Does providing an advance organizer in online drill and practice games improve language learning outcomes?

Shiru Li (s1568833)
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MASTER THESIS
Shiru Li (s1568833)

GRADUATION COMMITTEE
Dr. H. H. Leemkuil
Dr. H van der Meij

Institution: University of Twente
Faculty: Behavioral Science
Master: Educational Science and Technology
Abstract

Like many other methodological innovations, Game-Based Learning (GBL) has been applied to the area of language learning. Drill and practice games are most often used. However, little research has been done to explore whether providing an advance organizer in drill and practice games improves language learning outcome. This paper evaluates the effectiveness of an advance organizer on vocabulary word and grammar based word learning among Chinese junior students. A quasi-experimental design was adopted to probe this study. Students in NO.11 junior school in China were recruited and divided into an experimental group and a control of 30 students each. Students in the experimental group were provided with an advance organizer; whereas, the students in the control group were not. Post-test questionnaires were subsequently administered to the participants after playing the game. Independent sample t-test analysis was applied to examine if the advance organizer is effective for vocabulary word and grammar based word learning. Findings indicate that an advance organizer did have significant positive impact on vocabulary word learning. On the other hand, it did a negative influence on learning grammar based words. These results imply that learning vocabulary by means of a drill and practice game can be enhanced by giving an advance organizer. In addition, teachers can also enhance their teaching method by using games and advance organizers.

Keywords: gamed-based learning, advance organizer, foreign language learning, vocabulary, grammar.
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**Introduction**

With the growing concern about the next generation and the development of online games, game-based learning (GBL), which means learning from digital games is an alternative learning and training tool to motivate and train students (Karl & Scott, 2010). In the last decade, researchers and educators have shown an increasing interest for the use of computer games for the purpose of learning and instruction (Wouter, van Nimwegen, van Oostendorp, & van der Spek, 2013). Traditionally, memorization is the nerve-center of teaching and learning vocabulary and grammar. This, however, by effect limits the context for the learners and affects the function of languages (Cowley, 2013). However, recent research highlights the value of digital games for education. There have been various studies exploring the influence of video game types on foreign language learning.

Two trends can be observed for educational games: problem-based games and drill and practice games (Deen, van den Beemt & Schouten, 2015). In problem-based games, players start with an ill-defined problem and have various solutions to a challenge. In contrast, drill and practice games offer opportunities for learners to acquire given knowledge that has been taught previously (Patterson, 2000) and encourage students to engage in repetitive learning exercises, typically providing students only one correct answer with the problem (Deen et al., 2015). When computer games were first introduced for the purpose of education for widespread use, most of them were academic drill and practice games (Fisch, 2005). When learning a new skill, students may feel overwhelmed because the new knowledge or skill is beyond their ability, hence, sufficient practice may be needed until the skill is mastered (Hamari, Shernoff, Rowe, Coller, Asbell-Clarke, & Edwards, 2016).
However, drill and practice games focus on finding the solution to a problem and memorizing it (Ke, 2008) instead of inspecting why and how the solution can solve the problem (Deen et al., 2015). There are many drill and practice games for vocabulary and grammar learning, but most of them only concentrate on finding the correct answer instead of explaining why the answer is correct or wrong. For instance the game “Monkey Sentence” (see Figure 1) only requires players to fill in blanks. As a result, these games may lead to rote memorizing without understanding the context. Students may also have difficulties picking the correct answer, memorizing the truth and finding the correct explanation to a problem (Deen et al., 2015; Reeve, Jang, Carrell, Jeon, & Barch, 2004).

In order to help students overcome difficulties to find and memorize solutions and increase learning effectiveness, advance organizers can be provided as learning support. An advance organizer is an instructional approach that is presented in advance of direct instruction to build prior knowledge (Ausubel, 1960). An advance organizer includes providing background knowledge, making explicit links between past learning and new knowledge, pre-teaching new vocabulary in context, highlighting key vocabulary (Echevarria & Short, 2010), which may help students receive new knowledge and provide an anchor where
students can attach new knowledge (Healy, 1989). It can also help students transform knowledge and apply it in new situations creatively (Mohammadia, Moenikiab, & Zahed-Babelanc, 2010). This means that students can filter the correct answers out of wrong answers by using information provided in the advance organizer. Mayer (2003) also stated that advance organizers assist students to organize new knowledge by arranging and sequencing the main idea of the new material based on what learners already know. These processes help learners to integrate the new information into their long-term memory (Mohammadia et al., 2010).

This study explores whether providing an advance organizer in an online drill and practice game improves language learning outcomes. This work is unique because there are few researches providing advance organizer in online drill and practice games. This study could help improve instructional design of drill and practice games, and could also encourage teachers to improve their teaching method by using games. In addition, it could guide teachers how to give an advance organizer for students to improve learning outcome. It also contributes to the literature and theory on game-based learning and language learning.

**Literature Review**

**Game-Based Learning**

*Introduction and importance of GBL.*

Game-based Learning (GBL) refers to applying computer games that have educational value or different kinds of software applications that use games for learning or educational purposes (Moreno-Ger, Burgos, Martinez-Ortiz, Sierra, & Fernández-Manjón, 2008). GBL is
also named as serious game (De Freitas, & Liarokapis, 2011), digital game-based learning (Monk, van Niekerk, & von Solms, 2010), and educational game (Young, Slota, Cutter, Jalette, Mullin, Lai, Simeoni, M.Tran, & Yukhymenko, 2012).

The application of games for teaching and learning has a long history and is used in many different areas such as in military, medicine and health (Hainey, 2010; Wouters, van der Spek, & van Oostendorp, 2009). The characteristics of digital games, for instance, entertainment, feedback, mission, sense of triumph, fantasy, contest and social interaction, contribute players’ engagement and immersion (Fu, Su, & Yu, 2009; Prensky, 2001; Rolling & Adams, 2003), and the competition and challenges in the games stimulate players’ curiosity and inner motivation (Fu et al., 2009).

In recent years, the interest in GBL has increased, and researchers and educators have been keen on exploring the pedagogical benefits in a classroom context (Chik, 2014). Digital games with special environment provide students more opportunities and possibilities to develop skills in self-initiated learning (Oliver & Herrington, 2001) and they have changed the role of students from passive receivers into active knowledge constructors (Fu et al., 2009). Research indicated that games can promote knowledge acquisition (Huizenga, Admiraal, Akkerman, & Dam, 2009) motivation and engagement (Brom et al., 2011; Schaaf, 2012).

**Drill and practice games.**

When educational computer games were first introduced for widespread use, many games were in the form of drill and practice (Fisch, 2005). Historically, computers have been used as pedagogical tools primarily for supporting drill and practice to recall facts (Jonassen, 1988). The purpose of drill and practice software is to support the learning of basic
knowledge and skills (Nicol & Anderson, 2000). Sheingold and Hadley (1990) found that drill and practice games are helpful for reinforcing basic facts. Okolo (1992) stated that drill and practice games are effective in improving students’ arithmetic facts proficiency regardless of which program type they used. In addition, Patterson (2000) proposed that instead of providing initial instruction, drill and practice reinforce knowledge and skills and help students develop automaticity of the multiplication facts.

**English Vocabulary and Grammar Learning**

*Learning English in China.*

In China, since 1978, English language education has been a compulsory course in mainstream education from secondary schools to universities and expanded to primary schools in the last few years (Lam, 2005). Compared to other foreign languages being taught in China, English has the most people learning foreign languages (Xu, 2010). However, due to Chinese examination-oriented education system, grammar and vocabulary assessments in various tests (e.g., Hu, 2003; Pan & Block, 2011), English has played a key role in schools as a major exam subject rather than a means of communication (Lam, 2005). Therefore, teachers and students pay more attention to memorizing vocabulary and grammar rules to pass the exam instead of understanding the context thereof.

*The need for an innovative approach to English vocabulary teaching and learning in China.*

Vocabulary is a core component of language proficiency and it is essential to successful second language learning (Schmitt, 2000), since it provides much of the basis for the skills of listening, speaking, reading, and writing successfully (Atay & Kurt, 2006). Diamond &
Gutlohn (2006) suggested that vocabulary is the knowledge of words and their meanings. This means comprehension and use of a language will not be achieved without building a strong vocabulary base (Diamond & Gutlohn, 2006). In addition, vocabulary serves as the foundation of real-life communication. The more vocabulary a learner understands, the more skillful expressions he/she can make (Lin, 2015). However, Chinese students have problems when learning English vocabulary (Lin, 2015). Min & Hsu (2008) argued that Chinese students traditionally use memorization to learn new English vocabulary; although this becomes monotonous. Most situations in the real world are not as well-organized as those presented in the classroom (Lin, 2015). Many students believe that their most significant obstacle is learning vocabulary (Lin, 2015). A possible explanation is the teacher-centered and examination-oriented lecture approach in vocabulary instruction (Lin, 2015). Therefore, it is significant to use more effective methods to foster second language learners' ability to use vocabulary correctly and appropriately (Lin, 2015).

**The need for an innovative approach to English grammar teaching and learning**

According to the Merriam-Webster Dictionary (2015), grammar is the set of rules that explain how words are used in a language. Arsen-Freeman (1991) stressed that grammar incorporates grammatical form, grammatical meaning and use as well. However, this study is interested in the use of grammar. Therefore, the rules of grammar were not included in this research. Grammar teaching and learning is an area that has been frequently studied by linguists and educators (Llin, Kutlu, & Kutluay, 2012). However, research indicated that grammar presentation in textbooks at schools is decontextualized, which is the most common problem. (Llin et al., 2012). Nunan (1998) stated that learners are usually given isolated sentences and are expected to master the grammar they need to learn by repetition, manipulation and grammatical transformation. Moreover, the theory of grammar is full of
abstract terms and abstract mental operations, which makes grammar learning more difficult for learners (Nedomová, 2007). Especially for young learners, they tend to learn implicitly rather than explicitly (Cameron, 2001; Pinter, 2006), which means that they are able to understand meaningful messages, but cannot analyze grammar systematically (Arikan & Taraf, 2010). Therefore, it is crucial to find an effective teaching method to present and use grammar within meaningful contexts (Cameron, 2001).

There is a progressive increase in the number of instructors who have attempted to probe how technology can be integrated in teaching grammar to second and foreign learners (Rezvani & Ketabi, 2011). It has been subsequently discovered that using technology to aid learning is beneficial in diverse ways (Zhao, 2007).

**Advantages of GBL in foreign language (FL) vocabulary learning context**

A significant set of studies have investigated the benefits of various types games on foreign language learning (Chen & Yang, 2013), especially for second language vocabulary acquisition (Smith, Li, Drobsz, Park, Kim, & Smith, 2013). Many online vocabulary-learning games can create an authentic learning environment for second language learners by providing context-rich dialogues or images to make the learning process more interesting and effective (Chen & Yang, 2013; Oberg, 2011). This new type of learning environment, however, is very different from traditional language classrooms, since many learning opportunities are offered to learners in a more implicit way (Chen & Yang, 2013). Lin (2015) explained two approaches to language learning vocabulary: an implicit approach and an explicit approach. The implicit approach puts learning into context so that the knowledge is retained incidentally. Vocabulary for example is argued to be a by-product of language learning activities such as extensive sustained reading activities. However, the traditional teaching method in a classroom where a teacher gives students direct instructions is typically
an explicit approach. Here words are the focus of learning and are learned through instruction and systematic interpretation.

Turgut and Irgin (2009) investigated second language learning via computer games among Turkish young students and found that online games have a significantly positive effect on language learning, especially, vocabulary skills. Ranalli (2008) designed simulation games called ‘SIMs’ and investigated the effect of a game for second language learners on vocabulary learning, and eventually, found that participants made statistically significant improvements in their vocabulary knowledge. Yip and Kwan (2006) also found that online vocabulary games tend to enable learners to learn more appropriately and learners retain the new words for a longer period of time.

Advantages of GBL in FL grammar learning context

The Ministry of National Education’s English Language Curriculum for Primary Education Grades 4 through 8 (2006) claimed that online games are important to school learners’ language development because they contextualize to make material more meaningful and learners can be motivated by features of the games. With the help of grammar games, students understand when and how to use the knowledge they have learned (Deesri, 2002). Therefore, as long as those games attract learners’ attention to some specific forms of grammar before they apply them in communication, they can have the opportunity to practice them.

However, the application of online grammar games is not yet common practice worldwide and there has been little research into game-based learning and grammar.
Advance Organizers

Introduction of advance organizer

The concept of an advance organizer was proposed by Ausubel, which is defined as material with higher generality, inclusiveness and abstraction presented in advance of a task (Ausubel, 1960), or an exercise or in this case English learning. Then he further distinguished advance organizers into two types: comparative and expository.

Comparative organizers act as reminders to point out explicitly “whether already established anchoring ideas are nonspecifically or specifically relevant to the learning material” (Ausubel & Robinson, 1969, p. 146). Ausubel (1968) stated that a comparative advance organizer not only integrates new information with basically similar concepts in cognitive structure, but also discriminates between new and existing information. Davis (2014) stated that comparative organizers use examples to explain a new concept in terms of something already known. The main goal of comparative organizers is to activate existing schemas (Woolfolk, Winne, Perry & Shapka, 2010). In contrast, expository organizers are used when the information is unfamiliar to the learner. This type of advance organizer often relates what the learners already know with new and unfamiliar material and it is aimed to make the unfamiliar information more plausible to learners (Woolfolk et al., 2010).

Mohammadia and her colleagues (2010) stated that by using advance organizers, educators could provide students the opportunity to key in on what is to be learned and to use this knowledge to facilitate subsequent learning. So if a connection of similarities between the new information and previous knowledge can be made, the learning experience will become more meaningful to them (Mohammadia et al., 2010). As early as 1995, Mendelsohn has already indicated that these preparatory activities allow learners to provide a context for interpretation while learning and learners will use this knowledge “as a basis of their
hypothesis information, predicting and inferencing”. Moreover, an advance organizer also helps students to structure the new information based on their prior knowledge and encourages them to transfer and apply new knowledge (Mohammadia et al., 2010).

Features of effective advance organizers

Ausubel, Novak, and Hanesion (1978) found that two conditions were important for advance organizer effectiveness. First, the advance organizer should involve similar topics. Second, an effective advance organize should be in line with learners’ existing knowledge structures (Ausubel et al., 1978). Strickland (1997) also concluded four common features of an effective advance organizer:

- Briefness
- Linking similarities of the unknown and known
- Used as an introduction to new material
- An abstract outline of new information and a restatement of old knowledge.

Advance organizers in FL learning

A growing body of research has indicated that advance organizers have a significantly positive influence on foreign language comprehension by activating background knowledge through brainstorming, illustrating key words and scripts (Teichert, 1996). The role of an advance organizer in language learning is to build background knowledge that is relevant to the current lesson and frontload new vocabulary and concepts (Billings & Mathisom, 2012). Ways to use advance organizers to active background knowledge include making explicit links between previous learning and new knowledge, frontloading new vocabulary in a context, emphasizing key vocabulary, and limiting the number of vocabulary (Echevarria & Short, 2010).
Research shows that students who have been provided background knowledge and vocabulary prior to lessons perform better in their language learning (Marzano, 2004). Chung (2002) examined the effect of using an advance organizer which contains a question preview and vocabulary pre-teaching on 188 Taiwanese college students English listening comprehension. The results indicated that students exposed to a combined treatment of questions previewing and vocabulary pre-teaching gained higher scores than students who only received vocabulary pre-teaching or students who had no advance organizer on both multiple-choice and open-ended questions. Chung and Huang (1998) investigated the effects of three aural AOs on student comprehension of L2 videotaped material and found that the presence of unfamiliar vocabulary was a significant positive factor for listening comprehension. Evans (2003) studied the effects of graphic organizers for Japanese readers on English expository texts and found that student generated graphic organizers help accommodate different learner styles which lead to meaningful learning, and enhance reading comprehension. Herron (1994) also evaluated the use of an advance organizer in a French foreign language learning and she found that students who had been given an advance organizer with video had significantly better listening scores than students who had video only.

**Research Questions**

This study sets in junior education in China: Grade 8 of one junior school involved in the north of China. The goal of this applied study is to analyze if providing an advance organizer for combined with a foreign language learning drill and practice game improves students’ vocabulary words and grammar based words scores.
The following questions are generated:

1. Does providing an advance organizer for a drill and practice game influence vocabulary words scores of students in junior schools in China?
2. Does providing an advance organizer for a drill and practice game influence grammar based words of students in junior schools in China?

From these questions, therefore, the following hypotheses are conducted:

1. An advance organizer for a drill and practice game increases English vocabulary words scores of students in Grade 8 in China.
2. An advance organizer for a drill and practice game increases grammar based words scores of students in Grade 8 in China.

**Scientific & Practical Relevance**

The contribution of this research is to investigate if providing an advance organizer for online drill and practice games increases students’ English learning outcomes. Firstly, it may encourage teachers to use drill and practice teaching English. In addition, it could guide teachers how to give an advance organizer for students to improve learning outcomes in other academic fields of learning.

Also, given that the number of English learners and users has exceeded 400 million in mainland China (Wei & Su, 2012), this investigation may have important implications for the localization and improvement of English education in China.
Method

Research Description
This study was a posttest-only and quasi-experimental. In order to get an overall interpretation of the results, quantitative data were collected. The independent variable is the advance organizer for an online game “Academy Island”. The dependent variables are students’ English vocabulary and grammar scores. The effect on the dependent variables was measured by using an experimental group, which received an advance organizer and a control group which did not receive an advance organizer before playing the game.

Participants
In total, 60 students from grade 8 of NO.11 junior school completed the experiment. The school was located in Hebei, the north of China. The students were selected from the same class. The students were assigned randomly into an experimental group of 30 students and a control group of 30 students as well. Among them, the majority of the students were female (53.3%). Most of them were 15 years (M = 14.68 SD = 7) with a range of 13-17 years. In addition, most students were at the age of 15 (51.7%)

Table 1
The Distribution of Gender in the Experimental Group and Control Group

<table>
<thead>
<tr>
<th></th>
<th>boy</th>
<th>girl</th>
</tr>
</thead>
<tbody>
<tr>
<td>experimental group</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>control group</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>
**Instruments**

**Game.** This research focused on the game “Academy Island” from University of Cambridge, ESOL Examinations. It is an online, drill-and-practice, English-learning game, suitable for B1-C1 English learners. This game has six islands (excluding the academy island in the middle): Noun Island, Plural Island, Vowel Island, Adjective Island, Simile Island and Pronoun Island. The difficulty level of the noun and plural islands is the easiest, the vowel and adjective islands are medium and the smile and pronoun islands are hardest. Players are asked to help an alien learn English by going to these six islands, which have various situations such as renting a house, shopping in a bakery or fruit shop and visiting an art gallery or a library and they also need to answer questions by talking to the people they meet in each situation. The players can collect credits if they answer the questions correctly and eventually go to the academy island in the middle to get a diploma if they get enough credits.

*The following figures are adapted from University of Cambridge, ESOL Examinations.*
Figure 2 Various islands in the Academy Island

Figure 3 Choosing a situation in Academy Island

However, after answering the questions, the players only know if they answered the questions correctly or wrong. Explanations or elaborate feedback are not presented.
Figure 4 Questioning in Academy Island

Figure 5 Answering correctly and collecting credits in Academy Island
PowerPoint Show. A PowerPoint slide Show was applied instead of the real game. This is based on the following reasons:

1. In the real game, the players are free to enter any island and choose any situation.
2. The questions are selected randomly in each situation. These two factors result in difficulty controlling the experiment and comparing two groups.
3. There was time limitation to answer the questions, which may increase guessing
   
   The right answer by the students.

Therefore, a PowerPoint Show was utilized to control the situation and questions.

At the beginning of the experiment, an English teacher in NO.11 Junior School in China was contacted in order to know which situations in the game were related to what students already have learned. As a result, the cinema was chosen. Then, all questions from the cinema situation were collected and sent to the English teacher to know which vocabulary words and grammar based words in the cinema situation of the game were new to the students. In total,
there were 12 new vocabulary words and 3 new grammar based words they had to learn. As stated earlier, these words are based on how they are used and not about the laws of grammar that they are based upon. In addition, there was a limited time frame, this did not allow elaborate definition of the rules and meaning of grammar to the respective words of grammar.
Table 2

*New Words Concluded from the Game*

<table>
<thead>
<tr>
<th>Vocabulary words</th>
<th>Grammar based words</th>
</tr>
</thead>
<tbody>
<tr>
<td>actors</td>
<td>should</td>
</tr>
<tr>
<td>comedy</td>
<td>might</td>
</tr>
<tr>
<td>release</td>
<td>If I were...I would...</td>
</tr>
<tr>
<td>scene</td>
<td></td>
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<tr>
<td>keen on</td>
<td></td>
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<tr>
<td>science-fiction</td>
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<td>thriller</td>
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<td>reserve</td>
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<td>film reviews</td>
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<tr>
<td>Oscar award</td>
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<td>involve</td>
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<tr>
<td>director</td>
<td></td>
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<tr>
<td>producer</td>
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</table>

The PowerPoint Show had 219 slides containing 42 questions and 4 videos. Each question took up 5 slides: questioning, feedback on choice 1, choice 2, choice 3 and choice 4. All
questions were screenshots from the real game. In order to make the students aware of the background of the game, a video of an alien arriving on earth and attempting to communicate with the locals was inserted as the first slide (see Figure 7). The video was also based on the real game. A brief description of the game was inserted as the second slide (see figure 8). The description was sent to the English teacher in NO.11 Junior School before the experiment to ensure that it is not too difficult for students to understand.

The research used all questions (42 questions) from the game, which includes new words and words the students already know instead of questions with only new words, in order to make students not feel being forced or pushed to learn. Also, mixing new words and old words together in the game was good to active students’ prior knowledge.

*Figure 7* The first slide in PowerPoint Show
After the slide with the description, a short video of the alien entering the cinema on the island was used as the third slide and the prologue was used as the fourth slide to ensure smooth-flow in the plot of the PowerPoint Show (see Figure 9 and 10).
The questions started from the fifth slide. After answering the questions, the correct answers were highlighted in green whereas the wrong answers were highlighted in red. For every answer selected a dialogue box appears to indicate if the answer selected was correct or not.

In addition, students could not go back to a question they already answered and they were required to click the “next” button to view the next question. The keyboards were also locked and students could only use the mouse to navigate on the page.
DOES PROVIDING ADVANCE ORGANIZER

Figure 11 Slide of questioning in PowerPoint Show

Figure 12 Slide of the choice 1 in PowerPoint Show
Figure 13 Slide of the choice 2 in PowerPoint Show

Figure 14 Slide of the choice 3 in PowerPoint Show
Furthermore, to make it more game-like, a video about the alien’s transition from one cinema to another cinema was applied after Question 29 in the middle of the PowerPoint Show (see Figure 16). A video of the alien getting the trophy was also presented at the end of the PowerPoint Show (see Figure 17).

Figure 15 Slide of the choice 4 in PowerPoint Show

Figure 16 Going to another cinema
The advance organizer. The advance organizer was applied in this research to help students build background information. The background was based on the movie Zootopia due to its popularity among children in China. This was intended to increase students’ interest and engagement. The advance organizer had three pages and was designed in the form of a dialogue between two characters from Zootopia: Nick (the fox) and the Flash (the sloth). The dialogue was about Nick and Flash teaching students words about cinema. The title of the advance organizer was “Welcome to Zootopia”.

In the dialogue, the new words were highlighted in pink and Chinese explanations were also given right behind the new words. Some words the students have already learned about cinema from their textbooks were also presented in the dialogue in order to activate their prior knowledge and to link it to the new knowledge.
Post-test. To measure students’ learning outcomes of English vocabulary words and grammar based words, an English test was administered immediately after playing the game. The test was divided into 3 parts. The first part was about participants’ age and gender. The second part was about the scores from the participants’ English test in the last semester. The score section was based on 3 scales: 100-80 (good), 80-60 (average) and lower than 60 (not good). And the last part contained the test questions. These questions had 18 items: 12 items were for vocabulary words and 6 items were for grammar based words. Considering there were not many grammar based words in the game, there were two questions for each new grammar based word.
Procedure. Before conducting this research, the school administration was contacted for permission and the school was asked to send a passive informed consent by e-mail, so that parents were made aware of their children participating in a research. An English teacher and a computer teacher from the school assisted with the experiment.

The advance organizer, the PowerPoint show and test were sent to the teachers by email one week before the experiment. The experiment took place at a computer lab, during a regular English class. This experiment had two sessions lasting 45 minutes in total. 60 students were selected from grade 8 and were assigned randomly into an experimental group of 30 students and control group of 30 students as well. There were only 30 computers available; therefore, the students in the experimental and control groups did the experiment separately.

The students in the experimental group did the experiment first. Firstly, the students were informed about the procedure of the experiment and were given the advance organizer and subsequently the test. Secondly the computer teacher showed students on the projection screen where to find the PowerPoint Show on the computer. Then the students read the story and started playing the game when they thought they understood the story. The time of playing the PowerPoint Show was not controlled. After playing the game, students immediately did the test. The tests were collected.

Then students in the control group did the experiment afterwards. Firstly, the students were informed about the procedure of the experiment and subsequently the test. Secondly the computer teacher showed students on the projection screen where to find the PowerPoint Show on the computer. The time of playing the PowerPoint Show was not controlled. Then students played the game and did the test immediately after playing the game. At the end, the English teacher collected the tests.
Analysis. Before performing an independent sample t-test, compute variable was used to create new variables: vocabulary words and grammar based words. In the post-test, the items 1, 2, 4, 5, 7, 8, 10, 11, 12, 14 and 15 were computed as vocabulary words; the items 3, 6, 9, 13, 16, 18 were computed as grammar based words; item 17 was deleted because of the mistake of the answering category.

Analysis of the English score from the last semester between experimental and control groups

Frequencie analysis in SPSS was conducted to gain insight into the English abilities of students in two groups. Results show that 16 students got “good” in the experimental group whereas 9 students got “good” in the control group. The “average” took the most place in the control group, 20 students. In the experimental group, 12 students had “average”. The “not good” was the least: 2 in the experimental group and 1 in the control group.
Table 3

*Distribution of Students in the Experimental Group and the Control Group*

<table>
<thead>
<tr>
<th></th>
<th>score</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not good</td>
<td>average</td>
<td>good</td>
<td>Total</td>
</tr>
<tr>
<td>group</td>
<td>experimental group</td>
<td>2</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>control group</td>
<td>1</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3</td>
<td>32</td>
<td>25</td>
</tr>
</tbody>
</table>

Chi-square was used to analyze whether the distribution of the English score from the last semester is the same in the experimental group and the control group. Results show that there was not a significant association between the English score from the last semester and two groups $X^2 = 4.304, p = 0.092$.

**Results**

The aim of this study was to assess if providing advance organizer for language drill and practice games promote students learning outcome. In addition, vocabulary words and grammar based words have been considered as two factors. One independent sample t-test was used to investigate the two hypotheses. The result will therefore be presented in relation to each hypothesis and the method involved in testing it.

Hypothesis 1: An advance organizer for a drill and practice game increases English vocabulary words scores of students in Grade 8 in China.

To test the first hypothesis, an independent sample t-test was conducted. As can be seen in Table 4, the students in the experimental group were associated with higher vocabulary
scores $M = 5.27$ (SD = 2.32). By comparison, the students in control group were associated with lower vocabulary scores $M = 3.8$ (SD = 1.69). The assumption of homogeneity of variances was tested and satisfied via Levene’s F test, $F (58) = 2.27, p = .14$. The independent sample t-test was associated with statistically significant effect $t (58) = 2.8, p = .007. d = 0.72.$

Table 4

*The Mean score of Vocabulary Words*

<table>
<thead>
<tr>
<th>group</th>
<th>N</th>
<th>Max Score/11</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>experimental vocabulary group</td>
<td>30</td>
<td>11</td>
<td>5.27</td>
<td>2.32</td>
</tr>
<tr>
<td>control group</td>
<td>30</td>
<td>7</td>
<td>3.80</td>
<td>1.69</td>
</tr>
</tbody>
</table>

Hypothesis 2: An advance organizer for a drill and practice game increases English grammar based words scores of students in Grade 8 in China.

An independent sample t-test was performed to test the second hypothesis. The results revealed that the experimental group significantly differed from the control group in their level of grammar based word learning, $t (58) = -2.19, p = .033$. However, the mean score of the experimental group ($M = 1.87; SD = 1.07$) was lower than the control group ($M = 2.5; SD = 1.17$). The assumption of homogeneity of variances was tested and satisfied via Levene’s F test, $F (58) = .32, p = .57$. 
Table 5

The Mean Score of Grammar based Words

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Max Score/6</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>experimental group</td>
<td>30</td>
<td>4</td>
<td>1.87</td>
<td>1.07</td>
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<tr>
<td>control group</td>
<td>30</td>
<td>5</td>
<td>2.50</td>
<td>1.17</td>
</tr>
</tbody>
</table>

Discussion

Main Findings

The findings of this study suggest that there is a statistically significant effect of the advance organizer on vocabulary words learning. On the other hand, the results of the analysis show that advance organizer had significant but negative influence on grammar based words learning.

The first hypothesis was fully confirmed on the possible influence an advance organizer has on vocabulary words. It was expected that the students in the experimental group would perform better than students in the control group. The mean score shows that the students in the experimental group scored higher than the students in the control group. In addition, the p value shows that the difference of the vocabulary words score between the experimental group and the control group were statistically significantly different. The finding is in line with the findings of Teichert (1996), who stated that an advance organizer had a significant positive influence on foreign language learning by activating background knowledge through
brainstorming, illustrating key words and scripts. And the result also conforms with Marzano (2004), who discovered that the students who have been provided background knowledge and vocabulary before lessons did better in their learning than students without advance organizer. The findings of this experiment are also in line with Chung and Huang (1998), who found that providing unfamiliar vocabulary was a significant positive factor for listening comprehension.

The second hypothesis had an interesting result. This is because the finding was significant but with negative influence on learning grammar based words. The mean score suggests that students in the control group performed better than the students in the experimental group. This finding does not support Deesri (2000), who asserted that grammar games help students understand when and how to use the knowledge they have learned and can develop their ability in using language in real situations. Also, the finding is not in line with the claim from the Ministry of National Education’s English Language Curriculum for Primary Education Grades 4 through 8 (2006), digital games have positive influence on learners’ language development because they contextualize to make material more meaningful and learners can be motivated by features of the games. However, the study of grammar in online games and advance organizer are a few.

To exclude complexity and confusion of grammatical rules, the grammar part of the advance organizer was collapsed into the basic use of the grammar (as translated in Chinese in the advance organizer). Also the time and length of the study does not allow enough time to learn all grammar rules. This could have affected the outcome because grammar has multiple rules guiding it. Also, residual knowledge of the students is important to consider when learning new grammar. For student with weak grammatical foundation, an advance organizer might
not help with even more difficult grammar. Nedomová (2007) noted that the theory of grammar is full of abstract terms and abstract mental operations and considering natural development of students’ intelligence, students are hardly able to understand what they are expected to do. However, the traditional way of teaching grammar in NO.11 junior school is that the teachers explain the meaning and the usage of grammar such as why, when and how to use them. In this experiment, only the Chinese meanings of new grammar were given; the further explanation like why, when and how to use the grammar were not elaborated. Moreover, the students in NO.11 junior school are used to the traditional learning method, which is teachers explaining everything. This would result in students lacking self-learning ability. However, students are required to learn by themselves in this experiment. This might be another reason why they did not perform well in grammar part. In addition, their English ability might also influence the result. In this experiment, the English scores from the last semester were collected as the indicator of their English ability.

However, the English scores were collected as three categories: good, average and not good instead of the exact scores, which do not reflect students’ real English ability and may influence the distribution of the English scores from the last semester considering the small number of participants. For example, there were 12 students in the experimental group who got “average” from the last semester, whereas, in the control group, 20 students got “average”. If the most students in the experimental group got 60 and most students got 80 in the control group, it is believed in this case that the English ability in the control group is higher than the experimental group.

However, they both were categorized into the same category in this research, which lead difficulty in analyzing their real English ability. Furthermore, the outcome might be different
for longer studies. It might take a while for students to actually adopt and use advance organizer, and learning is a process that inculcates much more than obtaining knowledge but putting it in practice for a considerable period of time. Therefore, since the advance organizer was only implemented for one lecture, this time might be constrictive for remarkable findings of grammar; hence, might not be tenable enough to predict the effectiveness of advance organizer. This could also explain why the effectiveness on grammar learning of the advance organizer has not been fully explored.

**Limitations and Implications**

There are certain limitations for this study. The first being that the study did not use the real game instead it used a PowerPoint Show. In the PowerPoint show, the students cannot choose the situations by themselves and cannot collect credits by answering questions correctly, which may limit the interestingness and effectiveness of the game and affect engagement. Second, the sample was drawn from only one class of NO.11 junior school. It is not clear whether the results can be generalized to the larger population. Third, this research is the post-test only design. It did not have a pre-test, thus, the result could not allow us know the estimate the degree of improvement of students after using advance organizers.

The outcomes have a number of implications for language online drill and practice games. First, since the advance organizer has a positive effect on vocabulary learning. Some vocabulary online games may think to involve introduction and explanation of the new words before players start playing the game. In this case, players would have less guessing and understand why and how the answers are correct.
Suggestions for Future Research

This study has some useful recommendations for the future research. First of all, in the future research, the grammar part of the advance organizer should be more elaborate and more effective for grammar. This can be done by adding explanation of why, when and how to use them and examples. Also, teachers can be invited to lead students learn the content and context of the advance organizer if it is necessary. This could reduce students’ confusion and increase their interests and engagement in the learning process. In addition, the advance organizer should be implemented multiple times instead of just once because gaining knowledge is a long process and students need to get used to the new learning method. Furthermore, there is a need to get larger and wider samples from different schools and classes. It could improve generalizability and external validity of the results. Moreover, the exact scores should be the indicator of students’ English ability instead of a range as inculcated in this research. Last, further research can use a pretest-post test design, which might be more helpful for analyzing the improvement of participants after using an advance organizer.

Conclusion

This paper has suggested applying an advance organizer in drill and practice games for learning a foreign language based on a case study implemented in a Chinese junior school. The results suggest that the effect of the use of an advance organizer combined with a drill and practice game was significantly positive on English vocabulary learning. However, it was not helpful for grammar based words learning considering more cognitive processes. This means that schools can make better use of advance organizer for vocabulary learning. On the other hand, a specific advance organizer can be developed solely to learning grammar because of its complexity. Nevertheless, as research in this field continues to expand, it is
hoped that tools like advance organizer would also develop in dynamic ways that would continue to help knowledge beyond language learning especially for students who are just starting to learn new languages.

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Welcome to Zootopia 欢迎来到《疯狂动物城》！

Hello everyone! Today we are going to the cinema in Zootopia (动物城) with Nick 🐇 and Flash 🐇 and they will show us how to watch a film (=movie 电影) in cinema in English. Let’s go!

: Welcome to Zootopia! I am Nick and this is Flash 🐇 we are both actors (演员) in this film -Zootopia. Today, Flash and I are going to teach you some words about cinema.

: Heeeeeelllllllllooooooow, guuuuuuuys! Weeeelccoooome...

: Okay Flash. Hi, guys, did you watch our film? Do you like it? It is a comedy (喜剧) and it is just released (上映) .

: Oh, just released, so it is a new film. Well, what is comedy, Nick?

: Comedy is a type of film. It contains some scenes (片段) to make audiences (观众) laugh.

: Ah, I see. In our film, I always make audiences laugh.

: Yes. Guys, what is your favourite film?

: I know! Boys are keen on (喜欢) science-fiction (科幻片), while girls are afraid of thrillers (恐怖片).


: Hahahahaha...

: Okay, everyone, what should (应该) we do next?
I think we should buy the ticket.

You are right. We can reserve tickets online and check film reviews to see which film we would like to watch. Also, if you are a student, you can get student discount.

Yes, reserving online means you buy the tickets online and buy tickets quickly. If you have a discount, you can buy a cheaper ticket. But Nick, if the film is cancelled, how about our money? Can we get the money back?

Yes, we can. If the film is cancelled, we can get a refund. This means we can get our money back. So, don’t worry.

Look, those students are watching our film.

Where? Ah! I am seeing it! They are watching the trailer.

What is the trailer?

Hmmm, it is a short introduction of the film.

I saw our names on the trailer.

Yes, we call that the cast. You can find anyone’s name about the film in it.

I might be famous. I might win the Oscar award.

If I were you, I would not (If I were... I would/ would not do... 如果我是...，我会/ 不会...) say that. I don’t care about the Oscar award. I want to be involved in making films, like to be the director or producer in the future. That is my dream.

My dream is to sleep all day.
Alright. Everyone, our tour will be finished soon. Let’s go and help the alien, he is waiting for us!
Appendix 2: Post-test Questionnaire

年龄（age）: __________  性别（gender）: __________
上学期的期末英语成绩，请从下列分数分布用✓选择 (The score of the final English exam from the last semester. Please use ✓ to choose which score section you are in.)

100-80 （Good）:
80-60 （Average）:
60 以下 （Not good）:

1 Which person is not involved in making films?
   A a producer  B a director  C a reporter  D an actor

2 Which kind of film is usually funny and makes the audience laugh?
   A science-fiction  B comedy  C thriller  D trailer

3 It _____ rain tomorrow, I am not sure. If it rains tomorrow, I will stay at home.
   A should  B would  C could  D might

4 This film is a new one, it is just _____.
   A released  B performed  C sold  D showed

5 The _____ of this film are scary, I don’t like it at all.
   A pictures  B performances  C scenes  D shows

6 If I were you, I _____ choose the Moon cinema because it has bigger screens and more comfortable seats.
   A will  B would  C could  D should

7 If you go to the cinema to watch a film, you are called _____.
   A a customer  B a passenger  C the audience  D a visitor

8 Compared with the Sun cinema, I am keen _____ the Moon cinema, because it has a bigger screen and more comfortable seats.
   A on  B in  C to  D for

9 You _____ smoke in cinema, because it is not allowed.
   A will not  B should not  C could not  D would not

10 I have already _____ four tickets online, so we don’t need to wait.
    A looked  B checked  C asked  D reserved

11 If you are under 12 years old, you can have a _____. It is cheaper than the full-price ticket.
    A discount  B prize  C sale  D reward

12 I would like to return this pair of shoes, because they are too small for me. Can I get a _____.
    A discount  B refund  C receipt  D review

13 I think we _____ wait outside, the door is still closed.
DOES PROVIDING ADVANCE ORGANIZER

A shall  B will  C would  D should

14 If you really don’t know what to watch today, I suggest you look at the _____ online.
A film summary  B film story  C film review  D film comments

15 _____ are usually at the end of a film with names of the set of actors.
A the cast  B the crew  C the list  D the form

16 If I were a super star, I _____ be rich.
A would  B will  C should  D could

17 Finally, Leonardo won the _____, which is the top prize in the film industry.
A certificate  B metal  C campaign  D Oscar

18 I _____ be a teacher in the future, I am not sure. After all nobody knows what the future will be like.
A need  B might  C will  D have to
Appendix 3: Some questions of the PowerPoint Show

1. If I had a choice, I _____ to see a comedy movie.
   - would go
   - will go
   - had gone
   - go

2. Which of these is NOT a movie type:
   - thriller
   - romantic comedy
   - trailer
   - sci-fi

3. What is the correct spelling for the people who watch films?
   - the audience
   - the audience
   - the audience
   - the audience
DOES PROVIDING ADVANCE ORGANIZER

1. I ___ go and see that new film tonight - do you want to come?
   a. might
   b. would
   c. won't
   d. can't

2. I think you _____ book the tickets now.
   a. will
   b. shall
   c. would
   d. should

3. You can now _____ your tickets online.
   a. take
   b. bring
   c. reserve
   d. pay

4. I think we can get a student ______ at the cinema.
   a. discount
   b. refund
   c. sale
   d. ticket
I'm sorry, the film has been cancelled.

1. Where do I pay?
2. Can I get a refund?
3. I would like two tickets, please.
4. No, thank you.

Which of these is the set of actors in a film?

1. the cast
2. the crew
3. the case
4. the choir

What can you read to give you information about a film?

1. a film story
2. a film credits
3. a film summary
4. a film review
His latest movie is going to be ___ next month.

1. released  2. let out  3. performed  4. allowed

Who is NOT involved in making a film?

1. a director  2. a producer  3. a newscaster  4. the actors