CAN I SAY SOMETHING? THE EFFECTS OF DIGITAL GAME PLAY ON WILLINGNESS TO COMMUNICATE

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This paper reports on a study into the effects of digital game play on learners' Willingness to Communicate (WTC), or individuals' "readiness to enter into discourse at a particular time with a specific person or persons, using a L2" (MacIntyre, Dörnyei, Clément, & Noels, 1998, p. 547). Thirty Thai learners of English as a foreign language enrolled in a University language course completed six 90–minute lessons playing Ragnarok Online, a popular online role–playing game. The game had been installed on a private server and was thus only available to participants in the study. We modified the game to include special instructions, or quests (missions that players are assigned to accomplish in order to get items and progress throughout the game), designed to encourage collaboration and communication. To gauge participants' WTC, a series of questionnaires was designed, adapted from MacIntyre et al's (2001) WTC scale and previous studies on language and communication anxiety (Horwitz, Horwitz, & Cope, 1986; McCroskey & Richmond, 1982) and perceived competence (Compton, 2004; MacIntyre & Charos, 1996). These asked respondents about their (own perceptions of their) willingness to use English, as well as their confidence, anxiety, and perceived communicative competence in communicating in English. The questionnaires were administered at the start of the course, and again after six gaming sessions. Results on the first set of questionnaires showed that students had low confidence, high anxiety, low perceived competence, and low WTC. The second set of results showed a marked and significant improvement, with participants feeling more confident, less anxious, more competent, and more willing to communicate. We argue that the careful construction of tasks that draw on the affordances of games can have a positive effect on the language learning process.

INTRODUCTION

Producing the target language is an important contributing factor to eventual success in language acquisition (Swain, 1985; Swain & Lapkin, 1995). Many language professionals around the world, however, have experienced the challenges of encouraging learners to produce the target language, to feel at ease and not to worry about making mistakes. Many have also experienced the genuine anxiety that students feel about performing in front of others, and many classrooms do not, as a result, offer students much in the way of communicative practice as would be desirable. Digital games offer engaging environments that have recently started to be explored for their educational potential (Gee, 2007; Reinders, 2012). In particular, many games encourage, and even require a significant amount of interaction between players. Complex forms of sharing and collaboration are examples. The potential for such environments to encourage language learners to use the target language while enjoying the

experience of sharing and collaborating is only now starting to be investigated. In this study, we looked at the effects of digital game play on the willingness of L2 learners in Thailand to communicate in English.

LITERATURE REVIEW

Willingness to Communicate

Second language (L2) learners may feel more or less willing to communicate for a variety of reasons. In particular anxiety and self-perceived communicative competence have been examined as important affective factors for a number of years and have been shown to play a significant role in generating or reducing individuals' tendency to communicate in the L2 (Baker & MacIntyre, 2000; Clément, Baker, & MacIntyre, 2003; MacIntyre et al., 2001; MacIntyre & Charos, 1996; MacIntyre & Gardner, 1994; Yashima, 2002). Anxiety associated with learning and using the L2 has been shown to contribute to low levels of WTC (Chu, 2008; MacIntyre, Babin, & Clément, 1999; McCroskey, 1991). In other words, learners who experience high levels of anxiety about L2 communication are likely to choose to remain silent and are less willing to participate in it.

Individuals' perceptions of competence might be more important than individuals' actual competence in deciding whether or not to communicate; therefore, perceived communicative competence is believed to directly determine his/her WTC level (Baker & MacIntyre, 2000). That is, learners who perceive themselves as competent in communicating are likely to be more confident when interacting with others using the L2, and thus more willing to initiate or engage in L2 communication (MacIntyre, 1994). A positive correlation between self-perceived communicative competence and L2 WTC has been found in empirical studies (e.g., Lu & Hsu, 2008; Peng, 2007), indicating that learners are more willing to communicate in the L2 when they perceive themselves competent to do so. Many studies have investigated the relationship between L2 WTC and communication anxiety and perceived communicative competence. In general, the combination of a low level of anxiety about L2 communication and a sufficient level of perceived communicative competence (defined as self-confidence) have been found to be strong predictors of WTC in the L2 (Clément et al., 2003; Compton, 2004; Hashimoto, 2002; MacIntyre, 1994; MacIntyre, Baker, Clément, & Donovan, 2003; MacIntyre & Charos, 1996; Peng & Woodrow, 2010; Yashima, 2002). These consistent findings indicate that learners who experience a lower level of communication anxiety and who have a higher perception of their communicative competence, tend to be more willing to enter into L2 communication.

L2 pedagogy has emphasized authentic use of the L2 as an essential part of language learning and teaching, with the aim of developing L2 students' communicative competence. Many students, however, do not naturally engage in much target language production, neither inside nor particularly outside the classroom. As the final step before L2 production, willingness to communicate (WTC) is an important concept in describing, explaining, and predicting L2 communication (MacIntyre et al., 1998) and has been found to influence the frequency and amount of L2 communication (MacIntyre & Charos, 1996; Yashima, 2002), which can, in turn, facilitate successful second language acquisition (SLA). Accordingly, the development of WTC has been proposed as an important goal in language teaching (MacIntyre et al., 1998), in order for students to develop their L2 beyond the language classroom (Clément et al., 2003; MacIntyre et al., 2001; MacIntyre et al., 1998). WTC studies have shown that language learners with high WTC are more likely to use the L2 in authentic communication (Kang, 2005), have more potential to practice in the L2(MacIntyre et al., 2001), acquire higher levels of language fluency (Derwing, Munro, & Thomson, 2008), generally achieve greater language proficiency (MacIntyre et al., 2001; MacIntyre et al., 1998; Yashima, 2002), and, as a result, show more improvement in their communication skills (Yashima, Zenuk-Nishide, & Shimizu, 2004). Clearly, a language program that helps to engender WTC among its students can be considered successful.

Consequently, research has pointed to strategies and specific classroom environments conductive to the

fostering of WTC. Aubrey (2010, 2011), for example, found several important factors teachers should consider and can manipulate to improve students' WTC and encourage meaningful interaction during class. These included: cultivating group cohesiveness, lowering students' anxiety, making the lesson topic interesting and relevant to students, facilitating student acceptance of the communicative approach, and instilling positive attitudes towards the international community, including "interest in international affairs, willingness to go overseas to stay or work, readiness to interact with intercultural partners, and, one hopes, openness or a non–ethnocentric attitude toward different cultures" (Yashima, 2002, p. 57) in students. In addition to these, Cao and Philip (2006), in a study in New Zealand, further identified familiarity with interlocutors, topical familiarity, and self–confidence as important contextual factors contributing to or reducing students' WTC and classroom participation.

Technology, and in particular Computer–Mediated Communication (CMC) has also been shown to play a potential role in developing WTC. Compton (2004), for example, revealed that chatting helped students to feel confident and consequently, willing to participate orally in class discussions. However, its impact on WTC varied from learner to learner and was dependent on a number of factors, particularly the topics of discussion and the attitudes of their partners. Jarrell and Freiermuth (2005) found that the majority of their students preferred chat to face-to-face interaction and that they were generally motivated to communicate in English using Internet chat. They concluded that chat was a potentially motivating tool because it appeared "to increase students' WTC" (p. 70). In a related study, Freiermuth and Jarrell, (2006) further explored the use of chat as a means to resolve tasks and investigated the effect it had on students' WTC. Data from the post-test questionnaire and discourse produced by students showed that the majority of students who participated in their study produced a greater amount of language output, experienced more intrinsic motivation to communicate in English and less anxiety about communication, and, importantly, were more willing to communicate as a result of using chat in class. Similar results were reported in a more recent study by Kissau, McCullough, and Pyke (2010). Six post-secondary students in the study completed an online course in French. A questionnaire showed they did not perceive themselves to be less anxious or more confident in their abilities to communicate in French than at the beginning of the course. However, when looking at the students' language output the researchers found a steady increase during the course. In addition, interview data gave convincing evidence that students felt the online environment had helped to reduce their L2 anxiety, increase their perceived competence, and encourage their continuous active participation. These results were irrespective of students' proficiency levels; both non-native and heritage learners had the same experiences.

Despite the considerable attention for the role of CMC in increasing the amount of L2 interaction and levels of L2 WTC, less effort has been expended on investigating other forms of online interaction, particularly network-based games, on students' WTC. Digital games "have design features that are particularly relevant to language learning" (Gee, 2012, p. xiii) and increasingly play a role in supporting language learning and acquisition (e.g., deHaan, 2005a; Fujii, 2010; Ranalli, 2008). Our study takes this perspective further by looking at the potential of gameplay for WTC in English.

Game-Based Learning (GBL)

Based on the GBL literature (e.g. Gee, 2007; Mitchell & Savill-Smith, 2004; Prensky, 2001; Whitton, 2010), the rationale for the use of digital games in class activities is commonly influenced by the assumption that games are motivating to students while also incorporating good learning principles. Many experimental studies have shown that students' motivation increased when games were used in an e-learning context. For example, Anyaegbu, Ting, and Li (2012) investigated how a serious game called 'Mingoville' could motivate, engage, and arouse the interest of young Chinese learners of English. The qualitative findings indicated that the majority of their students were motivated to learn English with Mingoville because the game was fun for them and made them feel relaxed and avoided making them lose face. Other encouraging aspects were the positive collaboration that came out of the game as well as the rewards students received while playing. There were some students who reported that the experience

was demotivating because they either found playing the game boring, or generally didn't like games. This supports Whitton's (2007, 2011) view that employing games for motivational purposes alone is not sufficient justification for their use because they might not be motivational for all students, particularly students in Higher Education. Therefore, digital games should be employed to provide other benefits so that students will consider games as effective tools to help them learn and acquire another language.

In addition to motivational benefits, researchers have observed that network–based digital games such as massively multiplayer online role-playing games (MMORPGs) offer other benefits. Peterson (2010, 2011) showed that the highly learner-centred nature of the interaction provided by network-based games, the anonymity and the reduced inhibition provided by personal avatars, and the reduction of paralinguistic cues in real-time chat are characteristics that may reduce anxiety and improve self-confidence. Findings reported by deHaan (2005b), Peterson (2010, 2011), Voulgari (2011), Zheng, et al. (2009), Zhao and Lai (2009) showed that students felt more relaxed and confident in using the target language when involved in MMORPGs, two major variables promoting levels of WTC.

Moreover, past studies have demonstrated the beneficial effects of participation in MMORPGs on the quality of L2 use, as the contexts provided appear to offer extensive opportunities for target language use and social support (e.g. MacIntyre et al., 2001). A pilot study by Rankin, Gold, and Gooch (2006) investigated interaction between four ESL students in the MMORPG "EverQuest II" in an attempt to determine if participation in the game could foster students' English language proficieny and knowledge of new vocaubalry. In this study, students participated in eight gaming sessions held over a period of four weeks. The findings demonstrated that students increased target language vocabulary output by 40% as a result of interaction with non-playing characters and produced a remarkable 100% increase in target language chat messages during social interaction between players. The social interaction among players in EverQuest II was further examined by Rankin, Morrison, McNeal, Gooch, and Shute (2009). The authors took a closer look at the in-game dialogues between eight native and 18 non-native speakers and language socialization in MMORPGs. The findings revealed that ESL students significantly increased their target language output by interacting with their native speaker interlocutors. The findings also suggested that EverQuest II, and possibly MMORPGs in general, encouraged L2 interaction as the players must be active learners and engage with other learners within the environment. Furthermore, the findings demonstrated that the majority of the students displayed higher levels of engagement, motivation, and comfort as they participated in gameplay. Major WTC studies emphasize that greater relaxation as well as increased frequency and greater amount of L2 output reflect higher levels of WTC. The findings from previous studies therefore seem to point to the possible contribution that MMORPGs can make in increasing students' WTC.

In a case study of online gaming and open Internet environments as informal settings for L2 use and development, Thorne (2008) explored multilingual interaction between an English speaker living in the United States and a Russian speaker living in Ukraine within the MMORPG "World of Warcraft." Participants' feedback was very positive, with claims that participation in the game had enhanced their enjoyment and motivation for language learning. In addition, the analysis of the chat logs indicated that conversation in the game offered participants authentic interaction in the L2 and opportunities for providing expert knowledge in terms of language use and language-specific explicit corrections, requests for assistance, and collaboratively constructing repair sequences. Roy (2007) also investigated the potential in World of Warcraft by playing the game in Spanish. Although the author reported that he did not have much interaction with native speakers, he found that real-time chatting during gameplay exposed him to natural target language (TL) production, and that the interaction in which he engaged was a meaningful way to become comfortable with using the language.

From the literature review above, it is clear that digital games play a potential role in encouraging language learners to become willing to communicate. However, most of the literature is exploratory, limited in scope and with small sample sizes, focusing on anecdotal and descriptive evidence and

exploring the characteristics of games rather than their effects on language learning, and provides subjective views on the potential of games for language learning only. What is still unclear is if gameplay indeed leads to higher levels of WTC. In particular, few studies have adequately investigated the level of L2 WTC which the gaming environment can foster. This was the primary focus of our study.

METHODOLOGY

Research Question

The purpose of the study was to investigate the effects of participating in an online game on learners' willingness to communicate in English. Our research question is:

How does playing an online game affect Thai EFL learners' *willingness to communicate* in the target language?

Operating WTC

Willingness to communicate in the second language is defined as an individual's "readiness to enter into discourse at a particular time with a specific person or persons, using a L2" (MacIntyre et al., 1998, p. 547). Building on this, in our study we operationally defined WTC as "an individual's intention to initiate or participate in communication in English, the target language at a particular moment and situation" (p. 547). Intention can be understood and determined through a) perceptions of willingness to use English for communication and b) feelings about communicating in English, in terms of state communicative self-confidence. State communicative self-confidence is a combination of low levels of state anxiety, especially anxiety about communication in English, and sufficient levels of state self-perceived communicative competence in English. The term "state" here refers to momentary feelings in a particular situation. Anxiety about communication corresponds to the level of fear or anxiety associated with real or anticipated communication (McCroskey, 1977). Self-perceived communicative competence is the belief that an individual has an adequate ability to communicate successfully (McCroskey & Richmond, 1990). Willingness to engage in L2 communication and self-confidence are the focus of this study because they a) are hypothesized to be enhanced by a non-threatening environment like computer games, b) have received substantial attention from researchers conducting empirical studies with this construct, and c) have been consistently found to be vital for prediction of individuals' willingness to communicate in the L2 and in turn for contribution to successful L2 interaction and, ultimately, L2 acquisition.

Instruments

Two sets of questionnaires (see Appendices A and B) were developed by the researchers based on 1) our operational definition of the construct of WTC and 2) on the review of the literature identifying the variables believed to contribute to individuals' WTC. The first questionnaire was administered prior to the first computer game session, enabling us to gauge learners' general WTC in English for communicating in the classroom. The second questionnaire was administered after the last computer game session (i.e. the 6th session) in which participants were asked more specific questions relating to their WTC in English in a computer game setting. A comparison between participants' WTC during class time and their WTC in the game environment was made to allow us to examine any differences and thus determine whether gameplay played a significant role in Thai EFL learners' WTC. Although the questions in the two sets of questionnaires were slightly different, in order to reflect their focus on either the classroom or the game environment, the questionnaires were kept as similar as possible to measure the WTC construct (i.e., how willing participants were when communicating in English).

They covered 1) WTC in English and 2) state communicative self-confidence, with the latter covering a) state anxiety and b) state self-perceived communicative competence. The questionnaires used self-report scales. Table 1 shows the number of items, and reports Cronbach's alphas (α) as evidence of the internal reliability of each measure. Although Cronbach's alphas indicated in most scales were not particularly

high, the number of items on the questionnaire was fairly low, and internal reliability was therefore considered to be satisfactory.

Table 1. *Questionnaires*

Measures	Number of Items	Internal Reliability	
		Set 1	Set 2
Willingness to communicate in English	5	.76	.70
State communicative self-confidence	10	.89	.83
Anxiety	5	.83	.69
Self-perceived communicative competence	5	.77	.72

The first section of the questionnaires was composed of five items concerning students' perceptions of their willingness to use English to communicate during class time (α = .76) and computer game activities (α = .70). Example items were: how willing are you to… "Talk to your classmates about a class assignment" and "Talk to other game players about a quest assignment" The items were mainly selected and adapted from MacIntyre et al (2001)'s WTC scale to include communication tasks common to the EFL class and gaming environments. Responses to items on a 5-point Likert scale were anchored with "1 = Very unwilling" and "5 = Very willing". It should be noted that the middle value labeled "Neutral" was included to elicit honest responses from some participants who might not have had experience in or strong feelings about particular communication tasks. High scores were interpreted as high levels of WTC.

The second section of the questionnaires included 10 items asking participants to report their state communicative self-confidence in a classroom setting (α = .89) and in a computer game environment (α = .83). The items were selected and modified from previous studies examining language and communication anxiety (e.g. Horwitz et al., 1986; McCroskey & Richmond, 1982), and perceived competence (e.g. Compton, 2004; MacIntyre & Charos, 1996). Students were asked to indicate on another 5-point the extent to which they agreed or disagreed with the statements indicative of state anxiety and state self-perceived communicative competence levels.

Responses for items with negative meanings were reversed before summing for the total and the average scores of all the ten items representing participants' level of state communicative self-confidence, which in turn revealed the overall impact of participation in each setting on participants' WTC in English. "Low" scores indicated "low" levels of state communicative self-confidence, while "high" scores signified "high" levels of state communicative self-confidence. In addition, "high" scores for state anxiety items reflected "low" levels of state anxiety, and vice-versa. On the contrary, "high" scores for state perceived communicative competence items suggested "high" levels of state perceived communicative competence, and vice-versa. "Low" levels of state anxiety combined with "high" levels of state self-perceived communicative competence led to "high" levels of state communicative self-confidence, and, in turn, indicated participants' "high" levels of WTC.

Participants

A convenience sampling method was used to select prospective participants. The study was conducted with 30 Thai EFL learners at a university in Thailand. We were fortunate to have all students in the class agree to participate, so were able to conduct the study during normal class hours.

Students were given an explanation of the study and were informed that their participation was voluntary and in no way affected their course grades. They were given a consent form to sign and were also informed that the results would be anonymised. Participants had different English language proficiency levels, ranging from elementary to advanced, as shown by their standardised test scores on the University's Test of English Proficiency. Specifically, the study involved 13 elementary students, 8 lower

intermediate students, 7 upper intermediate students, and 2 advanced students. The reason for this range of proficiency levels was that this particular course (English for IT) was only offered once per academic year.

In terms of language background, participants were fairly homogeneous; all of them were native Thai speakers and none had experience living in an English-speaking country. The majority had studied English since they started elementary school and had learned English for an average of 14 years. Their use of and exposure to the target language, especially speaking, was, however, limited and took place exclusively in the English classroom. Eighty percent of the participants ($N = 24$) reported that they had no other contact at all with English apart from formal classes, while 20% ($N = 6$) indicated that they occasionally watched movies in English. Participants were also similar with regard to game-related habits and experiences and familiarity with computer games and synchronous communication tools. All of the participants had previous experience playing computer games, particularly MMORPGs, meaning we could help them to focus on their language learning experience, rather than having to focus on (supporting them in) using the game. All the participants were also found to be sufficiently proficient in synchronous communication and typing skills to be able to readily engage in interaction during game play. Nonetheless, training and technical support were provided to the participants. It is therefore reasonable to expect minimal novelty and training effects (see Table 2 for a summary).

Table 2. *Participant's Game-Related Habits and Experiences*

Years of game playing	Mean	7.30 years	Range	1–12
Time spent each week playing games	Mean	22.87 hours	Range	3–100
Number of participants having experience in playing each type of game	30	MMORPG*		
	9	Simulation		
	18	Strategy		
	13	First-person shooter		
	16	Sport		
	10	Music game		
	10	Puzzle		
	10	Action		
	9	Role-playing		
	5	Platform		
Top-5 game genre preference	MMORPG, Strategy, Sport, Role-playing, Puzzle (in order of preference)			

Note: *16 Ragnarok Online, played in their native language.

The Course

The study was carried out in a 15-week course of English for IT. The course was offered to third year undergraduates from the school of IT and was designed and taught by one of the researchers. The focus of the course was all-round skills development in the information technology field, guided by the textbook "Oxford English for Information Technology". The classes met for two sessions of 90 minutes per week and were taught entirely in English.

The intervention, the playing of the commercial game "Ragnarok Online"(Global Playground Gravity, 2010), was implemented during 20% of the class hours. Like other MMORPGs such as World of Warcraft and Everquest, Ragnarok Online is played by a large number of players in a complex environment allowing a significant amount of player interaction. The real-time simulated environment in Ragnarok provides opportunities for collaboration and social interaction, allowing players to interact with

each other, combat computer-controlled creatures, and accomplish quests to progress in the game.

Face-to-face sessions were conducted in a classroom while intervention sessions met in a CALL lab. The game was integrated as part of a lesson review session after students finished a unit. The course covered six units hence six review sessions, lasting one and half hours each. There were two pedagogical objectives to the game sessions: firstly, the activities were intended to give students opportunities to review the course material through *plearn*. The term "plearn" is one of the most important concepts in Thai education, emphasising that learning should be an enjoyable activity and students should gain knowledge through play. It is both a contraction of "play and learn" and also the Thai word for "enjoy" (Samudavanija, 1999). As part of playing a number of quests in Ragnarok, specified below, students had opportunities to learn and practise the vocabulary and language skills they studied in class in a fun way. By lowering the affective barrier, the intention was to encourage students to relax and learn in a more natural way (Aoki, 1999). The second objective of the sessions was to encourage more participation. Thai students are notoriously reticent and generally avoid interaction in English classes (Kamprasertwong, 2010). By encouraging students to work together in a non-threatening environment, the aim was to encourage them to become more actively involved in the learning process.

With permission from the game's local distributor, we were able to host the game on a private server in the CALL lab, thereby giving us control over who could access the game. We also obtained permission to modify the game in order to ensure its appropriateness to the L2 learning context, as well as its alignment with the course's learning activities and objectives. Although the original game contains a variety of authentic scenarios and tasks (similar in terms of their means to those that players may need to achieve in real life, such as negotiation and sharing – if not in their purpose, such as quests and battles!), its content was considered less than ideal as a CALL environment in the sense that the opportunities for target language exposure and "language learning potential" (Chapelle, 2001) were limited. This was due to the original game being created for Thai native speakers as a form of entertainment, not education. The international version available from Ragnarok's servers was considered, but it was not possible to obtain permission to use it for our study. Also, the international version may not be suitable in terms of the language level used, which could be too advanced, as well as some cultural contexts with which participants might not have been familiar. Another important reason for modifying the Thai version of the game was that we considered the original in-game quests to be too long for the study participants to complete during class time. The modification in this study, as a result, meant creating new quest events relevant to the participants' course, for application of language skills at the appropriate level. Despite these modifications we feel the gaming aspect of Ragnarok was left untouched; we simply optimised the environment for language learning.

Based on the "endogenous game" framework in which the learning content needs to be intrinsically linked with the game itself (Habgood, Ainsworth, & Benford, 2005), the previously learnt material was integrated into the narrative of Ragnarok, in order to provide students with learning opportunities while engaged in the process of playing. In particular, the six new quests (i.e. the missions that players are assigned to accomplish within the game) covered scenarios and player experiences, which were related to the courses' learning content and objectives. Table 3 shows an example of how the learning objectives were mapped to activities in the game.

Table 3. *Example of a Mapping of Learning Objectives to Game Activities (Quests)*

Unit 1		Computer Users
Objectives for this unit		
	1.1	Talk about how they and people from different professions use computers.
	1.2	Exchange information about the use of computers in their free time.

	1.3	Understand the difference between the Past Simple and the Present Perfect and use these tenses fluently and correctly**.**
	1.4	Read and comprehend an article in IT and computing contexts**.**
	1.5	Understand basic guidelines of how to write a good paragraph.
	1.6	Write a paragraph describing the use of computers in their study and free time**.**
Quest		
Event:		Finding how David uses his new computer
Description:		In this quest, students needed to help the starting NPC* named Austin find out how his student uses computers in his study and free time. Students had to interact with several NPCs to complete particular tasks, i.e. talking about computer use (1.1, 1.2), reading paragraphs in IT (1.4), and engaged in non-violent combat with monsters to earn required items.
		During communication in the game, students had opportunities to use and practice the language they had learned in class, such as using appropriate tenses to talk about what they had done in the game (1.3).

Note: *NPC stands for Non-player character

When participants played the game and worked through the language learning elements included in the modified quests, they therefore had opportunities to develop their comprehension of what they read and heard when completing the tasks. Participants were also allowed to practise and demonstrate understanding of the language skills previously learnt, and, importantly, use the L2 to communicate for real purposes in a socially meaningful context. Some evidence of how the participants used the L2 during game play can be obtained from an earlier pilot study (Reinders & Wattana, 2011). In summary, playing games was found to encourage a significant increase in the quantity of L2 interaction which also contained a variety of discourse functions associated with social, collaborative interaction (e.g., greetings, requests, and questions) and covered a range of linguistic features (e.g., use of a variety of verb forms). We intend to investigate this further in the future. In this study, we report on participants' self-reported willingness to use the L2.

The modified quest events still followed the original game which has an emphasis on interaction between players through either text or voice chatting, and between players and NPCs through controlled dialogues in which participants had to either type their reply or choose what to say in response to what NPCs had said. In addition, it should be noted that the tasks in the modified quests gradually increased in difficulty as the game progressed and constantly gave participants instantaneous feedback. This practice was likely to encourage more interaction among participants before they selected a choice of message to interact with an NPC or before they typed a reply to interact with each NPC (see Figure 1).

Before each of the six sessions a 15-minute briefing session was given. Participants were informed of the computer game session objectives, how to play the game, as well as the contents of the quest. Next, they were given time to discuss with other students any relevant grammar and vocabulary points that they might need to complete the quest. They were reminded that their interaction in the game was not being graded and were simply encouraged, but not forced, to use the target language for communication in the game when they felt that they were ready and willing to do so. Participants were given an opportunity to ask any questions.

Figure 1. A screenshot of Quest1: Finding out how David uses his new computer.

Participants used Skype and the recording program "Pamela for Skype" to communicate during the game. In the first three computer game sessions, participants used group text chat. Although pairing students might have led to more communication, group chat was used to promote natural and real communication in the game in which players were free to talk to anybody; in addition, if inexperienced, unconfident participants were paired together, they might have been unable to complete the quests. In the final three computer game session, participants were required to communicate to each other using their voice. In this case, they were randomly paired and asked to call each other. Since participants had played the game for three sessions, we assumed they felt experienced and confident enough to be able to complete the quests together in pairs. The pairs remained the same throughout the last three computer game sessions with the voice-based chatting tool.

While participants were playing the game, the researchers did not participate in any of the game tasks in order to allow participants to develop mutual support through collaboration and give them complete control over their progress in the game. However, the teacher-researcher remained present in the lab to assist with technical problems (but not with language-related problems), and to observe the research environment. After each game session, participants saved their chat history from the recording software. Finally, a collaborative debriefing took place during which students shared their experience playing the game.

RESULTS

Questionnaire 1: Perceptions of WTC in English in the Classroom

The first section of the first set of WTC questionnaires asked participants to rate their perceptions of their

WTC on a scale of 1 to 5 ("very unwilling" to "very willing") in a range of communication tasks they normally engage in during class time. The overall mean of 2.33 with a standard deviation of .55 indicated that participants perceived that they were somewhat unwilling to engage in communication situations in the classroom using the target language. As indicated in Table 4, participants generally showed a low level of WTC in English as they were somewhat unwilling to talk to their classmates about a class assignment ($M = 2.33$, $SD = .88$), to communicate their ideas, feelings and opinions ($M = 1.63$, $SD = .76$), and to read task description/instructions before they started ($M = 1.96$, $SD = .81$). Additionally, when participants were confused about a task they should have completed and when their classmates said something in English, they reported neutrality towards their willingness to ask for clarification ($M = 2.86$, $SD = .819$) and to listen to what their classmates said ($M = 2.86$, $SD = .78$).

Table 4. *Participants' Perceptions of WTC in English in the Classroom**

Communication tasks	Mean	*SD*	Interpretation
Ask for clarification when you are confused about a task you must complete.	2.86	.82	Neutral
Listen to what your classmates say in English.	2.86	.78	Neutral
Talk to your classmates about a class assignment.	2.33	.88	Somewhat unwilling
Read task description/instructions before you start completing.	1.96	.81	Somewhat unwilling
Communicate ideas, feelings and opinions.	1.63	.76	Somewhat unwilling
Overall Mean	2.33	.55	Somewhat unwilling

*Note: the order in the table above is listed in order from highest to lowest, not in the order in which the items appeared in the questionnaire

Questionnaire 1: Levels of State Communicative Self-Confidence in the Classroom

The second section of the questionnaire dealt with participants' feelings about communication in terms of state communicative self-confidence felt when using English in a classroom setting. The question items measured participants' state anxiety levels and state self-perceived communicative competence degrees to indicate their state communicative self-confidence and, in turn, their WTC in the target language.

Overall, participants showed low levels of state communicative self-confidence, as indicated by low averaged scores of the ten items ($M = 2.18$, $SD = .35$) (see Table 5), which in turn suggested that they generally were not very willing to use English to communicate in a classroom context. According to Table 5, low averaged scores for state anxiety items ($M = 2.29$, $SD = .41$) signified that participants suffered from anxiety when it came to communicating in English during class time. Particularly, they were worried about making mistakes ($M = 2.33$, $SD = 1.18$) and felt nervous about using English while participating in class activities ($M = 2.00$, $SD = .83$). Participants also felt uncomfortable sharing their ideas/feelings/opinions in English with their classmates ($M = 2.49$, $SD = .73$), which corresponds with the perception that that they were somewhat unwilling to do so ($M = 1.63$, $SD = .76$, see Table 4). In addition to communication, participants were also worried about their comprehension; specifically, the results showed that participants were worried that they would not understand what their classmates said in English ($M = 1.80$, $SD = .81$). Finally, when asked about their feelings about communication in class, they remained neutral ($M = 2.83$, $SD = .79$) about using English in this formal [classroom] environment being relaxing.

Participants' reported suffering from high levels of state anxiety regarding communication in English was found to influence the way they perceived their communicative competence. That is, anxious individuals were likely to perceive their competence to be low. The results in Table 5 showed low averaged scores for state self-perceived communicative competence items ($M = 2.06$, $SD = .29$), which suggested

participants' low levels of state self-perceived communicative competence when engaged in communication in English in the classroom. Participants generally perceived that communicating in English was difficult ($M = 1.83$, $SD = .75$) by thinking that they could not say what they want to say in English ($M = 1.96$, $SD = .72$) and that they did not know the vocabulary required for each task completion ($M = 1.80$, $SD = .81$). They also perceived themselves to have English at such a low level as to negatively affect their interlocutors' comprehension ($M = 2.30$, $SD = .84$). Further, participants did not really believe that class activities helped develop their fluency ($M = 2.43$, $SD = .73$).

Table 5. *Participants' Levels of State Communicative Self-Confidence in the Classroom*

Statements	Mean	*SD*	Interpretation
State anxiety items			
In general, I find communicating in English in classroom situations relaxing.	2.83	.79	Neutral / No opinion
I feel comfortable sharing my ideas/feelings/opinions with my classmates.	2.49	.73	Disagree
I am not worried about making mistakes.	2.33	1.18	Disagree
I feel nervous about using English while participating in class activities.*	2.00	.83	Agree
I am worried that I will not understand what my classmates say in English.*	1.80	.81	Agree
Total mean of state anxiety items	2.29	.41	Disagree
State perceived communicative competence items			
I think participating in class activities help me develop my fluency (i.e. with little hesitation and pauses).	2.43	.73	Disagree
I think my classmates cannot understand me because of my poor English.*	2.30	.84	Agree
I can say what I want to say in English.	1.96	.72	Disagree
I find it difficult to communicate in English.*	1.83	.75	Agree
I know the words required for each task completion.	1.80	.81	Disagree
Total mean of state perceived communicative competence items	2.06	.29	Disagree
Overall Mean	2.18	.35	Disagree

Note: *Responses for these items were reversed.*

Questionnaire 2: Perceptions of WTC in English in the Computer Game

The first section of the second set of WTC questionnaires, administered after the six gaming sessions, examined participants' perceptions of their willingness to interact in English while engaged in communication tasks common to a *gaming environment*, Ragnarok, presented in Table 6. Taken as a whole, participants' perceptions towards WTC were positive as they perceived that they were somewhat willing to use the target language for both talking and comprehending in the game ($M = 3.84$, $SD = .286$). Particularly, when participants were confused about a task and when other game players were talking, they perceived that they somewhat willing to ask for clarification ($M = 4.06$, $SD = .78$) and listen to their friends ($M = 4.06$, $SD = .69$). They also thought that they were somewhat willing to talk to other game players about a quest assignment ($M = 3.86$, $SD = .68$). However, they remained neutral to willingly express ideas, feelings and opinions in the game ($M = 3.36$, $SD = .76$).

Table 6. *Participants' Perceptions of WTC in English in the Computer Game Ragnarok*

Communication tasks	Mean	*SD*	Interpretation
Ask for clarification when you are confused about a task you must complete.	4.06	.78	Somewhat willing
Listen to what other game players say in English.	4.06	.69	Somewhat willing
Read quest description/instructions before you start completing.	3.86	.73	Somewhat willing
Talk to other game players about a quest assignment.	3.86	.68	Somewhat willing
Communicate ideas, feelings and opinions.	3.36	.76	Neutral
Overall Mean	3.84	.286	Somewhat willing

Questionnaire 2: Levels of State Communicative Self-Confidence in the Computer Game

The second section of the second questionnaire measured participants' overall state communicative self-confidence while communicating in English in the game on a 5-point Likert scale, with response anchors ranging from "strongly disagree" (1) to "strongly agree" (5). The levels of state anxiety about using English and state self-perceived communicative competence participants experienced during the game activities were used to indicate their state communicative self-confidence which, in turn, reflected their levels of WTC. Generally, participants had positive feelings about using English during game play since low levels of state anxiety and high levels of state perceived communicative competence were reported, as shown in Table 7. It was clear that participants were not anxious when communicating during gameplay (M = 4.19, SD = .33). Most importantly, participants reported that they were not nervous about using English (M = 4.57, SD = .50) and found communicating during gameplay relaxing (M = 4.50, SD = .51). They also claimed that they were anxious neither about communicating nor about comprehension in the game. In other words, they were not afraid of making mistakes (M = 3.83, SD = .75), felt relaxed about sharing their ideas/feelings/opinions with their friends in the game (M = 3.97, SD = .72), and were not nervous about understanding what was said in English during gameplay (M = 4.07, SD = .58).

Results from the second part of the questionnaire reveal that participants were quite confident in their abilities to communicate in the game (M = 3.77, SD = .39). They believed that participating in the game activities helped them develop their fluency (M = 4.27, SD = .45). They also expressed positive views about their ability and lack of difficulty communicating in English successfully in the game (M = 4.10, SD =.71), perceived themselves to have the ability to say what they wanted to say (M = 3.50, SD = .57) and regarded their English as not too poor for their friends to understand (M = 3.53, SD = .68). These results, therefore, suggested that participants were willing to communicate in English in a computer game environment.

Table 7. *Participants' Levels of State Communicative Self-Confidence in the Computer Game*

Statements	Mean	*SD*	Interpretation
State anxiety items			
I feel nervous about using English while participating in computer game activities.*	4.57	.50	Strongly disagree
In general, I find communicating in English in computer game situations relaxing.	4.50	.51	Strongly agree
I am worried that I will not understand what other players say in English.*	4.07	.58	Disagree
I am not worried about making mistakes.	3.97	.72	Agree
Total mean of state anxiety items	4.19	.33	Agree
State perceived communicative competence items			
I find it difficult to communicate in English.*			

I find it difficult to communicate in English.*	4.27	.45	Agree
I can say what I want to say in English.	4.10	.71	Disagree
I know the words required for each task completion.	3.53	.68	Disagree
I think other players cannot understand me because of my poor English.*	3.50	.57	Agree
I think participating in computer game activities help me develop my fluency (i.e. with little hesitation and pauses).	3.43	.77	Neutral / No opinion
Total mean of state perceived communicative competence items	3.77	.39	Agree
Overall Mean	3.98	.40	Agree

Note: *Responses for these items were reversed.*

To conclude, our results indicate that computer games may have had an effect on participants' levels of state communicative self-confidence. To investigate whether this was indeed the case we conducted a statistical analysis.

Statistical Analysis

A paired-samples t-test (with an alpha level of .05) was performed to determine the difference between learners' WTC in English in the classroom from their WTC in English playing the computer game. Cohen's d (1988) was subsequently calculated using means and standard deviations to indicate effect size. Statistical analysis results are shown in Tables 8-11. Firstly, as shown in Table 8, the mean scores of participants' perceptions of WTC in English during class time ($M = 11.67$, $SD = 2.9$) were significantly different from the mean scores of participants' perceptions of WTC during computer game activities ($M = 19.23$, $SD = 2.49$). The difference was found to be statistically significant ($t(29) = 21.54$, $p < 0.001$), showing a statistical effect for difference between participants' perceptions of WTC in English in the two settings, with a very large effect ($d = 2.79$).

Table 8. *T-Test for Perceptions of WTC during Class Time and Computer Game Activities (N = 30)*

			95% Confidence Interval of the Difference					
Pair	Mean	*SD*	Lower	Upper	*t*	df	Sig. (2-tailed)	Effect size
WTC in game	19.23	2.49	6.85	8.29	21.54	29	.000	*d* = 2.79
WTC in class	11.67	2.90						

Secondly, the results in Table 9 show that participants had statistically significantly lower levels of state anxiety when it came to communicating in English during gameplay than they did during class time ($t(29)= 21.20$, $p < 0.001$), again with a very large effect size ($d = 3.33$).

Table 9. *T-Test for Levels of State Anxiety during Class Time and Computer Game Activities (N = 30)*

			95% Confidence Interval of the Difference					
Pair	Mean	*SD*	Lower	Upper	*t*	df	Sig. (2-tailed)	Effect size
SA in game	20.93	2.08	8.55	10.38	21.20	29	.000	*d* = 3.33
SA in class	11.47	3.43						

Thirdly, as shown in Table 10, levels of state perceived communicative competence participants felt during computer game activities ($M = 18.83$, $SD = 2.23$) differed from those felt during class time ($M = 10.33$, $SD = 2.78$) and again, this was statistically significant ($t(29)= 24.40$, $p < 0.001$ with a very large effect size ($d=3.37$).

Table 10. *T-Test for Levels of State Perceived Communicative Competence during Class Time and Computer Game Activities (N = 30)*

Pair	Mean	*SD*	95% Confidence Interval of the Difference		*t*	df	Sig. (2-tailed)	Effect size
			Lower	Upper				
SPCC in game	18.83	2.23	7.79	9.21	24.40	29	.000	*d* = 3.37
SPCC in class	10.33	2.78						

Finally, participants reported significantly higher levels of state communicative self-confidence while engaged in computer game activities than during class time (*t*(29)= 25.89, *p* < 0.001), with a very large effect size (d) of 3.54, as shown in Table 11.

Table 11. *T-Test for Levels of State Communicative Self-Confidence during Class Time and Computer Game Activities (N = 30)*

Pair	Mean	*SD*	95% Confidence Interval of the Difference		*t*	df	Sig. (2-tailed)	Effect size
			Lower	Upper				
SCSC in game	39.77	3.95	16.55	19.38	25.89	29	.000	*d* = 3.54
SCSC in class	21.80	5.99						

DISCUSSION

The results above allow us to draw a number of preliminary conclusions. Firstly, the descriptive results from the first questionnaire showed that the participants in this study generally reluctant to interact in the target language in class; they were either unwilling or somewhat willing to, amongst others, talk to classmates about assignments, to ask for clarification or to listen to others. The results from the second part of the questionnaire showed that participants experienced considerable anxiety and were, amongst others, worried about making mistakes, and felt uncomfortable about sharing their feelings and opinions. Similarly, participants reported low state self-perceived communicative competence, thinking of themselves as having poor English and, importantly, not believing that class activities helped develop their fluency. Together, these results show that the students had low WTC in English in the classroom.

These results contrast with those for participants' WTC during game play. Students reported being more willing to interact in English during game play, feeling more confident to talk to other students, or ask for help. They also felt considerably less anxious and were not as nervous about making mistakes. In terms of their state self-perceived communicative competence, participants felt quite confident in their English ability and felt that game play helped them develop their L2 fluency. Together, these results show that the students had high WTC in a game environment.

Statistical analyses showed the differences in participants' responses to be significant and with large effect sizes, meaning participants were more willing to interact in English, were less anxious and felt better about (their ability to use) English in a game environment than in class. It is important, however, to acknowledge that the two questionnaires, although asking similar questions, were necessarily slightly different too, as the first asked about WTC in the classroom and the second about WTC during game play. Nonetheless, we feel that the results allow us to tentatively draw the conclusion that the participants in this study had a greater WTC in a game environment than in classroom one. This is an important result, especially as the participants were not simply told to go and enjoy themselves. They were given specific instructions and tasks to complete. Their responses therefore do not simply indicate a preference for playing games over taking classes, as they were responding to similar questions about communicating in English in two different environments.

This has a number of implications. Firstly, if WTC is a facilitating factor in second language acquisition

(MacIntyre et al., 1998), then it is important to create an environment conducive to encouraging this. It appears that for the participants in this study the environment offered by the computer game did this to a significantly greater degree than the classroom environment. Our study mirrors some of the findings from Aubrey (2010, 2011), regarding the factors contributing to WTC. Digital games clearly make learners feel less anxious and encourage collaboration and group cohesiveness. Further research is required to establish whether these findings generalise to other contexts, but our study does appear to corroborate findings from previous research by Compton (2004) and Jarrell and Freiermuth (2005) showing the benefits of using technology, and in particular text chat (one of the means of communication within the game), for increasing WTC. Of course, game play did not occur in a pedagogical vacuum, and it is important to point out other aspects of the intervention (such as the fact that the activities were not assessed) are likely to have played a role. Nonetheless, our instruments specifically probed the effects of the game on the students, and these results are clear.

More specific implications require briefly highlighting here. Firstly, on the initial questionnaire, participants indicated fairly low agreement with the statement that English classes help develop fluency. This may be a reflection particularly of English teaching in Thailand, which may be of a more traditional nature (such as teacher dominated talk, rote learning, and grammar translation in which students are mainly tested on grammar structures) and less focused on the development of communicative skills than in other countries. When asked about games, however, the participants said they thought it did help to develop fluency. In contexts where English (and other languages) are taught as a foreign language, and where students have limited access to opportunities for target language production, games can possibly play a role. Particularly, this may be the case in situations where the teachers themselves are non-native speakers and less confident or fluent in L2 interaction.

In addition to the issue of the development of fluency, game play also made learners feel more confident in their ability to use English. This is interesting as in the short period (nine hours over six weeks) of time students would have been unlikely to improve their productive skills very much. Clearly, aspects of the game environment make learners feel they are achieving better. One likely explanation for this is the fact that the game offered continuous feedback and allowed students to complete actions through language, and in this way gave students a sense of success. Interacting with other students and exchanging information helped them, for example, to get information on where to go or which character to find. Obtaining this information then helped them to complete those actions, immediately showing them the value of their communication, and giving them an immediate sense of achievement. Experiencing the transformative power of language in this way can provide significant motivational benefits (van Lier, 1996).

Finally, participants were reluctant in particular to share personal information in the classroom. Most were unwilling to exchange opinions and feelings. This was not the case in the game environment. Much research has shown the value of personally engaging in the learning process (e.g. Ushioda, 1996) and its potential on language acquisition. If games encourage learners to engage more, this may help them in their learning. One important reason for these findings may well be the anonymity the games afford; although all the students in this study knew each other and were probably easily able to tell which avatar represented which student, still a degree of projection may have made students feel more comfortable to communicate, and in particular, to make mistakes. This is in line with previous findings from studies by deHaan (2005b) and Peterson (2010, 2011), who showed that games, particularly MMORPGs, helped to reduce anxiety levels and encourage opportunities for taking risks in using the target language.

All this begs the broader question about whether game play should be encouraged as part of the L2 learning process, or even integrated into the curriculum, and/or whether features of game play should be used to change classroom teaching. Although our study did not directly attempt to address these questions we do feel that it contributes to the body of research that shows the potential of game play to facilitate important elements of the L2 acquisition process and as such, deserves more attention as a field of study.

CONCLUSION AND LIMITATIONS

One [1] limitation of our study is that it did not investigate L2 acquisition, thus not allowing us to make claims about the benefits of game play on learning. Although it is likely that greater willingness to communicate will lead to more interaction, this is something we have yet to investigate (although we did find a positive effect in an earlier pilot study (Reinders & Wattana, 2012)). Although our current data allows us to do so, this would still not allow us to draw conclusions on whether or not that interaction led to improved fluency or accuracy, as we did not measure these. Our aim with this study was more specifically to compare gaming and classroom environments and their effect on students' willingness to engage in target language communication. We hope future studies will continue from ours and investigate the effects of acquisition as well.

Another possible limitation of our study was the fact that the participants had very different levels of proficiency. It is possible that students at different stages of development feel differently, either about communicating in class, in a game, or both. However, we feel that using an intact class increased the ecological validity of our study. The participants were part of an existing group and thus represent an actual and 'real' community of learners that teachers (in Thailand) would be likely to face. If, as a group, these learners feel more comfortable communicating in a game than in a class, that is potentially useful information for their teachers. Nonetheless, future studies could employ a more strictly empirical design and control for factors such as proficiency level.

Further, there may well be a novelty factor at play here. Although we tried to minimise this by conducting our study with Engineering students, all of whom are fluent computer users as well as regular game players, the fact that something unusual happened during their course may in itself have added a degree of excitement and may have coloured their responses. At the same time, if students feel excited about game play and if that leads to greater WTC in English, then we feel this does not significantly take away from the findings.

Digital game-based learning is a relatively new field, with a great deal of potential. We believe future studies will add a great deal to our further understanding of their effect on communication and acquisition. We hope our study has made a small contribution to this exciting developing field.

APPENDIX A. **Willingness to Communicate Questionnaire Set 1**

This questionnaire contains 2 sections for measuring your **willingness to communicate** in the target language (English) particularly **inside the language classroom**. It should take about 10-15 minutes to complete. Please answer truthfully to guarantee the success of this study. Your answers will be treated confidentially and only the researchers will have access to the information you provide. Although we ask for your name, we do so only because we want to associate your answers to this questionnaire with your other data. Remember, you are telling the researchers about your communication in a classroom context. There are no right or wrong answers.

Name: _____(Please give the character's name that you use when playing Ragnarok Online[©])
Gender   ( ) Male   ( ) Female

Section 1: Willingness to Communicate

Instructions: Below you will read a number of different communication tasks in which you might engage **in the language classroom**. We would like you to tell us how willing you would be to do each of these *in English*. By 'willing' we mean 'showing strong intention' so please put an "X" in the box that describes the level of your willingness, using the following scales.

1	2	3	4	5
Very unwilling	Somewhat unwilling	Neutral	Somewhat willing	Very willing

Communication Tasks	1	2	3	4	5
1 Talk to your classmates about a class assignment.					
2 Communicate ideas, feelings and opinions.					
3 Ask for clarification when you are confused about a task you must complete.					
4 Read task description/instructions before you start completing.					
5 Listen to what your classmates say in English.					

Section 2: State Communicative Self–confidence

Instructions: We are interested in your anxiety about communication and self-perceived communicative competence when communicating **in English in the classroom**. Put an "X" in the box that represents the degree to which you agree or disagree with each statement, using the following scales:

1	2	3	4	5
Strongly disagree	Disagree	Neutral/No opinion	Agree	Strongly agree

Communication Tasks	1	2	3	4	5
1 I am not worried about making mistakes.					
2 I find it difficult to communicate in English.					
3 I am worried that I will not understand what my classmates say in English.					
4 I feel nervous about using English while participating in class activities.					
5 I can say what I want to say in English.					
6 I think my classmates cannot understand me because of my poor English.					
7 I feel comfortable sharing my ideas/feelings/opinions with my classmates.					
8 I know the words required for each task completion.					
9 In general, I find communicating in English in classroom situations relaxing.					
10 I think participating in class activities help me develop my fluency (i.e. with little hesitation and pauses).					

THIS IS THE END OF THE QUESTIONNAIRE.

APPENDIX B. **Willingness to Communicate Questionnaire Set 2**

This questionnaire contains 2 sections for measuring your **willingness to communicate** in the target language (English) particularly **during gameplay**. It should take about 10 minutes to complete. Please answer truthfully to guarantee the success of this study. Your answers will be treated confidentially and only the researchers will have access to the information you provide. Although we ask for your name, we do so only because we want to associate your answers to this questionnaire with your other data. Remember, you are telling the researchers about your communication in a gaming environment. There are no right or wrong answers.

Name: _____(Please give the character's name that you use when playing Ragnarok Online[©])
Gender   ( ) Male   ( ) Female

Section 1: Willingness to Communicate

Instructions: Below you will read a number of different communication tasks in which you might engage **in a computer game setting**. We would like you to tell us how willing you would be to do each of these *in English*. By 'willing' we mean 'showing strong intention' so please put an "X" in the box that describes the level of your willingness, using the following scales.

1	2	3	4	5

Very unwilling	Somewhat unwilling		Neutral	Somewhat willing	Very willing		

Communication Tasks	1	2	3	4	5
1 Talk to other game players about a quest assignment.					
2 Communicate ideas, feelings and opinions.					
3 Ask for clarification when you are confused about a task you must complete.					
4 Read quest description/instructions before you start completing.					
5 Listen to what other game players say in English.					

Section 2: State Communicative Self-confidence

Instructions: We are interested in your anxiety about communication and self-perceived communicative competence that you feel when communicating **in English in a computer game setting**. Put an "X" in the box that represents the degree to which you agree or disagree with each statement, using the following scales:

1	2	3	4	5
Strongly disagree	Disagree	Neutral/ No opinion	Agree	Strongly agree

Statements	1	2	3	4	5
1 I am not worried about making mistakes.					
2 I find it difficult to communicate in English.					
3 I am worried that I will not understand what other players say in English.					
4 I feel nervous about using English while participating in computer game activities.					
5 I can say what I want to say in English.					
6 I think other players cannot understand me because of my poor English.					
7 I feel comfortable sharing my ideas/feelings/opinions with other players.					
8 I know the words required for each task completion.					
9 In general, I find communicating in English in computer game situations relaxing.					
10 I think participating in computer game activities help me develop my fluency (i.e. with little hesitation and pauses).					

THIS IS THE END OF THE QUESTIONNAIRE.

NOTE

1. Our research has shown that the learners in our study were significantly more willing to communicate in a game environment than in the classroom. There are two significant aspects to this finding; firstly, students do not have positive feelings about communicating in class, which goes some way to explaining low participation rates in English classes, in particular in Thailand. Secondly, students do have significantly more positive feelings about communicating in a game environment. This implies that there may be a role for the use of digital games in the English language curriculum, at least with learners of similar backgrounds as in this study. The challenge is to do so in a manner that benefits the L2 acquisition process; simply making learners enjoy themselves is not sufficient. The use of games needs to be integrated into the broader curriculum, in such a way that it supports the achievement of the objectives set within that context. (One of the reviewers made the suggestion of investigating the possibility of gamification of the learning environment, i.e. using game-like elements in regular classes. We think this is an excellent suggestion for future research).

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REFERENCES

Anyaegbu, R,, Ting, W., & Li, Y. (2012). Serious game motivation in an EFL classroom in Chinese primary school. *TOJET: The Turkish Online Journal of Educational Technology, 11*(1), 154–164.

Aoki, N. (1999). Affect and the role of teachers in the development of learner autonomy. In J. Arnold (Ed.), *Affect in language learning* (pp. 142–154). Cambridge, UK: Cambridge University Press.

Aubrey, S. (2010). Influences on Japanese students' willingness to communicate across three different sized EFL classes (Master's thesis). *Asian EFL Journal*. www.asian-efl-journal.com/Thesis/Thesis-Aubrey.pdf

Aubrey, S. (2011). Facilitating interaction in East Asian EFL classrooms: Increasing students' willingness to communicate. *Language Education in Asia, 2*(2), 237–245.

Baker, S., & MacIntyre, P. (2000). The role of gender and immersion in communication and second language orientations. *Language Learning, 50*(2), 311–341.

Cao, Y., & Philp, J. (2006). Interactional context and willingness to communicate: A comparison of behavior in whole class, group and dyadic interaction. *System, 34*(4), 480–493.

Chapelle, C. (2001). *Computer applications in second language acquisition: Foundations for teaching, testing, and research*. Cambridge, UK: Cambridge University Press.

Chu, H. (2008). *Shyness and EFL learning in Taiwan: A study of shy and non-shy college students' use of strategies, foreign language anxiety, motivation, and willingness to communicate.* (Unpublished PhD dissertation), University of Texas at Austin.

Clément, R., Baker, S, & MacIntyre, P. (2003). Willingness to communicate in a second language: The effects of context, norms, and vitality. *Journal of Language and Social Psychology, 22*(2), 190–209.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.).* Hillsdale, NJ: Lawrence Erlbaum.

Compton, L. (2004). Using text chat to improve willingness to communicate. In J.-B. Son (Ed.), *Computer-Assisted Language Learning: Concepts, contexts, and practices* (pp. 123–144). New York, NY: iUniverse.

deHaan, J. (2005a). Acquisition of Japanese as a foreign language through a baseball video game. *Foreign Language Annuals, 38*(2), 278–282.

deHaan, J. (2005b). Learning language through video games: A theoretical framework, an evaluation of game genres and questions for futhre research. In S. P. Schaffer & M. L. Price (Eds.), *Interactive convergence: Critical issues in multimedia* (pp. 229–239). Oxford, UK: Inter-Disciplinary Press.

Derwing, T., Munro, M. , & Thomson, R. (2008). A longitudinal study of ESL learners' fluency and comprehensibility development. *Applied Linguistics, 29*(3), 359–380.

Freiermuth, M., & Jarrell, D. (2006). Willingesss to communicate: Can online chat help? *International Journal of Applied Linguistics, 16*(2), 189–212.

Fujii, Y. (2010). *Acquisition of English as a foreign language with an adventure puzzle video game.* (Unpublished graduation thesis), University of Shizuoka, Japan.

Gee, J. (2007). *What video games have to teach us about learning and literacy.* Basingstoke: Palgrave Macmillan.

Gee, J. (2012). Foreword. In H. Reinders (Ed.), *Digital games in language learning and teaching.* Basingstoke, UK: Palgrave Macmillan.

Habgood, M., Ainsworth, S.. & Benford, S. (2005). Endogenous fantasy and learning in digital games. *Simulation & Gaming, 36*(4), 483–498.

Hashimoto, Y. (2002). Motivation and willingness to communicate as predictors of reported L2 use: The Japanese ESL context. *Second Language Studies, 20*(2), 29–70.

Horwitz, E., Horwitz, M., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70*(2), 125–132.

Jarrell, D., & Freiermuth, M. (2005). The motivational power of Internet chat. *RELC Journal, 36*(1), 59–72.

Kamprasertwong, M. (2010). *Willingness to communicate in English speech as a second language: A study of Thai, Chinese, and Dutch samples.* (Unpublished MA dissertation), University of Groningen, The Netherlands.

Kang, S.-J. (2005). Dynamic emergence of situational willingness to communicate in a second language. *System, 33*(2), 277–292.

Kissau, S., McCullough, H., & Pyke, J. (2010). Leveling the playing field: The effects of online second language instruction on student willingness to communicate in French. *CALICO Journal, 27*(2), 277–297.

Lu, Y., & Hsu, C. (2008). Willingness to communicate in intercultural interactions between Chinese and Americans. *Journal of Intercultural Communication Research, 37*(2), 75–88.

MacIntyre, P. (1994). Variables underlying willingness to communicate: A causal analysis. *Communication Research Reports, 11*(2), 135–142.

MacIntyre, P., Babin, P., & Clément, R. (1999). Willingness to communicate: Antecedents & consequences. *Communication Quarterly, 47*(215–229).

MacIntyre, P., Baker, S., Clément, R., & Conrod, S. (2001). Willingness to communicate, social support, and language-learning orientations of immersion students. *Studies in Second Language Acquisition, 23*(3), 369–388.

MacIntyre, P., Baker, S., Clément, R., & Donovan, L. (2003). Talking in order to learn: willingness to communicate and intensive program. *Canadian Modern Language Review, 59*(4), 589–607.

MacIntyre, P., & Charos, C. (1996). Personality, attitudes, and affect as predictors of second language communication. *Journal of Language and Social Psychology, 15*(1), 3–26.

MacIntyre, P., Dörnyei, Z., Clément, R., & Noels, K. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal, 82*(4), 545–562.

MacIntyre, P., & Gardner, R. (1994). The subtle effects of language anxiety on cognitive processing in the second language. *Language Learning, 44*(2), 283–305.

McCroskey, J. (1977). Oral communication apprehension: A summary of recent theory and research. *Human Communication Research, 4*(1), 78–96.

McCroskey, J. (1991). Willingness to communicate, communication apprehension, introversion, and self-reported communication competence: Finnish and American comparisions. *Communication Research Reports, 8*(1), 55–64.

McCroskey, J., & Richmond, V. (1982). Communication apprehension and shyness: Conceptual and operational distinction. *Central States Speech Journal, 33*(4), 458–468.

McCroskey, J., & Richmond, V. (1990). Willingness to communicate: Differing cultural perspectives. *Southern Communication Journal, 56*(1), 72–77.

Mitchell, A., & Savill-Smith, C. (2004). *The use of computer and video games for learning: A review of the literature*. London: Learning and Skills Development Agency.

Peng, J. (2007). Willingness to communicate in the Chinese EFL classroom: A cultural perspective. In J. Liu (Ed.), *English language teaching in China: New approaches, perspectives and standards* (pp. 250–269). Bodmin, UK: Continuum.

Peng, J., & Woodrow, L. (2010). Willingness to communicate in English: A model in the Chinese EFL classroom context. *Language Learning, 60*(4), 834–876.

Peterson, M. (2010). Computerized games and simulations in computer-assisted language learning: A meta-analysis of research. *Simulation & Gaming, 41*(1), 72–93.

Peterson, M. (2011). Digital gaming and second language development: Japanese learners interactions in a MMORPG. *Digital Culture & Education, 3*(1), 56–73.

Prensky, M. (2001). *Digital game-based learning*. New York, NY: McGraw-Hill.

Ranalli, J. (2008). Learning English with The Sims: Exploring authentic computer simulation games for L2 learning. *Computer Assisted Language Learning, 21*(3), 441–445.

Rankin, Y., Gold, R., & Gooch, B. (2006). *3D role-playing game as language learning tools.* Paper presented at the EuroGraphics 2006, Vienna, Austria.

Rankin, Y., Morrison, D., McNeal, M., Gooch, B., & Shute, M. (2009). *Time will tell: in-game social interactions that facilitate second language acquisition.* Paper presented at the Proceedings of the 4th International Conference on Foundations of Digital Games, Orlando, Florida.

Reinders, H. (Ed.). (2012). *Digital Games in Language Learning and Teaching*. Basingstoke, UK: Palgrave Macmillan.

Reinders, H. & Wattana, S. (2011). Learn English or die: The effects of digital games on interaction and willingness to communicate in a foreign language. *Digital Culture and Education, 3*(1), 4–28.

Reinders, H., & Wattana, S. (2012). Talk to me! Games and students' willingness to communicate. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 156–188). Basingstoke, UK:

Palgrave Macmillan.

Roy, D. (2007). Warcraft teaches Spanish. Retrieved from
http://www.crossgamer.com/warcraft_teaches_spanish_1

Samudavanija, C. (1999). *Plearn Puea Roo (Enjoyment for learnng)*. Bangkok, Thailand: Vajiravudh
College.

Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible
output in its development. In S. Gass & C. Madden (Eds.), *Input in second language acquisition* (pp.
235–253). Rowley, MA: Newbury House.

Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step
towards second language learning. *Applied Linguistics, 16*, 371–391.

Thorne, S. (2008). Transcultural communication in open Internet environments and massively multiplayer
online games. In S. S. Magnan (Ed.), *Mediating discourse online* (pp. 305–327). Amsterdam, The
Netherlands: John Benjamins.

Ushioda, E. (1996). *Learner autonomy 5: The role of motivation*. Dublin, Ireland: Authentik.

van Lier, L.(1996). *Interaction in the language curriculum: Awareness, autonomy and authenticity.*
London, UK: Longman.

Voulgari, I. (2011). Collaborative learning in massively multiplayer online games: A review of social,
cognitive, and motivational perspectives. In P. Felicia (Ed.), *Handbook of research on improving learning
and motivation through educational games: Multidisciplinary approaches* (Vol. 1, pp. 370–394).
Hershey, PA: IGI Global.

Whitton, N. (2007). Motivation and computer game based learning. *ICT: Providing choices for learners
and learning. Proceedings ascilite Singapore*, 1063–1067.

Whitton, N. (2010). *Learning with digital games: A practical guide to engaging students in Higher
Education*. New York, NY: Routledge.

Whitton, N. (2011). Theories of motivation for adults learning with games. In P. Felicia (Ed.), *Handbook
of research on improving learning and motivation through educational games: Multidisciplinary
approaches* (Vol. 1, pp. 352–369). Hershey, PA: IGI Global.

Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The
Modern Language Journal, 86*(1), 54–66.

Yashima, T., Zenuk-Nishide, L., & Shimizu, K. (2004). The influence of attitudes and affect on
willingness to communicate and second language communication. *Language Learning, 54*(1), 119–152.

Zhao, Y., & Lai, C. (2009). MMORPGs and foreign language education. In R. E. Ferdig (Ed.), *Handbook
of research on effective electronic gaming in education* (Vol. 1, pp. 402–421). New York, NY:
Information Science Reference.

Zheng, D., Young, M., Brewer, R., & Wagner, M. (2009). Attitude and self-efficacy change: English
language learning in virtual worlds. *CALICO Journal, 27*(1), 205–231.

OTHER MEDIA

EverQuest II. (2004). Sony Online Entertainment.

Global Playground Gravity. (2010). http://www.gravity.co.kr/eng/games/ragnarok.asp

World of Warcraft. (2004). Blizzard Enterntainment.