

*Learning Strategies and Learner Attitudes in the  
Massive Multiplayer Online Role-Playing Game Cube World*

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**Abstract**

The shift from analogue to digital has transformed teaching and learning. Collaborative learning environments such as virtual worlds and digital games, especially massively multiplayer online role-playing games (henceforth MMORPGs), have generated increasing interests from experts. Recent studies showed that MMORPGs have the potential to be suitable platforms for language learning (Peterson, 2013). This paper will analyze the findings of exploratory work focusing on the use of the MMORPG *Cube World* involving EFL learners based at a university in Japan. Data analysis from pre- and post- questionnaires, text chats, in-class video recordings and learner feedback revealed that the target language exchanges between players when they communicate and collaborate with each other in the game appear beneficial, fun and motivating. This suggests that learner participation in network-based MMORPGs provides an arena for learner centered social interaction that offers valuable opportunities for target language practice. Data suggests that MMORPGs offer arenas for language learners to development their communicative competence. Areas with potential in future research are examined.

Keywords: MMORPG, Cube World, language learning, learning strategies, learner attitudes

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## **Introduction**

The rapid progress of technology has revolutionized learning over the past decade. Research (Bonk & Graham, 2006; Babb, Stewart & Johnson, 2010) has shown that technology can be effectively implemented in blended learning classrooms and can provide helpful tools for language learning (Blake, 2008). The emergence of digital natives, students born in the last twenty years (Prensky, 2001) – as well as the widespread availability of digital appliances such as smartphones and tablets have ensured that Computer Assisted Language Learning (henceforth CALL) has recently become more widely accepted as a means to facilitate the process of language learning (Thomas, Reinders & Warschauer, 2013).

Collaborative learning environments such as virtual worlds, social networking and digital games have generated increasing interest from experts (Gee, 2003; Squire, 2005a; Peterson, 2010) and past studies (Thorne, 2008; Zhao & Lai, 2009; Zheng et al., 2009) have suggested that of these tools, MMORPGs are promising educational platforms. It is claimed that these games present engaging environments for learning as they support problem-solving, communication and team work. However, despite the recent expansion in research, studies on utilizing MMORPGs in language learning are relatively limited in number, small in scale, and confined to investigating a narrow range of variables (Peterson, 2013). This paper will provide an overview of current research and examine the findings from an exploratory case study on how learners manage their in-game interactions in the target language (henceforth TL) as well as how learners view using MMORPGs as a language learning tool.

## **SLA and MMORPGs**

To date, the most common way that computer technology has been used to facilitate language learning has been through the use of specially designed programs (Barr, 2004) but the proliferation of the Internet has facilitated new forms of real time computer-based communication. O'Rourke (2005) asserts that the process of second language acquisition (henceforth SLA) is stimulated by the power of human interaction and teachers can create opportunities for beneficial forms of interaction within the context of computer mediated communication (henceforth CMC). A study by Kötter (2003) suggests that CMC-based collaborative learning offers participants the chance to be both a learner and a tutor, which may help to boost confidence and trust. Moreover, it is suggested that participation in this type of interaction makes learners more willing to offer and receive help from their peers in the same group. In order for learning goals to be achieved, learners must negotiate when and how to help their peers, as in how often and how much detail they should comment on each other's output. In this way, both the learner and the tutor are stimulated to evolve an awareness of the aims and process of learning as well as critically reflecting on their own learning needs. This implies that language learning and teaching are social activities and CMC is a platform that provides synergy for students to engage in SLA process.

MMORPGs are a type of digital game that takes place in a virtual world where large numbers of players develop their characters in a role-playing environment. As a form of CMC, one of the features that distinguish MMORPGs from traditional console-based role-playing games is that MMORPG game play is essentially based on

alliances of players. This type of game requires collaboration, strategizing, planning and interacting with objects and resources. Researchers claim that this type of game incorporates features that may facilitate SLA including assigning user controlled virtual agents known as avatars to individual learners, enabling them to experience a higher degree of immersion and emotional investment in the virtual world (Svensson, 2003). Moreover, avatars also contribute to the process of relationship forming and bonding between players by enhancing the role-playing experience (Peterson, 2006).

Byrant (2007) and Thorne (2008) claimed that the collaborative learning aspects of MMORPG game play not only provide the benefits of social interaction in the TL but also foster motivation, creating opportunities for real-time practice and exposure to immediate feedback. When playing MMORPGs learners can participate actively in goal-based communicative tasks which elicit beneficial forms of TL interaction such as negotiation of meaning and scaffolding that have been identified as playing a central role in learning in both the psycholinguistic and sociocultural accounts of SLA. Scaffolding, in particular, is important as it is central to the operation of Zone of Proximal Development, ZPD (Vygotsky, 1978) providing a powerful means for learners to conceptualize the developmental process involved in language learning.

Additionally, MMORPGs provide a social platform for like-minded players to gather and this environment can serve as a catalyst for fostering collaborative learning. It is claimed that in-game collaboration and interactive conversations elicited by this type of game promotes critical thinking as well as supporting types of social negotiation associated with learning (Lave & Wenger, 1991). This in turn allows learners to share information, test their understanding and reflect on their learning (Jonassen, 1999). Instead of learning through explicit linear instruction by reading a manual first, players take their time to gather the information needed by evaluating various options before formulating a plan and change strategies and/or goals according to the different variables presented to them. In other words, MMORPGs have the potential to provide optimal learning mediums that are capable of meeting the needs of the younger generation who have grown up socializing with digital media.

## **Previous Research**

Previous small-scale studies (Rankin et al., 2009; Kongmee et al., 2012) on interactions between non-native speakers of English in MMORPG-based digital games have shown that participants improved their language learning skills with higher post-test scores. This in turn increased the participants' motivation. These researchers report that the participants were comfortable with the communication environment. The findings of the above studies suggest that the community-based nature of these games provides a safe and fun venue for the learners to take risks and reflect on their mistakes. As is noted in the literature (Kohonen, 1992), reflection plays an important role in SLA by providing a bridge between experience and theoretical conceptualization while risk-taking is associated with a willingness to maximize success. A higher intrinsic motivation leads to a higher incidence of positive experiences of communication success and this in turn encourages learners to take more risks and accept the ambiguity caused by the new linguistic system (Stern, 1983).

Another MMORPG case study involving a group of experienced gamers from New Zealand and the Netherlands undertaken by Bytheway (2013), shows learners adopting a combination of learning strategies influenced by the games culture which encouraged curiosity and in turn enhanced cooperative interactions with other players. The participants in this study were made aware of a variety of vocabulary learning strategies and many of them agreed that these strategies could be applied to other learning contexts in real life. This research also shows that educators need to dispel the negative conceptions of gaming in order to encourage learners to appreciate their empowering nature.

In a further case study (Uusi-Mäkelä, 2015), Finnish and Norwegian students collaborated in building villages in the MMORPG *Minecraft*. The researcher investigated informal learning. Researcher observation revealed that this phenomenon of informal language learning was observed throughout the study. Learner feedback was mixed. Some learners reported improvement in their language competences while others reported no improvements. However, most participants agreed that they were able to employ the TL in an appropriate manner. The researcher claimed that the collaborative learning environment provided by *Minecraft* enabled learners to practice adaptive strategies in order to communicate effectively with each other.

This paper will now examine the key findings of an exploratory study on the use of the MMORPG *Cube World* as a language learning platform. Preliminary results are examined. These observations indicate evidence of extensive collaboration conducted in the TL. The discussion will conclude with an examination of promising areas for future research.

### **Minecraft and Cube World**

“Today, more and more, digital games are being hyped as a new silver bullet” (Gee, 2013). The introduction of *Minecraft Education Edition* enables educators to use the *Minecraft* game in a variety of educational contexts. This game is designed to facilitate the development of essential life skills such as computational thinking along with communication, collaboration, critical thinking, creativity and curiosity. Likewise, the interactive environment of *Cube World* which is inspired by *Minecraft* (von Funck, 2011) not only provides participants with the freedom to explore and discover the rules of learning through game play (Bogost, 2008) but also allows for a deeper understanding of simulations and enables learning situated in action to take place (Gee, 2005).



Figure 1: Cube World.

Figure 1 shows the rich and engaging 3D virtual environment of Cube World, an open world MMORPG developed by Picroma, released in 2011, that enables players to explore a large-scaled voxel-based world that is filled with randomly generated features such as grasslands, jungles, deserts and oceans. As is the case in other MMORPGs, Cube World provides access to personal avatars that specialize in different abilities.

In addition, players can interact with each other in real-time using text chat that is displayed in an on-screen text box. Navigation is achieved by the means of keyboard commands that enable players to move and explore the world. Enemies are a mixture of fantasy creatures and animals that inhabit universes corresponding to their real life counterparts. For example, one will encounter wolves in the jungles but not in the deserts and one might encounter a shark in the ocean but not in the rivers running through the grasslands. This realistic element of the game allows participants to relate game dialogues, images, experiences and actions to the context of use, actual experiences, functions and problem solving in the real world. The complex cognitive processes that are elicited during the completion of tasks involving problem solving (Rankin et. al, 2006) make it possible to understand conceptual learning and apply the knowledge obtained.

### Collaborative Learning in Cube World

Previous studies indicate that learners gain opportunities to engage in beneficial types of dialogue through social interaction in popular MMORPGs such as Minecraft (Swier, 2014). However, to date, most research is small scale, limited in scope and tends to focus on “what the players are learning and thinking when they play these games” (Squire, 2002). Few studies have explored learner strategies during task-based interactions or learner attitudes. In order to address these gaps in the literature a case study was undertaken to answer the following questions:

1. What discourse management strategies do learners employed during task-based TL interaction in a MMORPG?
2. What are the learner attitudes to study in a MMORPG?

The case study was held weekly during the fall semester of 2015 involving a class of 10 Japanese EFL students. A pre-questionnaire was administered at the beginning of the class in order to gauge the participants computing skills, gaming experience and linguistic capabilities. All of the participants claimed they possessed competent computer skills but only two of these participants mentioned they had prior background in playing MMORPG games. Nine out of 10 students claimed to have average reading skills while three students admitted to have poor writing skills in the pre-questionnaire. Furthermore, only four students have taken the TOEIC/TOEFL tests.

Similar to other studies (Anfara & Brown, 2001), a triangulation of questionnaires, observations and document analysis rendered a holistic understanding of the situation and generally converging conclusions. Collected data include pre- and post-questionnaires, text chats, in-class video recordings and learner feedback posted on the web-based platform Edmodo after each session. All participants were requested to participate actively in completing the tasks which were designed to meet learner needs, encourage active participation and elicit meaningful collaboration by engaging learners in purposeful interaction using the specific tools provided within Cube World. These tasks were completed in class in order to reduce the possibility of network issues impeding data collection on top of allowing the researcher to observe in-class interactions among the participants. Each task lasted for at least one session per week while some activities were done over a span of two to three sessions. Further relevant information on the tasks can be found in Table 1.

<b>Task</b>	<b>Activities</b>
Self-Introduction	In order to break the ice between participants during their first meeting in the game the learners were required to introduce themselves and explain the reasons for their choice of avatar. They also gave feedback on the avatars chosen by other players.
Find A Place	Each participant was given a different clue and they have to take part in question-and-answer sessions with their group members to reveal the name of the place they were looking for in the game world.
Guessing Game	Learners were given bingo boards with various clues and the learners worked together with their group members to solve the clues in order to complete the bingo board.
Story completion	Learners worked together to fill in the blanks of a fairy tale. The required words and phrases were embedded in the game world.
Description Game	Learners were requested to visit a specific location in the game during a given time limit before heading back to base camp where they described their journey to the other group members.
Obtaining A Pet	At the start of the session, each participant was provided with an incomplete instruction sheet for finding an animal in the game world. The participants have to share and exchange the information they have with each other in order to find the animal specified in the instruction.

Table 1: Tasks.

### **Learner Interaction in Cube World**

The maximum number of players allowed to play on the LAN network was limited to four at a time but for the purposes of this study, the class was divided into groups of four and two players with each player being rotated between the groups so that the participants have the opportunity to interact with everyone in the class. Statements from learner feedback showed that the group size and rotations did not affect the players' interactions.

“Team member was different from last week. I enjoyed joining the game with a new friend and I think I can corporate with new friends well next week too.”  
Learner A

“At this time I worked together with [Learner 2]. He was a friendly person. We work good together. I want to talk more with playing with him.”  
Learner B

Analysis of the text-chats revealed that majority of the participants chose to ask their group members for assistance, regardless of the group they were in. This mutual engagement of participants in coordinated effort to solve the problem together (Roschelle & Teasley, 1995) represents the type of collaborative learning that not only develops social and communication skills but also builds positive attitudes towards peers and learning materials as well as building social relationships and group cohesion (Johnson & Johnson, 1999).

- (1) 1. Learner 1: my target is crocodile  
 2. Learner 2: crocodile?!  
 3. Learner 2: that sounds so hard  
 4. Learner 1: i don't know where thwy live  
 5. Learner 2: lets help each other  
 6. Learner 2: follow me!  
 (3 lines)  
 7. Learner 1: OK, lets go and find out crocodile  
 8. Learner 2: he is live near water  
 9. Learner 1: how you know?  
 10. Learner 1: so, lets go western river  
 11. Learner 2: crocodiles likes water, I think  
 12. Learner 2: let's go

In the above interaction, Learner 1 reveals the target of his/her task and in doing so, elicits help from a group member who obliges, thus creating a collaborative bond between these two participants. The target of the task (in this case, the crocodile) became the subject of subsequent conversations that further helped in strengthening the established coalition as well as helping the participants to focus on the task at hand.

In addition, a significant feature of the data involves either self- or other-initiated correction in the TL as seen in the excerpt below,

- (2) 1. Learner 1: i dont understand what 'fay-man' means...could you tellme?  
 2. Learner 2: fay-man?  
 3. Learner 3: you mean 'hay-man'?!  
 4. Learner 1: yea! yea 'hay-man'!  
 5. Learner 1: sorry!

Learner 1 makes an error in turn 1 in his/her TL output by misspelling the word "hay-man". This utterance draws a swift response for Learner 2 who signals that an error has occurred. In the next turn, Learner 3 provides appropriate corrective feedback. In turn 4, Learner 1 acknowledges the error and apologizes in turn 5. This example draws attention to an advantage of the communication environment provided by the game: learners can view their TL output on screen in real time as it is produced and this may facilitate the noticing first identified by Schmidt (2001).

- (3) 1. Learner 1: you have clues for me?  
 2. Learner 2: yes.  
 3. Learner 2: mosqtoes are active during \_\_ (sunrinse) or \_\_ (sunset)  
 4. Learner 2: sorry! mosquitoes :D  
 5. Learner 1: ww thank u

In interaction (3), Learner 2 commits an error in the form of misspelling "mosquitoes". In turn 4, this learner notices the error and provides the correct spelling and attempts to convey humor through the use of an emoticon in turn 5. As the avatars in this game cannot display facial expressions or use intonation, players normally employ a variety of text and keyboard symbols (emoticons and abbreviations) in an attempt to display these aspects of communication (Danet, 2010). The usage of the emoticon by Learner

2 elicits a positive response by Learner 1 with the abbreviated form of “u” and this learner further displays happiness through the use of the Japanese version of a “LOL” which is “ww”.

More usage of emoticons and abbreviations can be found in the following example.

- (4) 1. Learner 1: u are strong ww  
2. Learner 2: I owe items u gave me ww  
3. Learner 1: sorry I died :(  
4. Learner 2: here r feathers

In the above interaction, Learner 1 and Learner 2 were fighting with an enemy when Learner 1 was “killed” by the enemy. She “revived” to join Learner 2. When they meet up later on, Learner 1 compliments Learner 2’s physical strength using the abbreviated form of “u” and displays a friendly behavior the use of the Japanese version of a “LOL” which is “ww”. Learner 2 accepts the compliment by conveying his thanks to Learner 1 and shows his intention of maintaining the positive relationship between group members by repeating the use of “ww”. Learner 1 apologizes for her “death” accompanied by the sad face emoticon and to this, Learner 2 offers his healing items (in this case, the feathers) to Learner 1.

Interactions (3) and (4) show that both participants utilized paralinguistic cues in the form of abbreviations and emoticons in order to minimize social distance and to build supportive relationships between interlocutors. The friendly atmosphere displayed in the conversations proves that the participants regarded themselves as members of a group, rather than individuals which imply a well-established collaborative relationship between the members.

### **Learner Attitudes and Learner Feedback**

Pre- and post- questionnaires and in-class video recordings disclosed some interesting findings on learner feedback in Cube World. As was noted previously, nine students reported to have average reading skills and three students reported having poor writing skills in the pre- questionnaires but at the end of the semester, seven students strongly agreed that their readings skills had improved and six students either strongly agreed or agreed that their writing skills had improved.

Learner feedback posted on Edmodo revealed that rather than being embarrassed by their errors, the participants perceived mistakes as a source of opportunity. The researcher observed that throughout the sessions, the learners appeared highly motivated.

“Todays game was a little easier and very exciting for me but I could not solve it. The more I experience this class, the better I play this game ;))”

Learner C

Moreover, the learners asserted that a benefit of the game was the access to new vocabulary.

“I found many words I didn’t know such as ‘rooster’, ‘purr’, ‘raccoon’ and more. There are so many words I haven’t seen yet.”

Learner D

In-class video recordings showed that participants seek out the meaning of unknown words and phrases through electronic dictionary applications on their mobile phones. Once they have discovered the meaning of new words or phrases, it was observed that they sometimes share them with other participants. This is an important finding as it is noted in the literature that the feeling of succeeding as a communicator plays an important role in future success (MacIntyre, 2007). This finding echoes previous research (Rubin & Thompson, 1983; Brown, 2000). Data from the learner feedback shows that the participants were clearly comfortable with the communication environment and were willing to take risks in the TL. Moreover, they were open to receiving help in overcoming errors. However, as is noted in the literature, motivation only keeps the learner engaged for a fixed span of time. In this context, motivation is something that emerges from a combination of goals, personal backgrounds, games affordances and institutional context (Squire, 2005b), not just from playing the game or interacting with other players in the game world.

Another observation particularly relevant to the findings of this study is that most of the participants claimed in their feedback that particularly in the early sessions, they had difficulty in understanding the game commands and in controlling their game characters. This in turn lowered their motivation levels by the end of the class. Although this issue requires acknowledgement, it needs to be stressed that the participants claimed they were motivated to learn from errors and mistakes made during communication exchanges and they were engaged by the interactive environment of the game. Post-questionnaires further revealed this, as indicated in the following comment:

“in normal classroom, we sit and listen to the Professor but in this class, we read and type in English while playing games. This keeps motivation up and students will be more willing to study.”

Learner E

### **Conclusion and future directions**

Data analysis revealed the presence of extensive collaborative dialogue involving forms of self- and other- initiated correction. Data shows that viewing TL output on screen in real time helped in drawing attention to errors and eliciting appropriate feedback in facilitating peer scaffolding. Moreover, it was found that learners use paralinguistic clues such as abbreviations and emoticons in order to maintain social cohesion and to replicate the beneficial collaborative relationships that are found in real life face-to-face communication in the computer-based communication of the game. Learner feedback indicates that the rich 3D world provided by the game appears to enhance motivation and engagement.

However, a case study involving a small group of participants in a relatively unknown game cannot offer definitive results. Furthermore, computer lag proved to be a limitation as participants had to deal with typing in the chat box as well as dealing with the time delay between typing and reading the chat text. This case study, though

experimental, indicates that MMORPGs such as Cube World provide an engaging learning tool for the new generation of learners.

Knowing and understanding how learners adapt various strategies in their interactions and how learners perceive learning through digital games are essential parts of the foreign language pedagogy. These findings have implications for future research. Going forward, educators may investigate the implementation of meaningful task-based activities with the goal of better comprehending how participation in MMORPG-based gaming enables learners to engage in valuable forms of TL interaction that expand their learning skills. Furthermore, future studies into learner attitudes offer the prospect of enhancing understanding of learner in-game experiences.

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