

# Digital Game-Based Learning: A New Learning Environment for the 21<sup>st</sup> Century Learners

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## Abstract

Digital games have been shown to offer a number of pedagogical benefits for learning in general. However, more attention and investigation are needed to determine the impact digital games have on specific concepts of foreign/second language (L2) acquisition, especially affective state like improved motivation, increased confidence, and reduced anxiety which can, in turn, influence willingness to communicate (WTC) regarded as a final step before actual L2 use. In this paper, reflective practice from a research project of the use of online games implemented as an alternative language learning environment during a 15-week English for Information Technology (IT) course at a university in Thailand is presented. The aims of the use of digital games are to allow opportunities for learners to practise and use the target language and to enhance their WTC, which is a fundamental goal of L2 pedagogy. The empirical research findings revealed the usefulness of gameplay for encouraging learners' interaction and engendering their WTC. The reasons behind the success of the integration of digital games into formal education are also discussed.

**Keywords:** Digital game-based learning, Interaction, Willingness to communication

## 1. Introduction

In this early part of the 21<sup>st</sup> century, an increasing range of digital technologies is available for classroom practices and has become so diverse that the tools are being employed in classrooms all over the world. Digital games, in particular, are considered as one recent form of technological innovation in learning and teaching. A great deal of enthusiasm about the pedagogical benefits of digital games for learning, both in general education [see 1], and in language and literacy education in particular [see 2], is evident in the literature. Digital games have been hypothesized to have the potential to engage learners [see 3], to encourage interaction in the L2 [see 4], and to lower learners' affective filters such as increased motivation, improved confidence, and reduced anxiety [1, 5-7]. Few collections of empirical studies, nevertheless, confirm the existence of these pedagogical benefits and their impact on learners' interaction in English and willingness to do so. This paper deals with the integration of digital games in the English for IT course at a university in Thailand, the context in which the tools have not been extensively employed in language classrooms and explored in the literature. The effects of the use of digital games on interaction and willingness to interact in English are reported. The evaluation of this practice is also presented here.

## 2. Review of Related Literature

### 2.1 Interaction

Interaction generally refers to 'any types of two-way exchanges' [8, p. 54] that take place during interpersonal activity face-to-face or electronically between two people or between the person and the computer, and during intrapersonal activity within the person's mind [9-11]. Considerable attention has been paid to the role of interaction for language learning opportunities and language acquisition. In addition, the most significant benefit for the role of interaction, especially online interaction, is its contribution to greater language production, which was the primary focus of this

study. Ellis [12] states that for effective language learning to occur, it is crucial for learners to use the language to communicate. However, encouraging learners to engage in interaction using the L2 is a practical challenge for language teachers [13], particularly in foreign language settings, such as Thailand, where learners typically find opportunities to practise the L2 or English in the classroom only, and appear to have limited opportunities for L2 use in everyday life [14]. Even though a variety of teaching approaches have been being implemented in the language classroom to foster Thai learners' ability to interact in the L2, they may produce learners who are *capable* of communicating but do not actually *want* to use the L2 [15]. This is, perhaps, because they do not feel comfortable, competent, or confident enough to continue or initiate interaction in the L2.

## 2.2 Willingness to Communicate in the Second or Foreign Language

It has been argued that learners need to be not only *able* to communicate but also *willing* to engage in the act of L2 communication [16]. Accordingly, language instruction which aims to improve learners' communicative competence is suggested to be combined with opportunities to increase their willingness to communicate (WTC). The construct of WTC, individual's "readiness to enter into discourse at a particular time with a specific person or persons, using a L2" [15, p. 547], has been proposed as an individual differences variable that facilitates the L2 learning process [17] and as a fundamental goal of L2 education [15, 18]. Theoretically speaking, WTC is a final step before L2 use [15] and can influence the frequency of L2 communication [19-21], which can, in turn, facilitate successful language acquisition. It has been found that learners with high WTC are more likely to use L2 [22] than those with lower WTC. That means in order for L2 communication to be effective, learners must have WTC. However, my own experiences as a language teacher at a university in Thailand have indicated that it is not uncommon to find learners who would not voluntarily use English to speak, ask, and answer a question. It is clear that if they do not take the opportunities offered during class time, there is no other chance for them to practise and use the language. It is therefore important to investigate ways of increasing Thai learners' interaction WTC in English.

## 2.3 Digital Games in Language Learning

The implementation of digital games in language learning and teaching has expanded considerably in recent computer-assisted language learning (CALL) studies [e.g., 3, 4, 23, 24-30]. To date, there has been little empirical research investigating the effects and the use of digital games in foreign-language learning to increase L2 interaction. In Thailand, in particular, educational digital games are normally used with young learners at primary level for teaching basic vocabulary [31]. However, the use of digital games to facilitate language learning within and outside of the language classroom at tertiary level is still a new phenomenon. Specifically, due to the small number of attempts to use and investigate digital games in Thailand, many learners, teachers, and researchers appear to be skeptical about the pedagogical benefits games may have for language learning. In my study, a commercial game Ragnarok Online<sup>®</sup>, one of the most popular massively multiplayer online role-playing games (MMORPGs) played in Thailand, was altered to include a number of quests for learners to complete and used in their regular language course. Like other MMORPGs such as World of Warcraft and Everquest, Ragnarok Online<sup>®</sup> was played by a large number of players in a complex environment allowing a large amount of player interaction.

Interaction plays a central role during gameplay [32], especially in MMORPGs, because players have to exchange information, work on and solve problems together, and help each other in order to progress through the game and complete game tasks. Games in general are engaging and motivating [33, 34]. In addition, some particular types of games, such as MMORPGs, have significant characteristics and features that may reduce anxiety, promote various types of interaction hypothesized as beneficial for language acquisition [4, 27], and encourage the use and the practice

of the L2 in an entertaining and non-threatening environment [32]. Gameplay therefore has the potential to foster increased opportunities for interaction and expand learners' exposure to the L2. In addition to these pedagogical benefits, games can offer opportunities for investigating how learners interact in their complex, social environment.

From a personal perspective, I was interested to investigate the role of digital games within my own institution, Dhurakij Pundit University (DPU). In our organization, English teachers are expected to help students to get exposure to and make use of English and to teach the language through technologies because an increasing number of DPU students are acquainted with the use of computers and electronic communication for both work and play [35]. As a learner and teacher, I have a passionate interest in seeing innovative use of technologies, especially digital games, in the language classroom. In response to a) DPU's declared intention to investigate and support alternative ways of facilitating students' success in language learning and to b) my enthusiasm for looking for ways to encourage L2 interaction and to improve my professional competence teaching with CALL, conducting this study therefore posed an exciting challenge to me.

Hypothesising that gameplay would provide a non-threatening environment, thus potentially encouraging more L2 interaction, I was therefore interested in learners' interaction in English within the game, especially with respect to the effects of gameplay on the quantity of interaction. However, having opportunities to interact with the language does not necessarily ensure that learners actually or naturally engage in such interaction. Therefore, I was also interested in investigating how these learners felt about their own willingness to interact with each other in English while engaged in gameplay. Encouraging a 'low affective filter' [36] has been recognized as one of the positive qualities of gaming [37]. Thus, it was reasonable to assume that gameplay would allow learners to feel relaxed, engaged, and motivated, and to use the L2 in a comfortable way. If playing games is found to have an effect on this, it will be another beneficial part of gameplay that language teachers should tap into in order to encourage higher WTC levels which then translates into more interaction in the L2.

### 3. The Study

The study's research question was:

How can digital games encourage language learners' interaction and willingness to communicate in English?

The study, adopted the pseudo-empirical research design with a pre-test structure, was carried out with 30 third year undergraduate students enrolled in a course of English for Information Technology 1, designed and taught by the researcher, at a university in Thailand.

With permission from the game's local distributor, the study modified an existing commercial MMORPG, Ragnarok Online<sup>®</sup>, to ensure its appropriateness to the learning context and to better meet specific objectives of the language course. There were two pedagogical objectives for using gameplay activities in my language classroom. The first objective was to give participants opportunities to review the course material through play. The other objective of using digital games in my own teaching practice was to encourage more participation in English.

Participants' typical interaction in English and levels of willingness to use the language to interact in the classroom setting were examined beforehand to provide baseline data. Participants were then asked to participate in six gameplay sessions as part of the regular course. In the first three sessions, the interaction was carried out through the medium of typed text. In the final three sessions, participants were required to communicate with each other using a voice-based medium. Their

interaction and WTC in English during gameplay were measured. A comparison between the quantity of interaction and levels of willingness to interact in English in a traditional language classroom, and within a gaming setting, was finally investigated. A quantitative approach was employed to tabulate the amount of English output. Questionnaire results were triangulated to establish different perspectives for the interpretation of how participants felt about their own WTC. Furthermore, in attempting to provide answers for the research question, participants' interaction and WTC levels in two environments (classroom vs. gameplay) were compared statistically, allowing the researcher to test for significant differences and, in turn, the intervention effects.

#### 4. Summary of Key Findings and Discussion

Generally, it was found that participants produced more L2 words in the game than in the classroom. In other words, participants produced an average of  $M = 79.83$  ( $SD = 20.48$ ) during *gameplay* and  $M = 41.90$  ( $SD = 50.92$ ) during *face-to-face class activities*. This difference was found to be statistically significant ( $t(29) = 5.49, p < 0.001$ ), with a very large effect size of  $d = 0.97$  (see Table 1).

**Table 1.** Paired Samples T-Test for the Average Number of Words in Face-to-Face Interaction and Digital Game Interaction

Pair	Mean / SD	N	95% Confidence Interval of the Difference		t	Sig. (2-tailed)	Effect size
			Lower	Upper			
Game	79.83 (20.48)	30	23.61	52.05	5.49	.000	d = 0.97
Face-to-face	41.90 (50.92)	30					

During gameplay activities, participants who were normally reluctant to use English in class seemed to actively interact with each other in the game, using English. An additional interesting finding was that as the gameplay sessions progressed, participants dramatically reduced their mother tongue (L1) use and could conduct their interaction almost exclusively in English. This was a considerable achievement since the study was conducted among non-English majors with limited English proficiency, and it proved to be very difficult to get Thai learners in general to participate in English [38]. Significantly, this finding confirms claims that MMORPGs have the potential to provide extensive opportunities for authentic L2 interaction, as postulated by Bryant [32], Roy [39], and Peterson [26]. Moreover, this finding is particularly supportive of the constructivist approach in that, for these participants, it was vital to interact in the L2 even though they knew they made mistakes, which is an important part of the language learning process. However, this is not a common occurrence when language learners in Thailand have been characterized to be unable to communicate in English with confidence when collaboratively carry out communicative activities in class because they are anxious about making mistakes [40]. Although traditional communicative activities like discussion have been deemed very effective in allowing learners to interact with each other using the L2, this study has supported that it is participation in digital games that leads to a more significant increase in the quantity of L2 interaction. This finding supports previous studies providing evidence of a greater amount of L2 production in online interaction, including MMORPGs [e.g. 41-42] and other types of computer-mediated communication (CMC) environments [e.g. 43], one of the means of communication within the game, than in face-to-face classroom interaction.

As indicated in the literature on games and language learning [see 26], possible explanations lie in the fact that digital games, particularly MMORPGs, involve participants in purposeful communicative tasks allowing them to engage in collaborative interaction which, in turn, results in the production of considerable authentic L2 output. More L2 interaction is also believed to be the result of the anonymous nature of the online interaction. Zhao and Lai [44] explain that through anonymity during gameplay, players are less inhibited in L2 interaction and more freely experiment with the language to accomplish game quests. In addition, communicative activities that provide a high degree of comfort and security (i.e. the activities that are highly learner-centred, and the activities that are conducted in a safe, fun, engaging, and non-threatening setting), like digital game playing, may encourage participants to interact in the L2 more. This possibility was identified in the questionnaire findings which revealed participants' greater willingness to interact in English while engaged in gameplay activities. This is also evident in other studies which also found learners' positive attitudes towards language learning in MMORPGs [3, 4, 45, 46].

The mean scores of participants' perceptions associated with their WTC in English in class and gameplay activities were compared. As shown in Table 2, participants tended to perceive themselves to be more willing to communicate in the game than in the classroom. They generally perceived themselves to be somewhat willing to use English during gameplay ( $M = 3.84$ ,  $SD = .286$ ) whereas somewhat unwilling to do so in class ( $M = 2.33$ ,  $SD = .545$ ). An examination of the individual communication tasks mean scores also revealed that there was a difference in participants' perceptions. This, thus, indicated that they were more willing to interact in English in communication situations in the game than they were in the classroom.

**Table 2.** Difference in Participants' Perceptions of WTC in English in the Classroom and the Digital Game (N = 30)

Communication tasks	Classroom		Computer Game		Difference
	M	Interpretation	M	Interpretation	
1 Talk to your classmates (other game players) about a class (quest) assignment.	2.33	Somewhat unwilling	3.86	Somewhat willing	+1.53
2 Communicate ideas, feelings and opinions.	1.63	Somewhat unwilling	3.36	Neutral	+1.73
3 Ask for clarification when you are confused about a task you must complete.	2.86	Neutral	4.06	Somewhat willing	+1.20
4 Read task (quest) description/instructions before you start completing.	1.96	Somewhat unwilling	3.86	Somewhat willing	+1.90
5 Listen to what other game players (your classmates) say in English.	2.86	Neutral	4.06	Somewhat willing	+1.20
<b>Overall Mean</b>	<b>2.33</b>	<b>Somewhat unwilling</b>	<b>3.84</b>	<b>Somewhat willing</b>	<b>+1.51</b>

A paired-samples t-test was performed to determine the difference between participants' perceptions of WTC in English in the classroom and the game. An alpha level of .05 was used as a significance criterion for all statistical tests, as is standard practice. Cohen's *d* [47] was subsequently calculated to indicate the effect size. Overall, the paired-samples t-test results confirmed that participants exhibited significantly more positive perceptions about their WTC in

English during gameplay activities ( $M = 19.23$ ,  $SD = 2.49$ ) than they did during class time ( $M = 11.67$ ,  $SD = 2.9$ ),  $t(29) = 21.54$ ,  $p < 0.001$ . The effect size was very large ( $d = 2.79$ ). Results are shown in Table 3.

**Table 3.** Paired Samples T- Test for Mean Scores of Participants' Perceptions of WTC in English during Class Time and Gameplay Activities

Pair	Mean (SD)	N	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)	Effect size
			Lower	Upper				
WTC in game	19.23 (2.49)	30	6.85	8.29	21.54	29	.000	d = 2.79
WTC in class	11.67 (2.90)	30						

In this study, participants reported that they were unwilling to use English to talk to each other in the classroom. However, this was not the case in the game environment where participants appeared to use English to communicate for a variety of communication purposes, and an overall greater WTC was noted (including not only in producing but also reading, listening, and comprehension of the language). One possible explanation for the changes in participants' WTC is that digital games, particularly MMORPGs, provided collaborative activities with direct connection with various real-life communication situations (i.e., teaching game skills, exchanging information and helping each other) and meaningful tasks that required the use of the L2. The game used in this study had English as a default language of interaction and communication. Participants may have seen the need to use the L2 to communicate with each other and to read and comprehend game instructions and non-player characters' dialogues. Thus, participants were willing to communicate using English. Participants' increasing willingness to interact in English during gameplay was also confirmed by their actual participation in quest completion. Specifically, participants displayed a higher level of WTC as they produced more words over the three text-based chat sessions and the three voice-based chat sessions. This supports previous studies [e.g. 19, 21] revealing that WTC resulted in more frequent communication. The increase in L2 output which was found in this study is a noteworthy finding, especially because participants were not forced to use English to interact in the game unless they felt that they were ready and willing to do so. Their L2 use was voluntary and thus considered as a genuine attempt.

Despite identifying themselves as rarely speaking English in class, a large amount of English was used among participants and active participation in gameplay activities was observable. This finding is more impressive than it might seem; recent literature has frequently reported on reticence and passivity among many Thai students [48]. Participants in general appeared to feel reluctant to communicate in English in the beginning of computer game session and then were likely to significantly produce more L2 output as the gameplay session proceeded and they became familiar with the game environment. This tendency indicated that not only did digital games provide an attractive environment to participants, but interacting in that environment also led them to become more willing to communicate, with a decrease of L1 use over time. However, the effects of playing computer games on WTC may differ considerably from learner to learner. That is, some game characteristics/situations perceived by particular learners as beneficial for the development of their interaction and WTC may not have proved valuable for other learners who preferred traditional class activities. A possible reason for the differences in the effects of gameplay on participants is their perceptions towards experience in the game and towards the role digital games play in

interaction and WTC. This suggests that playing games alone do not necessarily contribute to an increase in interaction and WTC.

In conclusion, the findings of this study showed that Thai university learners did not really engage in the L2 interaction and were not very willing to communicate in English inside the classroom. However, they generally produced a greater quantity of the L2, and exhibited higher willingness to do so as a result of participating in gameplay activities. Playing games appears to allow language learners to engage in authentic L2 interaction in a social, collaborative learning environment underpinned by sociocultural principles, while at the same time developing WTC levels among themselves. From a WTC perspective, the findings of this study indicate that digital games may be effective tools for language learners to become more willing to use the opportunities provided to practise and use the L2.

### **5. Reflections on Integrating Digital Games into the Classroom**

The study has reported the pedagogical benefits of game-based language learning on Thai learners' interaction and willingness to use English to communicate with each other after a particular period of time. The findings suggest that commercial games can be adapted for use in real language learning and teaching situations, encouraging a move from an entertaining to an educational use of games and removing barriers for the teacher who attempt to use commercial games in their teaching practice. Nevertheless, the integration of digital games in language learning and teaching process are more demanding, complicated, and challenging than other forms of technology or than other paper-based materials. Also, the integration is not as simple as adding games to the curriculum and hoping that they will increase learners' interaction and WTC or enhance certain aspects of language development. This is, perhaps, because language classrooms are complex environments and language learners in general have different needs and interests. It is also because the teachers are not only responsible for integrating technology in class but also for playing a role in enacting change. In my view, enacting change is not easy since it requires great effort, considerable amount of time, good planning, clear objectives of using games in the classroom, sound understanding of the benefits of games for language learning, effective communication, and implementation skills. It is also crucial for teachers to choose suitable games [49, 50] and to have the ability to apply the (gaming) technology, create materials and activities using that technology, and teach with the (gaming) technology [51]. What I learnt from this study is that, if used appropriately and planned systematically, digital games could allow a) learners to learn the language in a fun way and b) teachers to revolutionize their teaching practice. The term 'appropriately' should be stressed here since the use of digital games should be truly useful in language instruction and linked with the course curriculum but should not be used just for the sake of using games. Furthermore, passion is, in my opinion, integral to implementing technology or actions that can make changes in the lives of learners. Although the game itself has some characteristics and environments that could lead to the success of the study, it also, in my opinion, depends on the way the teachers implement the games in their class. At a practical level, this suggests that prior to the integration of digital games, teachers should have positive attitudes towards the use of games for learning and teaching and be given specific training for effective implementation. Unfortunately, it seems to me that teacher training in Thailand is one of the most cited reasons behind the lack of technology integration in the language classroom.

Integrating of digital games in the language class is still a new area, but the practice has been found to offer a great deal of potential to facilitate many aspects of language learning. It is hoped that the findings reported here have made some contribution to this developing area, either by giving a better understanding of the effectiveness of digital games for language learners or by escalating the ongoing investigation in this area. It is also hoped that the reflections presented here help lead to the

improvement of the quality of the use of digital games in real language learning and teaching contexts. In addition, the study is hoped to provide an example of the way in which digital games could create a new language learning environment for dealing with 21<sup>st</sup> century learners. Thus, I would like to encourage language teachers to use technology in their class. Today's learners deserve to learn the language through technological tools that are an integral part of their lives and are likely to continue to play a pedagogical role in their futures.

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