilcoxon W	223.000
Z	-.394
Asymp. Sig. (2-tailed)	.694
Exact Sig. [2*(1-tailed Sig.)]	.713[a]

a: Not corrected for ties.
b: Grouping Variable: type

2. Density of affective category

Ranks

	type	N	Mean Rank	Sum of Ranks
affective	1	15	14.10	211.50
	2	15	16.90	253.50
	Total	30		

Test Statistics[b]

	affective
Mann-Whitney U	91.500
Wilcoxon W	211.500
Z	-.910
Asymp. Sig. (2-tailed)	.363
Exact Sig. [2*(1-tailed Sig.)]	.389[a]

a: Not corrected for ties.
b: Grouping Variable: type

3. Density of interactive category

Ranks

	type	N	Mean Rank	Sum of Ranks
interactive	1	15	8.80	132.00
	2	15	22.20	333.00
	Total	30		

Test Statistics[b]

	interactive
Mann-Whitney U	12.000
Wilcoxon W	132.000
Z	-4.182
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000[a]

a: Not corrected for ties.
b: Grouping Variable: type

4. Density of cohesive category

Ranks

type		N	Mean Rank	Sum of Ranks
cohesive	1	15	11.70	175.50
	2	15	19.30	289.50
	Total	30		

Test Statistics[b]

	cohesive
Mann-Whitney U	55.500
Wilcoxon W	175.500
Z	-2.415
Asymp. Sig. (2-tailed)	.016
Exact Sig. [2*(1-tailed Sig.)]	.016[a]

a: Not corrected for ties.

b: Grouping Variable: type