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## The Effects of an MMORPG on Thai EFL University Students' Reading for Main Ideas

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**Abstract.** This study aimed to explore the effectiveness of using a massively multiplayer online role-playing game (MMORPG) as a tool for improving students' English reading skills, specifically in identifying main ideas. The study employed a quasi-experimental method to gather comprehensive data, including pre-tests and post-tests consisting of 25 items each, to measure students' performance before and after utilizing the MMORPG. Additionally, a 15-question questionnaire was used to assess students' perceptions of using an MMORPG for reading instruction, and semi-structured interviews comprised of five questions were conducted to delve deeper into students' experiences and opinions. A purposive sample of 35 students enrolled in an English reading course at a university in Nakhon Ratchasima, Thailand was selected for participation. The findings reveal a significant improvement in participants' post-test scores compared to their pre-test scores (the results of participants' post-test scores increased from the pre-test scores at 6.657,  $p = .000$ ), indicating enhanced understanding of main ideas through MMORPG-based instruction. Moreover, the majority of participants expressed enjoyment and enhanced learning experiences using the MMORPG approach. This research study has implications for course developers, emphasizing the importance of a systematic process in MMORPG design and exploring the pedagogical benefits of incorporating an MMORPG as an alternative teaching method for similar subjects.

**Keywords:** online games; online learning; reading; role-playing game; teaching reading

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## 1. Introduction

Among the four language skills – reading, writing, listening, and speaking – this study places particular emphasis on reading, with the aim to investigate the way in which a massively multiplayer online role-playing game (MMORPG) affects the comprehension of main ideas. Reading is widely recognized as the most crucial skill among these language skills, as it plays a vital role in improving overall language proficiency (Krashen & Brown, 2007). By examining the impact of an MMORPG on reading, this study sought to shed light on the broader implications for language learners and their ability to understand key concepts. Despite the importance of English as a global language, the English proficiency of Thai students has been found to be very low, with the country ranking 89th out of 100 non-native English-speaking countries in 2021 and 100th out of 112 countries in 2021, with a score of 419 out of 800, which is considered significantly low (Bangkok Post, 2020). Consequently, numerous research studies have been conducted to investigate potential methods to improve the English proficiency of Thai students, with one of the recommendations being the explicit teaching of English skills.

Moreover, most research studies focus on the teaching of reading skills because reading is considered the foundational skill that students should acquire before learning other language skills. In Thailand, despite their English proficiency remaining significantly low, Thai students are taught English from Grade One or even at the kindergarten level. Challenges for Thai students arise from various factors, and extensive research studies have examined the reasons behind their low level of English proficiency (Kaur et al., 2016; Noom-ura, 2013; Panichakul, 2015; Sreena & Ilankumaran, 2018; Walakanon, 2014). These studies have identified several primary factors influencing students' English proficiency, including a lack of motivation to learn English, students' attitude towards English usage, and the use of inappropriate teaching methods or techniques. To enhance students' English language skills, various teaching techniques have been implemented, of which one is the use of online games for teaching.

This study used the MMORPG for various reasons. First, the computer-based MMORPG used in this study offered clearer texts and a more expansive view for reading, making it more suitable for learning compared to mobile phone apps. Second, integrating educational content into online games requires complex techniques, as most games are primarily intended for entertainment. The game designer met the challenge of carefully harmonizing the educational elements of the game with the text-based reading passages. Lastly, while many research studies have employed online games primarily designed for entertainment purposes, this study addressed the concern by customizing an online game into an educational tool by specifically targeting reading difficulties among students, ensuring the game's suitability for language learning (Hapsari et al., 2019; Zhang et al., 2017).

## 2. Research Questions

Two research questions are addressed in this study:

1. What are the effects of an MMORPG on Thai undergraduate students' reading for main ideas?
2. What are Thai undergraduate students' perceptions of learning reading for main ideas via an MMORPG?

## 2. Literature Review

### 2.1 The Importance of Reading

Reading is explicitly taught in most schools because it is considered one of the most important skills that students must learn, as it is the foundation for learning and essential for acquiring knowledge from textbooks, articles, digital resources, and other written materials. Reading comprehension is also taught to higher level Thai students, rather than spelling and reading aloud. Comprehension is related to the reader's ability to process the text, make sense of the meaning, and integrate it with the reader's own background. Reading instruction in schools encompasses various models, namely the bottom-up or top-down approaches and interactive model, each rooted in different language theories and perspectives. The bottom-up approach emphasizes decoding and analyzing individual elements of written language, while the top-down approach focuses on readers' background knowledge and experiences. The interactive model integrates both linguistic and background knowledge to facilitate comprehension (Aebersold & Field, 1997; Nuttall, 1982). These models are informed by behaviorism, constructivism, and interactionism, offering valuable insights into effective reading instruction. However, it is essential to adopt a flexible approach that meets the diverse needs of learners, employing a balanced mix of models and strategies to develop reading skills, comprehension, and critical thinking abilities. It is common for readers to encounter difficulties while reading, such as losing their place and focus, not grasping the main point, or forgetting what they have read (Osborne, 2010). Therefore, reading strategies play a crucial role in helping students overcome these challenges. Specifically, the main-idea strategy has the potential to enhance the reading comprehension performance of students who struggle with understanding inferential main ideas. Through the implementation of this strategy, both explicitly and implicitly, students can experience significant improvements in their reading skills and achieve greater success as readers (Boudah, 2013).

### 2.2 Reading for Main Ideas

Reading comprehension necessitates readers gaining an understanding of the main ideas in a text, but many people lack effective strategies. To improve comprehension, it is important to use techniques such as reading the introduction and conclusion, focusing on topic sentences, and organizing ideas for better understanding (Mannes & Kintsch, 1987). Therefore, specific methods have been introduced to help students read for an understanding of main ideas.

To enhance comprehension of main ideas, teachers can employ various teaching methods, such as anchor charts, visuals, and emphasizing titles. Furthermore, the utilization of games and online games in English language learning, including

reading, has gained popularity. Researchers such as Ariani (2010), Gozcu and Caganaga (2016), and Ronimus et al. (2019) have investigated the effectiveness of integrating games and online games in developing students' reading skills, particularly their ability to comprehend main ideas. These interactive and engaging approaches have demonstrated potential in improving students' grasp of main ideas within the context of English language learning. One example is a research study conducted by Jitendra et al. (2000) to investigate the effectiveness of main-idea strategies and self-monitoring instruction on students' reading comprehension. Participants were 33 middle school students in the north-eastern United States, who were divided into two groups. One was the control group and the other was the experimental group, where students were taught how to identify and generate main-idea statements using reading for main-idea instruction and a self-monitoring process. Students in the experimental group outperformed students in the control group. The conclusion from the research study is that the explicit teaching of reading for main ideas can help students learn more effectively.

### **2.3 Online Games in English Language Learning**

There are ten categories of instructional techniques that assist learners in achieving learning objectives or internalizing content: presentation, demonstration, discussion, drill and practice, tutorial, project-based learning, gamification, simulation, discovery, and problem-solving (Heinich et al., 2002). When designing an English course, teachers can utilize technology when teaching these methods to create an engaging learning environment that fosters student involvement and facilitates learning. One of the most relevant aspects of using technology to aid language teaching is to integrate learning with using online games. Technology is now vital both inside and outside the classroom. It offers interactive learning, access to educational resources, collaboration among students, as well as personalized learning, and prepares students for the digital world. Educators can also use technology to tailor instruction, track student progress, and provide feedback, creating a more effective learning environment. Employing online educational games is one of the most popular ways of embedding technology in teaching.

In some countries, the use of online games is a cause for concern because it is thought that they can be harmful and addictive for young children; however, online games are also beneficial for language teaching in various fields. In a study conducted by Alyaz and Genc (2016), the educational role-playing game (RPG) *Adventure German - A Mysterious Mission* was employed. The findings indicate that utilizing this game resulted in enhanced professional language skills among pre-service teachers. Furthermore, the teachers exhibited a positive attitude towards incorporating the game into their teaching practices. Due to advancing technology, numerous online games are now available for language teaching and learning.

Several research studies have explored the integration of online games into language teaching and learning. In their study, Ng et al. (2022) examined online game-related tasks and their impact on the language performance of language

learners. Through a comprehensive review of literature from various databases, they identified several factors within online games that contribute to language acquisition, including competition among peers, collaborative discussions, versatile game elements, and learner empowerment. The study highlighted the importance of implementing game-related tasks in online games as effective linguistic tools for enhancing language learning. Another study of the use of online games in language teaching was undertaken by Kazu and Kuvvetli (2023), who explored the perspectives of 69 8th Grade students by using digital games as a method for learning English as a foreign language. Their findings show that the students viewed game-based language learning positively and considered it highly successful due to the in-game power-ups, competitive elements, and rapid feedback.

Computer games can be classified into eight different genres: action games, adventure games, fighting games, puzzle games, RPGs, simulations, sports games, and strategy games. Teachers should therefore select the appropriate game that best aligns with the lesson objectives in language lessons. In this study, an RPG was chosen because it was considered a highly complex game (O'Brien, 2010) that engages players through features such as unique characters, settings, items, and inventory. Additionally, there are several types of RPGs, including action RPGs, tactical RPGs, and MMORPGs, which are among the most popular games (Yee, 2016) being played by millions of people worldwide.

#### **2.4 Massively Multiplayer Online Role-Playing Game**

As one of the most popular online game types, MMORPGs are a combination of role-playing video games (RPG) and massively multiplayer online games (MMO), in which a large number of players interact with one another within a virtual world. Examples of MMORPGs include World of Warcraft (WOW) and EverQuest, both of which contain simulation and interaction among game players.

Bryant (2006) conducted a research study to investigate the social aspect of language acquisition in students who played the MMORPG WOW at home. The study focused on student interactions with the researcher concerning the use of modal verbs in German. The results show that each student was provided with opportunities to use collaborative skills (such as communication, active listening, problem-solving, etc.) while playing the game, and the game also increased the students' intrinsic motivation for looking up unfamiliar words in a dictionary after playing the game. Hapsari et al. (2019) examined the impact of the MMORPG Dota 2 on English language learning. The study explored gamers' perspectives and found that Dota 2 facilitated incidental learning of English. The game's user-friendly platform and comprehensible language contributed to this effect. Additionally, gamers were able to improve their reading skills and expand their English vocabulary through gameplay.

#### **2.5 Theoretical Framework**

In this research study, an MMORPG was customized to help improve Thai students' English reading for main ideas. Gaming provides a playful environment in which learners follow the rules while striving to achieve challenging goals. This

technique is highly motivating and can be implemented individually or in groups. The most effective way to encourage specific behavior in gaming is by rewarding it. Figure 1 illustrates the theoretical framework of this study.

<b>Positive Reinforcement</b> <ul style="list-style-type: none"> <li>Positive behavior followed by positive consequences</li> </ul>	<b>Negative Reinforcement</b> <ul style="list-style-type: none"> <li>Positive behavior followed by removal of negative consequences</li> </ul>	<b>Reward systems (e.g., gold coins) make the game more pleasurable and fun</b>
<b>Punishment</b> <ul style="list-style-type: none"> <li>Negative behavior followed by negative consequences</li> </ul>	<b>Extinction</b> <ul style="list-style-type: none"> <li>Negative behavior followed by removal of positive consequences</li> </ul>	

**Figure 1: Theoretical framework of reward systems**

### 2.5.1 Rewarding and operant conditioning

Online games primarily utilize the inherent nature of progression to promote behavioral adjustments in players, particularly to enhance efficiency in players' everyday actions by rewarding them for achieving desired behavioral outcomes. This advantage allows games to serve as a beneficial tool with the potential to empower individuals or groups in terms of control and development.

According to Garaialde et al. (2021), gamification employs game-like rewards and feedback to motivate behaviors. This approach incorporates rewards such as points, levels, badges, and leaderboards, accompanied by visual feedback. Furthermore, the use of these techniques has been proven effective in boosting app usage and increasing participation. Gamification is commonly employed in education and exercise contexts, offering short-term rewards for sustained user engagement (Garaialde et al., 2021). Therefore, game designers should include the feature of a reward system when designing a game in order to make it both fun and challenging.

### 2.5.2 Memory

The integration of online games in language learning has a positive impact on students' cognitive development, as it enhances various cognitive abilities, such as sustained attention, logic and reasoning, and long-term memory. For instance, children who engage in online games exhibit improved memory, problem-solving skills, hand-eye coordination, and comprehension abilities. Blacker and Curby (2013) found that playing action games positively affects visual short-term memory. In their study of 121 undergraduate students, participants engaged in a task in which they needed to determine color matches between memory arrays and test arrays. The results show that playing video games in immersive visual environments improved visual memory accuracy. This suggests that video games can be beneficial for enhancing student memory, as their engagement and interest in gaming contribute to better retention of game content. Additionally, online games are specifically designed to captivate and immerse users in dynamic characters and thrilling adventures.

### 2.5.3 Motivation

Learners acquire more knowledge outside of the classroom in the subjects they choose themselves, regardless of their sociocultural background. They are more

motivated to learn through their own experiences in an informal context (Chen, 2015). In learning via online games, the learners are intrinsically motivated and able to control their own learning of knowledge, skills, and abilities. Online game-based learning empowers learners with intrinsic motivation, allowing them to independently acquire knowledge, skills, and abilities, while the availability of external learning materials beyond the classroom enhances student interest and motivation. Access to learning materials outside the classroom and the use of formative assessment methods such as observation, discussion, and small quizzes are important factors in increasing students' interest and motivation to learn, especially when considering the difference in assessing informal learning outcomes compared to formal classroom learning (Meyers et al., 2013).

### 3. Methodology

#### 3.1 Participants

The participants in this study were 35 students who were studying the English for Academic Purposes course at a university in Nakhon Ratchasima, Thailand in the academic year 2021. The participants were purposively selected to participate in this study based on their availability, because the study was conducted during the beginning of the Covid-19 pandemic. They were non-English-major students studying in the field of science and technology, with an average of 15 years of English language learning.

#### 3.2 Research Design

The research utilized a time-series quasi-experimental design to assess the effects of an MMORPG on students' reading for main ideas. Tests were conducted before and after the experiment at different times, with data being collected at multiple time points. The design included a pre-test, the experiment, and post-test for a single group, as illustrated in Figure 2.

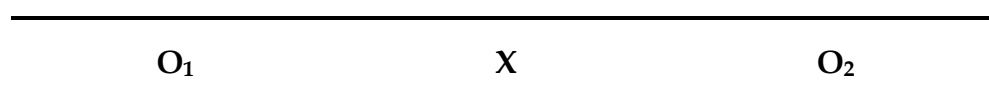


Figure 2: Time-series quasi-experimental design

O<sub>1</sub> represents the measurement of participants' English reading for main-idea knowledge before engaging in reading for main ideas via the MMORPG; X represents the experiment of teaching English reading for main ideas via the MMORPG; and O<sub>2</sub> represents the measurement of participants' English reading for main-idea knowledge and satisfaction after participating in reading for main ideas via the MMORPG.

#### 3.3 Research Instruments

Five research instruments were used in this research study to identify the effects of the MMORPG and determine whether it can help students to improve their English reading for main ideas. Furthermore, they were used to explore participants' perceptions when using the MMORPG in learning English reading for main ideas. The research instruments were lesson plans, the MMORPG, reading tests (pre-test and post-test), questionnaire, and semi-structured interview.

### 3.3.1 Lesson plans

We developed lesson plans for this study based on reading for the main-idea contents for university courses. The lesson plans were adapted for online teaching, and online learning activities were supplemented by the use of the MMORPG. To ensure the validity of the lesson plans, they were reviewed by three experts who assessed them for item objective congruence (IOC) values. The lesson plans were adjusted based on the advice provided by the experts.

### 3.3.2 MMORPG

An MMORPG called Defense of the Ancient 2 (Dota 2) was chosen in this study. Dota 2 is a highly complex game known for its engaging elements, such as unique characters, setting, and inventory. In fact, Dota 2 is classified as a multiplayer online battle arena (MOBA) game, where two teams compete in a single map. Additionally, the game offers a custom mode that allows communities to create their own maps. In this study, we created a customized map within the Dota 2 platform to match with their particular requirements. Therefore, it was developed for university students to facilitate their learning of reading for main ideas. Dota 2 is a game in which two teams compete in the same battlefield; it also provides a platform for players and game developers to create their own games by decorating the map and coding additional functions.

The construction of the MMORPG involved several steps. First, we examined the difficulties that students faced in learning the English language. Based on this understanding, the contents and lessons of the MMORPG were crafted by integrating reading texts and vocabulary into the game's features through coding. The development of the MMORPG included receiving evaluations and feedback from three experts. Following this, a pilot study was conducted to test the MMORPG, and any necessary adjustments were made to finalize the game. Figures 3 and 4 provide examples of the ways in which reading texts and vocabulary were integrated into the MMORPG.

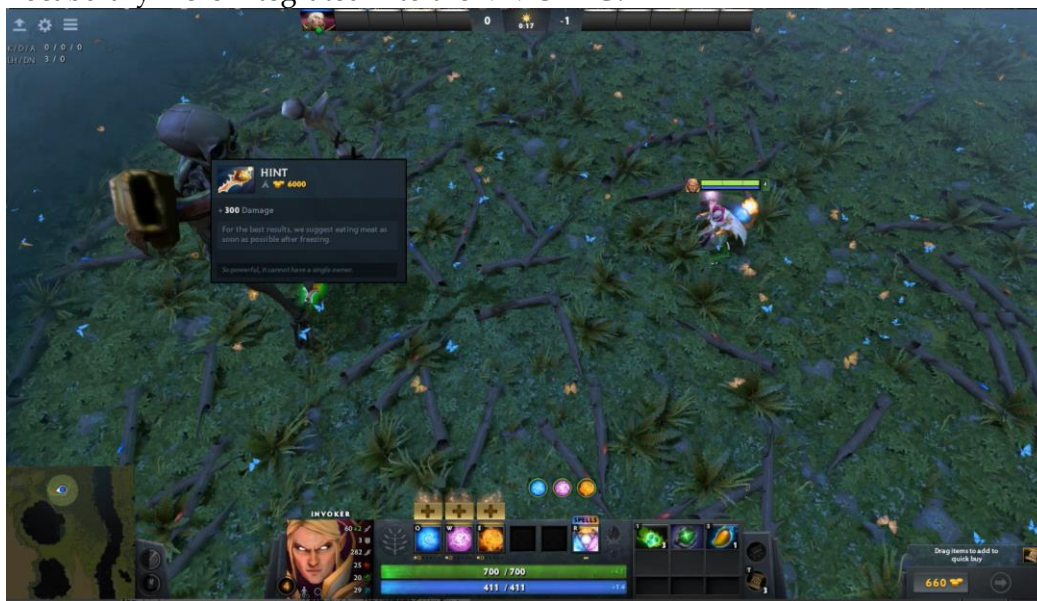


Figure 3: Collecting items and receiving a corresponding hint sentence on the MMORPG





**Figure 4: Essential vocabulary needed for reading throughout the MMORPG game map**

### 3.3.3 Reading tests

Reading tests of 70 items were also sent to experts in English teaching fields to determine the IOC value before being administered to the students in the pilot study. Next, an item analysis of the tests was performed using Microsoft Excel to determine the difficulty and discrimination levels. Items with the appropriate difficulty and discrimination levels were divided into two tests: the pre-test and the post-test. After that, the tests were administered to students in the pilot study and adjusted according to the experts' recommendations. Pre- and post-tests in a research study allow researchers to compare measurements taken before and after an experiment or intervention. This comparison helps researchers to determine whether the experiment has a significant effect on the dependent variable, and statistical analysis is employed to measure the significance of these changes.

### 3.3.4 Questionnaire

The questionnaire served as a tool for collecting quantitative and qualitative data on participants' perceptions of using an MMORPG for reading for main ideas. The questionnaire included two sections. The first section consisted of four questions and was intended to collect general information about the participants. The second section, containing 15 questions, explored the participants' perceptions of learning English reading for main ideas through the MMORPG. To measure the participants' perception levels, a five-point Likert scale was employed. This scale presents a declarative statement followed by response options ranging from *strongly agree* to *strongly disagree*. To ensure a deeper understanding, the questionnaire was delivered in the native Thai language to prevent language barriers.

### 3.3.5 Semi-structured interview

In this study, semi-structured interviews were conducted online in the participants' native language (Thai) to gather in-depth data on their perceptions

of using an MMORPG for learning reading for main ideas. These interviews provided insights into participants' evaluations of the MMORPG and their learning experiences. The interviews were conducted individually, allowing for focused and direct communication between the interviewer and each interviewee. The goal was to understand the participants' perceptions and feelings about learning through an MMORPG in relation to their overall learning success.

The research instruments and research procedures are described in Figure 5.

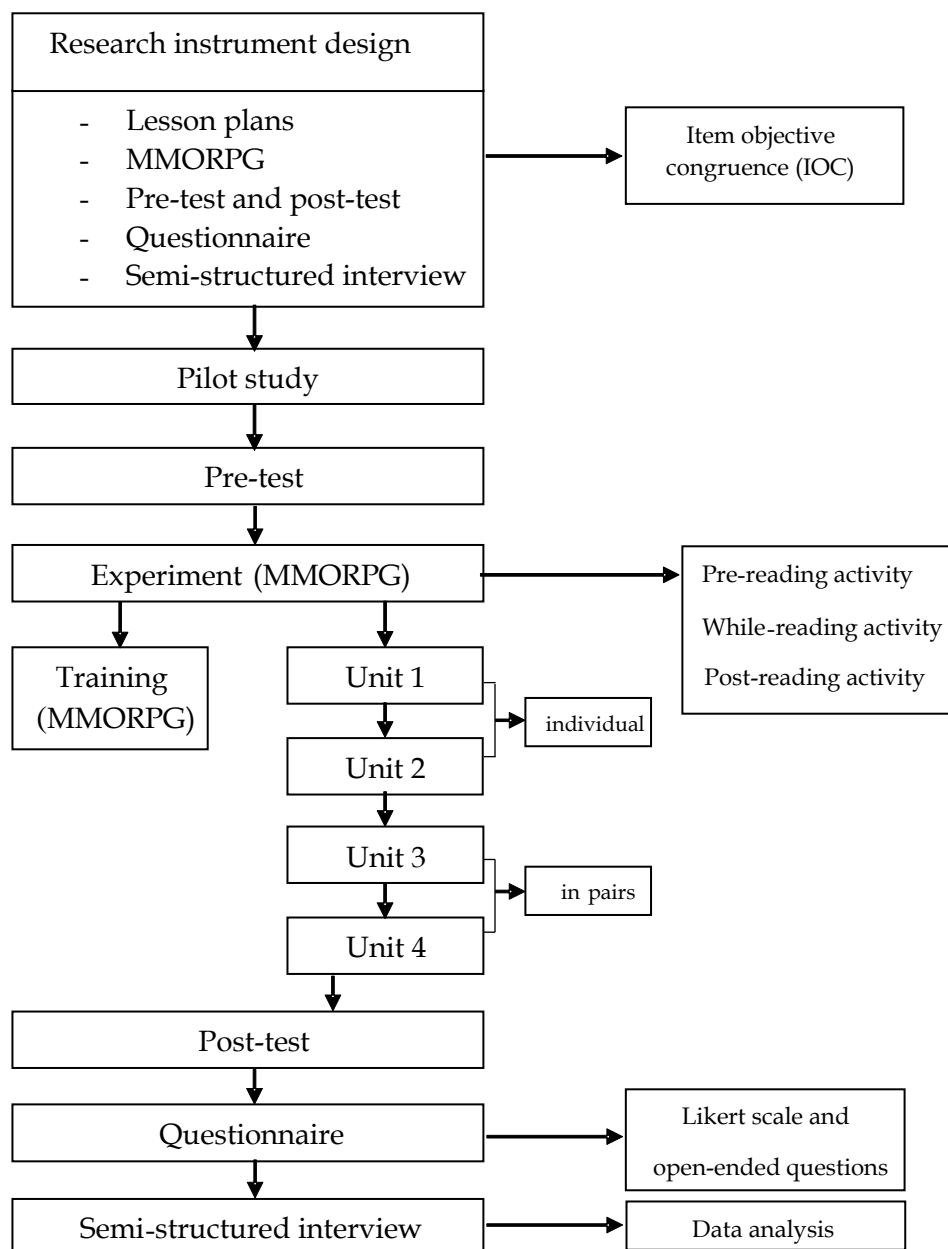


Figure 5. Research instruments and research procedures

### 3.4 Data Collection Procedure

The data collection procedure for this study were conducted in several steps. First, the participants in the experimental group underwent a pre-test consisting of 25 items to assess their knowledge of reading for main ideas. Following that, the participants engaged in online learning by studying reading for main ideas through videos on Google Drive. They also practiced reading for main ideas using the MMORPG and completed quizzes after each practice unit.

After the practice sessions, the participants took a post-test comprising 25 items to evaluate their progress in reading for main ideas through MMORPG practice. The scores of the pre-test and post-test, which both consisted of 25 items, were analyzed using SPSS software, specifically the paired sample *t*-test mode. This analysis aimed to determine whether there were any significant differences between the pre-test and post-test scores by examining the mean scores and standard deviation.

Furthermore, after completion of the experiment, the participants were administered a questionnaire consisting of 15 questions on a 5-point Likert scale to assess their perceptions of reading for main ideas through an MMORPG. The responses to these questions were analyzed to calculate the mean score and standard deviation, providing insights into the participants' perceptions of learning reading for main ideas. Lastly, semi-structured interviews were conducted with the participants to gain a deeper understanding of their perceptions of using an MMORPG to help with reading for main ideas. The transcripts of these interviews were analyzed to extract in-depth information about the participants' perspectives. The data collection procedure is demonstrated in Figure 6.

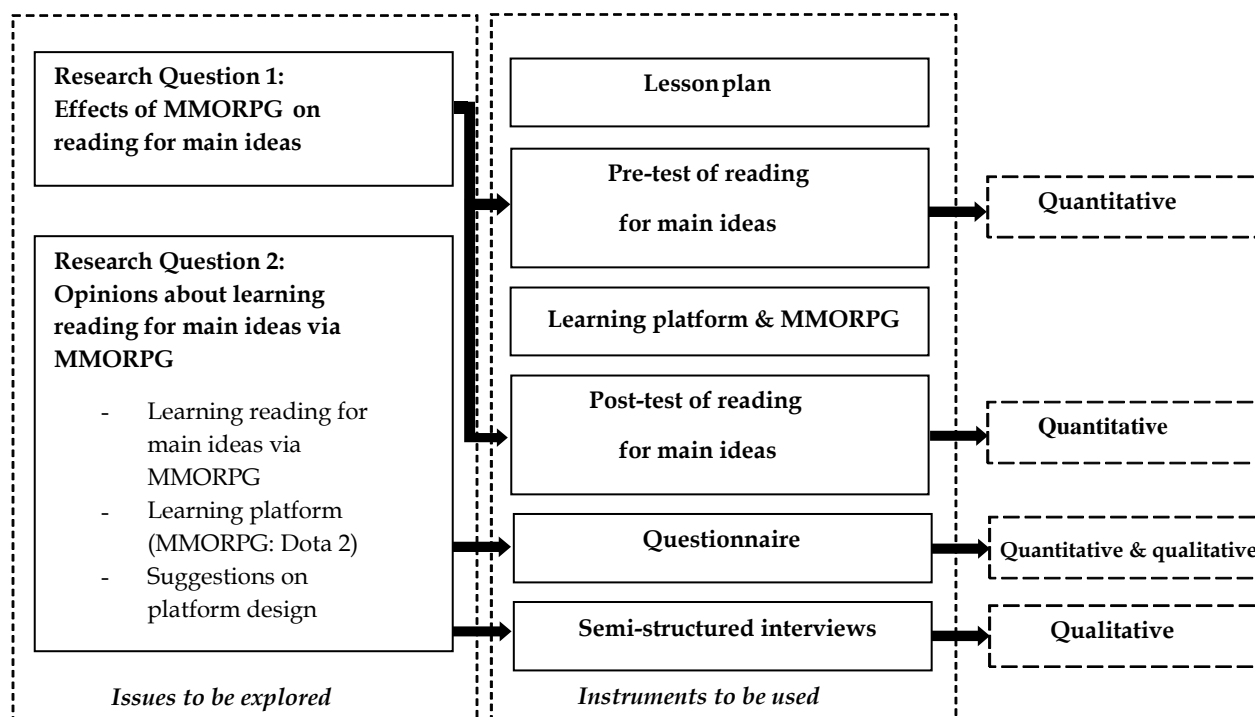


Figure 6: Research instruments and research procedures

### 3.5 Data Analysis

The collected data were analyzed and interpreted using different methods. Quantitative data were analyzed using SPSS software, specifically employing the paired sample *t*-test to assess the differences between pre-test and post-test scores. The questionnaire data were analyzed using Microsoft Excel, calculating the mean score ( $\bar{X}$ ) and standard deviation (SD). Qualitative data, obtained through semi-structured interviews, conducted in the participants' native language (Thai), were recorded and transcribed. The analysis of qualitative data involved identifying themes and developing categories.

## 4. Results

### 4.1 Results from Pre-Test and Post-Test Scores

This section presents the results derived from the comparison of mean scores from the pre-test and post-test on English reading for main-idea knowledge, according to the first objective of this study. The mean scores, standard deviations, and *t*-values are presented in Tables 1 and 2.

**Table 1: Paired sample statistics of participants' pre-test and post-test results**

		Mean	N	Std. deviation	Std. error mean
Pair 1	Post-test	14.26	35	3.600	0.609
	Pre-test	7.60	35	2.626	0.444

A paired sample *t*-test was used to compare the average scores of the participants on the pre-test and post-test. As shown in Table 1, the results reveal that the post-test scores ( $M = 14.26$ ) were significantly higher than the pre-test scores ( $M = 7.60$ ), indicating a statistically significant difference between the two sets.

**Table 2: Comparison of participants' reading for main-idea knowledge before and after the MMORPG experiment**

Variables	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		<i>t</i>	df	Sig. (2-tailed)
				Lower	Upper			
Post-test- Pre-test	6.657	3.253	0.55	5.54	7.775	12.105	34	0

\* $p < 0.05$  (2-tailed)

The results from the pre-test ( $M = 7.60$ ,  $SD = 2.626$ ) and post-test ( $M = 14.26$ ,  $SD = 3.600$ ) indicate that the use of the MMORPG resulted in an improvement in reading for main ideas ( $t [35] = 12.105$ ,  $p [0.000] < 0.05$ ). Therefore, there is a statistically significant difference between the pre-test and post-test mean scores. Our findings thus show that there was a positive effect on participants' learning after using the MMORPG, demonstrating that it can help students improve their skills in reading for main ideas.

## 4.2 Results from the Questionnaire

The questionnaire was administered to the participants to explore their perceptions of using an MMORPG to assist with learning reading for main ideas. The statements of the questionnaire are based on a survey of students who played MMORPGs in a pilot study. Participants in the pilot study were asked to rate items on a scale, which allowed for standardized analysis of their responses. The survey results from the pilot study were developed into a 5-point Likert scale, which was employed in this research study for the participants to rate each item. The Likert scale ranges from 1 to 5, where 1 represents strong disagreement and 5 represents strong agreement. The average scores of participants' perceptions about learning reading for the main ideas via the MMORPG are presented in Table 3.

**Table 3: Participants' perceptions about learning reading for main ideas using the MMORPG**

Item	X	SD	Interpretation
1. I like learning to read for main ideas through a Massively Multiplayer Online Role-Playing Game because it is fun.	4.43	0.608	Satisfied
2. I like the various points of the map in the game very much because they make me feel excited when learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game.	4.34	0.725	Satisfied
3. Learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game encourages me to participate more in class.	4.26	0.561	Satisfied
4. I enjoy learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game very much.	4.43	0.655	Satisfied
5. I like learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game because I can play it with my friend.	4.46	0.561	Satisfied
6. I like learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game with my friends because I can discuss the reading content with them.	4.34	0.539	Satisfied
7. I believe that learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game together with my friends helps me read English passages better.	4.40	0.553	Satisfied
8. I like the chat function of the Massively Multiplayer Online Role-Playing Game because I can contact my friends in real time.	4.31	0.631	Satisfied
9. While learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game, I always discuss it with my friends via the chat function.	4.06	0.539	Satisfied

10. I also share my reading sentences or vocabulary meaning via the chat function of the Massively Multiplayer Online Role-Playing Game when learning to read for main ideas.	4.46	0.505	Satisfied
11. I like gold coins in the Massively Multiplayer Online Role-Playing Game because I can use them to buy items that make my hero get stronger.	4.60	0.553	Satisfied
12. I feel excited when I level up and finally win the Massively Multiplayer Online Role-Playing Game.	4.49	0.612	Satisfied
13. I want to play the Massively Multiplayer Online Role-Playing Game again to practice my reading more.	4.63	0.490	Satisfied
14. I become an active learner when learning to read for main ideas through the Massively Multiplayer Online Role-Playing Game.	4.40	0.553	Satisfied
15. I am interested in learning English reading for main ideas through the Massively Multiplayer Online Role-Playing Game because I want to understand the ways in which games can enhance and facilitate my learning process.	4.34	0.539	Satisfied
<b>Total</b>	<b>4.40</b>	<b>0.57</b>	<b>Satisfied</b>

To assess participants' perceptions of learning reading for main ideas via an MMORPG, a survey consisting of 15 items was utilized. Participants provided self-ratings using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The specific definitions for each point on the Likert scale are presented in Table 4.

**Table 4: The 5-point Likert scale conversion to level**

Numerical scale	Weighted mean interval scale	Mean descriptive equivalent
5	4.21-5.00	Very high
4	3.41-4.20	High
3	2.61-3.40	Moderate
2	1.81-2.60	Low
1	1.00-1.80	Very low

According to the participants' responses, the questionnaire results were categorized into three themes. **First**, with regard to reading improvement, item 13 received the highest score ( $X = 4.63$ ,  $SD = 0.490$ ), with 92.6% of the participants strongly agreeing that they would like to play an MMORPG again to practice their reading skills further.

**Second**, the reward system in the game was highly regarded, with 92% of the participants strongly agreeing with item 11, making it the item with the second highest score ( $X = 4.60$ ,  $SD = 0.553$ ). This indicates that the participants appreciated the reward system as it allowed them to strengthen their heroes and enhance their understanding of main ideas through the MMORPG.

**Lastly**, in terms of the fun and excitement provided by the MMORPG, 89.8% of the participants strongly agreed with item 12 ( $X = 4.49$ ,  $SD = 0.612$ ), signifying their excitement, particularly when they leveled up and achieved victory in the game.

### **4.3 Results from the Semi-Structured Interviews**

The results from the semi-structured interviews were grouped into themes according to the participants' responses.

#### *4.3.1 Fun and motivation*

Participants expressed that learning English reading for main ideas using the MMORPG was enjoyable and fun. Furthermore, the game format made learning feel engaging and not like traditional classroom learning. Playing the game and learning English simultaneously was also seen as a motivating factor.

#### *4.3.2 Understanding texts and meaning*

Some participants highlighted that the game characters or content helped them to better understand the reading material. Moreover, the game facilitated comprehension by providing context and aiding in the recall of content.

#### *4.3.3 Memory*

Several participants mentioned that the game helped them to remember vocabulary and reading content more easily, and the inclusion of vocabulary in the game enhanced their ability to read and comprehend texts.

These results show that the participants liked the MMORPG. They believed that it allowed them to learn in a more pleasurable and playful environment while also helping them to improve their reading ability. The semi-structured interview results match with those from the questionnaire in items 1 and 4 (1. I like learning to read for main ideas through a Massively Multiplayer Online Role-Playing Game because it is fun; 4. I enjoy learning English reading for main ideas through a Massively Multiplayer Online Role-Playing Game very much). One of the participants mentioned in the interview that they liked learning reading for main ideas via the MMORPG because it is similar to the game that they were playing, which was really fun, and they liked the way they could play a game and learn English at the same time. They did not feel like they were learning in the classroom at all.

## **5. Discussion**

The results of the research study reveal that MMORPGs can help students to improve their English reading for main ideas. The discussion section is divided into two main points: advantages of the MMORPG and difficulties that participants faced while learning.

### **5.1 Advantages of the MMORPG**

Below, the advantages of the MMORPG are presented in greater detail.

### 5.1.1 Fun and motivation

As an example of an MMORPG, Dota 2 has proven to be a fun and motivating tool that can improve students' reading skills and develop their vocabulary knowledge. Additionally, Moreira's (2013) research showed that students who engaged with Dota 2 experienced improvements in English reading and writing skills due to the game's incorporation of heroes' skills and item definitions. This indicates that MMORPGs can positively impact learning, particularly in reading, by providing an enjoyable form of encouragement and motivation.

### 5.1.2 Memory enhancing

Furthermore, MMORPGs play a significant role in enhancing students' memory and cognitive skills. According to Cowan (2014), MMORPGs develop students' working memory for cognitive tasks, while the visual memory aspect of these games helps students to connect reading texts with the graphics they encounter during gameplay. This finding is reinforced by Clemenson and Stark (2015)'s study, which suggests that active engagement with game elements in online games enhances students' memory abilities.

### 5.1.3 Reward system and motivation

The reward system within MMORPGs also plays a significant role in improving students' reading skills and vocabulary knowledge. By having positive consequences, the game motivates students to practice reading repeatedly, leading to the development of literacy skills. Furthermore, students can enhance their vocabulary knowledge by remembering the words that they have encountered in the game and associating them with the objects and meanings provided in the MMORPG environment.

Overall, MMORPGs provide a distinctive and captivating platform that has a positive influence on students' learning, motivation, reading skills, and vocabulary knowledge. By integrating enjoyable gameplay elements and promoting active engagement, these games establish an effective learning environment that fosters student progress and enjoyment throughout their educational journey.

## 5.2 Difficulties Faced by Participants During Learning

Some participants faced difficulties with learning equipment, while others found that poor internet connection interrupted their learning. Moreover, some participants could not afford to pay for internet. This represents a key concern of teachers, not only for students studying English reading for main ideas via an MMORPG but also for students studying other subjects. Adris and Yamat (2015) highlighted that online learning equipment and internet connections should be available for students to enable learning via technology.

## 6. Conclusion

This research study aimed to investigate the effects of the MMORPG on students' comprehension of main ideas and to examine their perceptions of reading for main ideas using an MMORPG. To address these research objectives, a mixed-method approach combining quantitative and qualitative methods was employed. The study utilized multiple research instruments, including an MMORPG, lesson plans, pre-test and post-test assessments, a questionnaire, and



semi-structured interviews. In summary, the results of the study can be outlined as follows: 1) the pre-test and post-test scores were significantly different, indicating a significant improvement in participants' knowledge of reading for main ideas; 2) the questionnaire and semi-structured interview results indicate that participants had positive perceptions of using an MMORPG for learning reading for main ideas. It can be concluded that participants enjoyed using an MMORPG because it was suitable to facilitate their knowledge of reading for main ideas.

The findings of the present study align with previous research that incorporated online games in language classrooms, suggesting that MMORPGs can serve as effective teaching and learning tools to enhance students' reading comprehension skills. Several factors support this claim. First, previous studies (Alyaz & Genc, 2016; Hapsari et al., 2019) have shown that online games can improve language students' reading and vocabulary abilities. Second, online games have been found to enhance students' intrinsic motivation (Bryant, 2006).

## **7. Pedagogical Implications**

The results of the current study demonstrate that the utilization of an MMORPG has led to improvements in students' reading comprehension of main ideas as well as their motivation levels. Most importantly, the results of the present study have raised many interesting questions and implications for pedagogy and further study.

### **7.1 Language Skills to be Applied with MMORPGs**

MMORPGs can also be applied to teaching other language skills, for example listening, speaking, and vocabulary, because MMORPG game features also support these functions.

### **7.2 Game Design and Function**

Using MMORPGs as an educational tool necessitates that educators possess a deep understanding of their functioning and features as well as expertise in game coding. This knowledge is crucial for successfully integrating MMORPGs into educational settings and creating engaging and educational games. Educators can be empowered by acquiring the necessary skills and knowledge to leverage the full potential of MMORPGs as effective teaching tools.

### **7.3 Utilizing Game Features to Draw Attention**

It would be interesting for teachers and game developers to transform the MMORPG into a quest by creating storytelling games or stages that utilize the game's features and graphics to capture students' attention. The visually appealing game maps and features have the potential to attract and engage players.

## **8. Limitations**

One limitation of the study is that it did not include live online teaching, which limited participants' ability to ask immediate questions and receive real-time clarification on the learning content. Participants expressed a preference for live

video sessions as they found them more engaging and interesting. Additionally, the study did not provide an adequate number of examples and exercises related to finding main ideas in the lesson. Participants suggested that increasing the number of these resources would allow for more practice and improve learning efficiency. Therefore, incorporating live teaching and increasing the availability of practice materials could enhance the overall effectiveness of the study.

Another limitation of the present study is that it focused solely on the effects of MMORPGs on students' reading skills for main-idea learning. To gain a more comprehensive understanding, future research could explore the impact of MMORPGs on other specific learning objectives and in different contexts. For instance, investigating the potential of MMORPGs for teaching vocabulary, speaking, and writing skills would provide valuable insights into their broader educational benefits and limitations in language learning.

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