Investigating the Effectiveness of Online Games in Vocabulary Learning

The Case of Second Year Master Students of English at Larbi Ben M'hidi University

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master in Language Sciences and Teaching English as a Foreign Language

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DEDICATION

“In the Name of Allah, the Most Gracious, the Most Merciful”

All the praise is due to him alone, the sustainer of all the worlds

I would like to dedicate this modest work to:

My mother, my brothers and my Sisters the dearest persons to my heart;

Thank you for all your sacrifices, your encouragement, and all love and support.

All my family, friends, and teachers.

All my colleagues, and all those who have been supportive and caring.
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Abstract

Vocabulary learning has always been a challenging yet a very important task for second/foreign language learning. On the light of vocabulary importance, the present dissertation attempts to investigate the effectiveness of online games in improving learners' target language vocabulary. In this respect, one main research hypothesis has been set forward that if learners play an online game then, this will have a positive impact on their vocabulary repertoire. For the sake of bringing relevant data to the present study and test the research hypothesis, both a qualitative and a quantitative methods have been opted for. An experiment design was conducted to investigate the extent to which the online games namely “criminal case” can improve learners' vocabulary. Then, a questionnaire was submitted to investigate participants’ attitudes toward the use of criminal case in vocabulary learning. On the basis of the results and findings, the research hypothesis was confirmed in that using online games actually meet the requirements of a language learner to master the target language vocabulary in an enjoyable way. Therefore, it is recommended that teachers set the enjoyable learning conditions that online games bring and draw students' attention to such tools focusing on their educational value.

Key Words:

Online games, vocabulary learning, criminal case.
List of Abbreviations

CALL: Computer Assisted Language Learning

GBLL: Game Based Language Learning

L2: Second Language

MMOGs: Massively Multiplayer Online Games

MMORPGs: Massively Multiplayer Online Role Playing Games

N: Number

VLS: Vocabulary Learning Strategies

%: Percent
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General Introduction

1. Statement of the Problem

Developing vocabulary knowledge is regarded as a crucial necessity for every language learner. The increasing attention vocabulary receives, when compared to other language aspects, emanates largely from its fundamental presence within the four skills of language. Despite its importance in language teaching and learning, English vocabulary has always been an area of struggle. Learners have always complained about reading and memorizing unfamiliar words and on top of that the boredom of traditional methods such as translating, filling the gaps and creating simple sentences. For a language learner, it is in terms of certainty that relying upon formal education will not be sufficient especially concerning the everyday life vocabulary. In fact, most teachers pay little attention to put a considerable emphasize on vocabulary not to mention that this attention fades along the way to higher levels of education. This case is not different from the case of second-year Master students of English at Larbi Ben M'hidi University, Oum El Bouaghi. Regardless to their rather advanced level, they have always complained about the deficiency of vocabulary package and lack of appropriate words within different contexts of language use.

A part of the challenge in language learning and vocabulary in particular inhabits the fun factor. As a matter of fact, it became the order of the day to bring novelty and liveliness into vocabulary learning especially because it is an endless journey. Learning vocabulary is most fruitful and pleasant when it engages with daily fun activities such as technology and games. One suggested strategy that combines both aspects and in which learners may be able to practice and enrich vocabulary repertoire in a relaxed atmosphere is online games. Online games grant further potential of vocabulary learning through exposure and use of new items in authentic context along with its worldwide popularity. Though online games are perceived as a distraction when it is related to education, the application of online games as a strategy for language learning may have a great potential in enriching learners' foreign language vocabulary.
2. Aim of the Study

The aim of the present research is to investigate the effectiveness of online games as a self-study strategy for students of English as a foreign language with regard to vocabulary acquisition. Its aims to determine whether online games are only entertaining or they may serve as means for learning. On this ground, the present study has the ambition to establish a positive correlation between online games and vocabulary learning especially in term of motivation and providing a regenerated source of language input. Besides, this study intends to reveal the importance game characteristics in promoting interest and motivation and therefore more vocabulary retention. In addition, it seeks to uncover the learners' attitudes and perceptions toward the use of online games in vocabulary learning.

3. Research Questions and Hypothesis

The present research is willing to answer the following questions:
- Are online games affective in enhancing students’ target language vocabulary?
- Are online games efficient in linking vocabulary learning to their context of use?
- What are the characteristics that learners encounter as to be of a good learning game?
- What are students' attitudes toward the use of online games in learning?
- Would learners gain a balance between entertainment and vocabulary learning while gaming?
- Is there a positive correlation between extent of exposure to an online game and efficiency of vocabulary learning?

In the light of the above questions, the following research and null hypotheses are put forward:

**H1:** If learners play video games in an online environment, then this will have a positive effect on their vocabulary.

**H0:** Learners will not have any significant improvement in vocabulary as a result of playing online games.
4. Research Tools

In order to examine the effectiveness of online games on students’ vocabulary, an experimental design is opted for as the main research tool. The target of investigation is second-year Master students of English (option: Language Sciences) at the University of Larbi Ben M’hidi, Oum El Bouaghi for the academic year 2015/2016. In addition, a questionnaire is used as a secondary tool to obtain data about the students’ attitudes about online games and target language vocabulary learning. Therefore, a voluntary sample of thirty students was used to represent the population. A Facebook game namely “Criminal Case” was chosen to fulfill the online game requirement. For the procedures, a vocabulary pre-test is administered, first, to get scores of both control and experimental groups. The experimental group was exposed to the game while the control group was not. After five weeks of treatment, the two groups took the same post-test in order to determine whether playing “Criminal Case” has had a statically significant improvement on students’ vocabulary or not and therefore confirm or reject the research hypothesis. Moreover, a questionnaire was submitted to the members of the experimental group in order to investigate the effectiveness of online games characteristics in vocabulary learning and participants' attitudes toward using online games particularly criminal case for learning purposes and collect the overall result.

5. Structure of the Study

The present study embodies two chapters: one theoretical chapter and one practical. The first chapter is divided into two sections. Section one sheds light on online games, its characteristics and the benefits they bring to a language learning environment in terms of motivation and autonomy. Furthermore, it tries to supply a definition for some existing taxonomies of games and the way of learning it offers in addition to some similar educational concepts. Section two reviews vocabulary learning according to different theoretical standpoints. It entails a discussion of learning vocabulary, its requirements, importance, strategies, how to measure vocabulary knowledge, and learning vocabulary through games. The second chapter, also, is divided into two sections. Section one presents the case study, and data analysis and interpretation of the experiment. Section two presents data analysis and interpretations of the students' questionnaire.
Chapter One: Online Games and Vocabulary Learning

Section One: Online Games

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Introduction

Lately, the number of online game players is rapidly increasing making them the dominant genre among games. However, the interest in such a field, for linguists, is more directed into a potential effect on language learning. Indeed, it is no longer considered as purely entertaining but also as a powerful means of language learning. The present chapter intends to shed light on what a game is and what a game is not. Moreover, it attempts to classify online games characteristics with reference to the benefits it offers in language learning. Besides, it takes a step to cover some online games which may suit learning while defining the meanings of serious, casual and educational games. Beyond, it takes a glimpse into similar educational concepts such as the notion of “Gamification”, “Edutainment”, “Computer Assisted Language Learning” and “Game-Based Language Learning” as the fields concerned about the effectiveness of using online games in education.

1.1.1. Defining Online Games

To get a clear picture about what online games are, it is necessary, first, to define the easy “online” part then moving to the more complex issue of how to define a “game”. To get straightforward, “online”, as defined by the Oxford Basic English Dictionary (2006), means the use of computer network or the internet. That is, connected to the worldwide network using any electronic device of any kind. Specifically, any electronic device uses a computer or a computer-like process to connect to the worldwide network. This includes desktop computers, laptop computers, mobile phones, consoles, handheld devices and so on.

On the other hand, the notion of a game may be deceptive. One may refer to that as an easy term to define it is 'an activity to have fun'. However, there were numerous attempts to frame the notion of game but still there were no exact accepted definition for it. Besides, Crawford, 1982; Costikyan, 2003; Salen and Zimarmen, 2004; and Prensky, 2002 insist on revealing the distinction between games and other concepts that are known to have some game-like characteristics, but are not considered as games. Concepts such as play, puzzle, narratives, stimulation and toy are commonly mistaken with the notion of game. However, before we can seriously tackle the issue of what a game is, it seems worthy to clarify first what a game is not.
1.1.1.1. What a Game is Not?

Play is not a game, for the former can be broader and narrower than the latter. In a way, the basic component of play is fun. Anything fun can be determined to be play. In another, games are not only play. Games entail some further concepts such as rules. However, the play part is a basic component in a game. According to Salen and Zimmerman (2004),

Play is both a larger and a smaller term than “game” depending on the way it is framed. In one sense, “play” is a larger term that includes “game” as a subset. In another, the reverse is true: “game” is the bigger term, and includes “play” within it (p. 02).

Play is an activity for amusement only. A part of play is the free will for purpose of joy and pleasure only. In the same time, a basic component of games is play. A game must be optional, fun and amusing. In addition, according to Prensky (2002), “game-play is all the activities and strategies game designers employ to get and keep the player engaged and motivated to complete each level and an entire game” (p. 08).

Puzzles are not to be confused with games, for the first is static and the other is interactive. Crawford (1982) states that “it is the interaction that makes the game a game rather than a puzzle” (para. 23). In other words, a puzzle does not change its situation as a result of player's action. For example: solving a crossword puzzle is not a game, because it does not change as the player adds answers to the board. A puzzle remains as it is. Yet, “although puzzles are not games, games can include puzzles as subtasks” (Smed & Hakonen, 2003, p. 03). In fact, many games include puzzle solving, or more a sequence of puzzle solving. Puzzles are popular because they are challenging and fun, but they lack the interaction element which is an important component of games.

Narratives are not games. Although narratives have a lot in common with games such as an imaginary world explored by characters, they are not games in the sense that they involve an ordered sequence of controlled events unlike games. A story is linear while “a game is non-linear. Games must provide at least the illusion of free will to the player; players must feel that they have freedom of action within the structure of the game” (Costikyan, 2003, p. 01). Opposed to a game, in a story, it is all up to the story teller how the story proceeds till it ends, and the player have no control on that sequence of events.
For a game, the player must at least believe that the way he plays control the way the game proceeds.

Stimulations, also, take a closer position to games. However, the core of the difference between both terms lies in the purpose of the designer and how serious he is. Despite that some stimulations are also games, “where a simulation is detailed a game is stylized” (Crawford, 1982, para. 19). In other words, stimulations often are coined with a serious detailed imitation of real life situations and for serious purposes that touch the real life of the user, that is, has real life consequences. Stimulations invest much focus with details whatever small they were, while games are not. Stimulations are objective, while games are subjective.

Toy is not a game because the game is not intrinsic in the toy. There are no exact rules how to play with a toy. It does not allow any control to the toy maker. “A toy can be identified with the representation component” (Smed & Hakonen, 2003, p. 03). In other words, toys allow total freedom for the toy user he can use it anyway his imagination allows to. For example, a ball, you can throw it, catch it, hit it to the wall, and you may use it in game, but the game is not within the ball. A toy is something we can play with rather than a game.

Despite that those concepts have a lot in common with games, they are not considered as games. In fact, games may or may not involve all concepts mentioned. Furthermore, the importance of the distinction between a game and the other concepts is that, sometimes, they may cause misconceptions with the notion of a game. Besides, online games are a subset of games and what we generalize on a game can also apply to online games. A closer step to games will take us to identify some aspects to what constitute a game.

1.1.1.2. What a Game Is?

Mostly, a game is defined by its features and what makes it a game rather than other pastimes. But, unfortunately, the exact parameters of what constitute a game are still debated and even defining games in this way divides researchers into two different and separate views. While some researchers define it as a human activity, others define it as a system of rules.
Researchers (Abt, 1970; Suits, 1990) claim that games are a human activity because they imply the human factor. According to Abt (1970), “a game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context” (p. 06). Following this definition, a game includes an activity of two or a group of decision-makers, and a goal to achieve with some rules that restrict the actions. In addition, according to Suits (1967),

To play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, where the rules prohibit more efficient in favor of less efficient means, and where such rules are accepted just because they make possible such activity (p. 184).

Suits argue that the aim is not only to achieve the goal, but achieving it while adhering to the rules of the game. An example that makes it clearer is cheating. Cheating in the game according to this very definition makes you out of the game. In other words, you are no longer playing a game if you are cheating the rules.

The other view is that of researchers that defines games as a system of rules. According to Salen and Zimerman (2004), a game is “…a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome” (p. 02). From this perspective, a game is the complex system that involves players participants to play, an artificial conflict 'a separation from the reality of time and place', with some rules that govern it, that is what players can and cannot do, and a result 'either a player win or lose'.

Apart from the distinction of game into a human activity and a system, Juul (2003) provides a comprehensible definition that fits the delimitation of this research

A game is a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable (para. 15).

Following Juul’s (2003) view, a game includes six features. First there must be rules that constrict the participants. Second, the variable controls the outcome. Third, the
outcome asserts positive or negative values in the user. Besides, players have to spend an effort in playing the game. In addition to a feeling of attachment to the game, and some negotiable consequences that do not affect the real life of the gamer. A game is based on some explicit rules and a variable that changes by the effort of a player. Moreover, a game is fun and has no serious real life consequences.

Hence, an online game is a digital, video or a computer game that is played over an online environment that is, the internet. Moreover, according to The Organization for Economic Co-operation and Development (2005), “an online game is defined as any computer-based game played over the Internet including PC, console and wireless games” (p. 09). This includes both stand-alone and multiplayer games. Those lasts, In addition to the features mentioned, are universally popular. Massively multiplayer games can reach millions of users whether in the same time or in different times.

Massively multiplayer online game MMOs are highly graphical 2- or 3-D videogames played online allowing individuals, through their self-created digital characters or "avatars", to interact not only with the gaming software but also with other player's avatars as well (Steinkuehler, 2008, P. 10).

An online game adds the capacity of worldwide interaction, competition and communication. Its popularity reveals by being a massively multiplayer hence, take the challenge and competition toward another level as well as communication and interaction all to be globally rather than within one's self. These games can be played in the same time or in different times. Yet, until recently, online games were well-known by numerous stereotypes of bad influence on people at both levels: mentally and physically. However, a closer look to online games may bring us to discover its similarities with successful learning environments.

1.1.2. The Use Online Games for Learning

First and foremost, online games are seductive. “Video game industry today approaches yearly revenues of $15 billion and approximately 3.38 billion hours of game play” (Annetta, 2008, p. 01). This kind of industry targets all ages at all levels of education. It is only related to who wants to play and who does not. Gaming is seen as a culturally acceptable activity on a large scale.
Currently, online games are the dominant genre among games. This last is an essential part of what Prensky (2001) calls the “Digital natives”. Today's learners use technology for learning in a variety of ways. Television, movies and games are nowadays reliable sources of knowledge. Prensky (2001) adds “our students have changed radically. Today’s students are no longer the people our educational system was designed to teach” (p. 01). With the quick advancement of technology, it is natural that the change reaches the way people play games to involve more aspects of learning but never lose the games sense of entertainment. These changes affect the way people use and learn languages as well. Nevertheless, a healthy language learning environment considers engagement, motivation, challenge, competition, interaction, goals, evaluation and even rules as primary ingredients for a successful transfer of language. Those features are not outsiders or in contrast with those of an online game. At the opposite, they have a lot of commonality.

1.1.2.1. Characteristics of Online Games

To define the characteristics that constitute a game, the best example to follow is the characteristics collected by Witthon (2010). He gathered the commonly presented characteristics of games in the literature and created what he calls “An open Definition of Game”, That is, a game may or may not include all the characteristics mentioned. The aforementioned characteristics are summarized in the following table:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Definition</th>
</tr>
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<tr>
<td>Competition</td>
<td>The goal is to achieve an outcome that is superior to others.</td>
</tr>
<tr>
<td>Challenge</td>
<td>Tasks require effort and are non-trivial.</td>
</tr>
<tr>
<td>Exploration</td>
<td>There is a context-sensitive environment that can be investigated.</td>
</tr>
<tr>
<td>Fantasy</td>
<td>Existence of a make-believe environment, characters or narrative.</td>
</tr>
<tr>
<td>Goals</td>
<td>There are explicit aims and objectives.</td>
</tr>
<tr>
<td>Interaction</td>
<td>An action will change the state of play and generate feedback.</td>
</tr>
<tr>
<td>Outcomes</td>
<td>There are measurable results from game play (e.g. scoring).</td>
</tr>
<tr>
<td>People</td>
<td>Other individuals take part.</td>
</tr>
<tr>
<td>Rules</td>
<td>The activity is bounded by artificial constraints.</td>
</tr>
</tbody>
</table>
Table 1: Ten defining characteristics of games (Whitton, 2010, p.23)

Table 1, as proposed by Whitton (2010) contains 10 defining characteristics of games. A game is competitive. However, this competition can be within one’s self, with the game, or with other players. This last can be in the same time or in different times as through MMOG's (massively multiplayer online games). Online games are mostly known by their worldwide competition. They allow the user to participate with people he knows or do not know which create a better sense of competition. Moreover, “game elements like competition predictably and almost inevitably focus students on getting a high score rather than on learning the material” (Aldrich, 2009, p. 24).

Second, it involves challenge. Challenge refers to the difficulty faced by the player in the game. Usually games are challenging but achievable. In addition to that, some games offer the player to choose how difficult or easy the game is going to be which could also be expressed as intermediate, advanced, etc.

Third, it offers an exploration of a virtual world. Games offer a new world and characters to explore. The interacting with the game or with other players keeps the player curious and motivated to play. Moreover, the use of interactivity, collaboration and exploration based simulations allow children to perform within their own categories of achievement (Sørensen & Meyer, 2007, p. 565).

Fourth, it provides a sense of fantasy. Most games involve a sense of drama that approaches the user more closely, touches his imagination and makes him involved into the story. Beyond, Aldrich (2009) concludes that the motivational effect of digital games comes from “the emotional appeal of fantasy and the sensory and cognitive components of curiosity” (p. 05). Moreover, games may involve imaginary or real places as well as real or invented creatures that color the game. Games are just another virtual world to travel.

Fifth, it must have some clear goals. This last means that a game should be defined by goals and objectives which the player is eager to get to. Also, a clear idea about what the player has to do to reach those goals and finally win or lose the game. “Goals play an important role in shaping the intrinsic meaning of gaming in that all game situations are not equally desirable” (Waern, 2012, p. 10).
Another important characteristic is interaction. Interaction can be with the characters of the game or with other players. The most lovable kind of online games is that which contains the possibility of the player to interact with each other globally. This particular type of games offers new directions for language learning. Furthermore, computer-mediated interaction in digital games supports flow (Franciosi, 2011, p. 21).

Also, a game must involve outcomes and existence of other people. First, outcomes allow the player to see his results in the game and compare it with those of another people. In addition, the existence of other people is considered as an important characteristic to maintain the interest of a player in the game. However, people can be playing in the same time or at different times.

Moreover, a game is placed under the limitation of a set of rules, but keeps the safety element. That is, some obliged instructions of what the player can and cannot do and in the same time do not cause any harm to the player. Rules are usually explained explicitly but also can be discovered through the game. They are what make the meaningless activity have a meaning. Beyond, a game must be safe. The results in a game must not harm the player in the real world. A game should not be risky on the player's life or contain serious life consequences.

1.1.2.2. Characteristics of Online Games and Learning

When comparing the description of online games characteristics to a healthy language learning environment, there are much similarities. Like all digital games, online games are said to

...provide a platform for active learning, that is, they promote learning by doing rather than listening or reading, they can be customized to the learner, they provide immediate feedback, allow active discovery and develop new kinds of comprehension (Blamire, 2010, p. 14).

Online games are made out of uncountable auditory, visual and tactile stimuli that enable the player to experience things in the virtual world instead of reading it, writing it or looking to it only. As well, a game has clear objectives, and played under the limitation of rules that preserve the discipline of the environment.
Furthermore, another example that can be minded is interaction. Playing a game entails the occupation of interaction whether with the story, the characters of the games itself or other player’s avatars. According to Prensky (2001), “unlike many other game environments, complex computer games provide a complete, interactive virtual playing environment” (para. 23). Unlike other games, some sophisticated online games offer a highly interactive environment i.e. they promote the ability not to just interact with the characters of the game but also with the avatars of other players. One can play with or against real persons around the world at anytime.

On top of that, feedback also can be highlighted as another example. The same as the teacher’s feedback that generates trough classroom interaction, a player has to know whether he is making any progress or not. For example: when greeting another avatar in a game, the player has to feel acceptance or rejection whether by a gesture, talk or even by a look on the avatar’s face. A player has to know whether what he is doing is good or bad. According to Johnson, Vilhjalmsson and Marsella (n.d), “good games provide users with feedback on their actions, so that they know how well they are doing and can seek to improve their performance” (para. 11).

Also, when comparing a game activity to a learning task, other examples that can be minded are autonomy and challenge. Along with games, tasks and learning activities are preferable to be learner centered, challenging and at the same time achievable. Gros (2007) argues that “digital games are user centered. They can promote challenge, co-operation, engagement and the problem-solving strategies” (p. 23). Digital games take a learner centered approach to learning. The player is not bound on a specific time. He can play whenever time allows him to. Besides, online games encourage challenge and spread the willingness of participation. Hence, they are well competent to serve as learning tasks.

Moreover, Gee (as cited in Mitchell & Savill-Smith, 2003, p. 18) argues that good computer games are not just entertainment but incorporate as many as 36 important learning principles. Taking as long as 100 hours to win, some are very difficult. They encourage the player to try different ways of learning and thinking, which can be experienced as both frustrating and life-enhancing. Along time, good games come to reflect better and better learning principles.
Such characteristics of games stimulate interest within the learner thus entail motivation. This last has been strongly accepted by both teachers and researchers as one of the key factors that influence the success of second/foreign language learning.

1.1.3. Online Games and Motivation

Blamire (2010) assert that “games are more often qualified in retaining and motivating students in a way unlike formal educational settings” (p. 14). Online games have an abnormal potential to intrinsically motivate learners. Online games are seductive, optional, enjoyable and amusing and that makes it irresistible. “Video games motivate learning by challenging, providing curiosity, beauty, fantasy, fun, and social recognition” (Annetta, 2008, p. 02). They are based on numerous visual, auditory and tactile stimuli that approach the emotions of the learner and make him engage, even with a sense of addiction. Moreover, “one of the foremost qualities of digital games is their capacity to motivate, to engage and to immerse players” (Felicia, 2009, p. 12). In other words, they have the ability to make learners participate by their own will. On the other hand, there is the verb “immerse” which is considered to be very important in the context of games. The player’s immersion refers to “… a psychological condition in which one person has all his attention on a single activity and feelings are channeled to that point in particular” (Mendonça & Mustaro, 2012, p. 102). In the game domain, immersion refers to the degree of engagement and involvement in the game. It is a mental state in which the player feels intense engagement to the game he is playing. Beyond, Brown and Cairns (n.d) investigated for further study of what is meant by immersion. They concluded that this notion can be distinguished by three different stages corresponding to the sense of involvement toward the game. The first and lowest stage of immersion is termed “engagement” where players simply invest time and effort to play the game. The next level is “engrossment” where players are more focused and involved emotionally. The highest level which entangles total immersion by is identified with “presence” or flow (As cited in Mendonça & Mustaro, 2012, p.102).

While the flow experience, gamers described a sense of being cut off from reality. They forget about their surroundings and get totally focus on the target of the game. A feeling as if they are in the game. During the flow experience, the player is drawn and absorbed totally to the actions in the game and its story. Players strive to accomplish the game and win the challenge so much that they lose themselves into the game.
However, though the advancement in technology of games, many researchers admit that what we learn from online games is not always desirable. After all, the use of online games, mainly, depend as many other things on how intelligent you choose it and how intelligent you use it. Online games, if used properly, are a creative way to make learners learn in their own time.

1.1.4. The Taxonomy of Online Games

“Because of this rich context for language learning, many researchers have applied MMO games to language learning” (Gerber & Abrams, 2014, p. 91). Online games are a creative and complementary platform for vocabulary learning.

However, there are more genres of online games than people may think, such as shooter games, strategy games, adventure games, simulations games, role-playing games, action games, puzzle games and a good number of other types. Yet, researchers (Derryberry, 2007; Kelly, 2013; Voortman, n.d ) maintain the variety between three different concepts:

**Advertising games**: abbreviated “advergames”, refer to games which are sponsored for marketing purposes. “It is a scheme of advertisement where the message is hidden in a game” (Voortman, n.d., p. 04). the player gets the message throughout playing the game or winning.

**Casual games**: are games developed for entertainment only. Purely designed for fun, these games can include everything from a card game on your computer to the most complex games as world of war craft. Though casual games’ objectives and intention are for amusement only, they are likely to have a positive learning effect. According to Derryberry (2007), “while learning can and does occur within a casual game, it is a by-product, rather than an intentional outcome of game play” (p. 03).

**Serious games**: refer to games specially developed for serious purposes or to improve a learning attitude. Same as educational techniques in the classroom to motivate learners, serious games use the fun element to upgrade a learning behavior. The use of serious games in language learning is consistent with a subset division of serious games labeled educational serious games.
Non educational games are not directed toward a learning aspect. Nonetheless, the goal of the game designer do not necessarily mean that the game have no effect of language learning on the user. Paradoxically, the game effect is due to the user purposes. Entertainment games can be used for language learning in addition to serious educational games. However, the notion used to include the use of serious, casual, or advergames for serious purposes is “Serious Gaming”. “Serious gaming is a label that refers to any video game used for “serious” purposes, whether the “serious” dimension is or is not designed within the software” (Djaouti, Alvarez, & Jessel, n.d., para. 10).

1.1.5. Incidental and Intentional Learning in Online Games

Online Games can be used for both incidental and intentional types of language learning according to the type of game used and the intention of using it. On the first hand, intentional learning refers to learners intention to learn new words or expressions and preserving it in memory, such as preparing for a test in school or memorizing by heart. It entails an emphasis on knowledge representation in order to a prosperous information transfer. Serious educational games are designed especially to fulfill such tasks. According to Derryberry (2007), “what sets serious games apart from the rest is the focus on specific and intentional learning outcomes to achieve serious, measurable, sustained changes in performance and behavior” (p. 4). The uses of serious educational games reflect an intentional influence on language learning behavior. It is the design in such games that supports the development of specific educational learning aspects whether simple ones such as vocabulary or more complex ones.

However, online games typically entail a focus on meaning rather on the focus on linguistic forms. Hence, grant more possibility for incidental learning, that is, “unintentional or unplanned learning that results from other activities” (Kerka, 2000, p. 01). It refers to the acquisition of information without intention to where the learning occurs without even being conscious to it such as picking up the word 'exit' while playing a video game.

Incidental learning is more likely to occur outside formal learning environments and in real life experiences and games. In the daily-life, the primary motive for playing games, mostly, is pleasure hence; it is a convenient applicable platform for incidental learning. Sylvén and Sundavist claim that a positive correlation stand between L2 gaming and
incidental and informal L2 learning, and the reading of in-game texts could be a key learning facilitator (as cited in Chik, 2014, p. 86). Moreover, there is the term stealth learning which indicates how learners absorb information unintentionally while gaming.

Stealth Learning consists of the educational gain by players, when either a learning objective is not immediately apparent, where content helps a player to gain information in some way, or where secondary learning objectives are achieved as a result of the content (De Feritas & Mahrag, 2011, p. 112).

Online games have the potential to exert the total focus of the player into the story, the challenge, the competition and the fantasy of the game. Incidental learning or stealth learning, however, undertaken without prior planning, in combination with a rich linguistic environment promote and compel language learning.

1.1.6. Autonomy in Online Games

In relating autonomy with online games, online games are an innovative visionary way to engage English language learners in learning at their own time. Online games represent a productive form of language use and practice of language elements especially when the game offers English words that need to be understood in order to play the game. They are a part of the daily-life. In a study conducted to relate internet use and autonomy Gardner (2011) claims that “the participants that used the internet to develop their pronunciation, grammar and vocabulary liked the interactive exercises and especially games” (p. 258). Online games are a part of daily-life and with the wide spread of technology, they are accessible and seductive. In addition, “a game presents a learner centered approach to learning” (Stapleton, 2004, p. 02). It is due to the player when to play and how much time to spend playing which make it easy to play.

1.1.7. Similar Educational Concepts

Second and foreign language learning has been always a popular subject in educational technology in view of being easy to integrate. However, the use of digital games in education is being confused largely as a part of not a specific field but many fields of research and sometimes overlapped with others. Concepts as edutainment,
gamification, computer assisted language learning, and game-based language learning are most convenient nearby.

**Edutainment:** as the names suggest is the mixture of entertainment and education. The term entertainment refers to anything that entertains people. That is anything fun and amusing that have an educational perspective or use can be classified as edutainment such as online games. Other examples of edutainment constitute TV channels such as National Geographic and Animal Planet.

**Gamification of learning:** there have been already many attempts to define what gamification refers to. However, generally, “gamification applies the mechanics of gaming to non-game activities to change people’s behavior” (Bunchball, 2010, p. 02). The key issue of the concept is being an element of games. Instead of combining education with entertainment, the gamification of learning attempt to adjust the learning aspect into a game mechanism. This last in its turn includes digital games.

**Computer based language learning (CALL):** As well as gamification there were many attempts to define CALL. Beatty (2003) defines CALL as being “any process in which a learner uses a computer and, as a result, improves his or her language” (p. 07). This includes all computer software such as dictionaries and computer games.

**Digital game based learning (DGBL):** Digital game based learning is a growing field in using digital games in influencing human behavior whether training or learning. Prensky (2001) defines DGBL as “any learning game on a computer or online” (p. 146). This definition covers all types of digital games whether serious, educational or casual and advertisement games that are use for learning purposes. Moreover, the notion of game is a key aspect in DGBL. In addition, the notion of digital games is used to separate the type of games used from the traditional games.

Computer-based language learning (CALL) and game based language learning (GBLL) both are different in the sense that the former does not focus specifically on games but learning languages, while the latter includes learning as a set chosen from different topics. It does not focus language learning but it is more popular in training, and health care.
Conclusion

As the review of literature indicates, online games have a lot of similarities to a designed language learning environment. It establishes a link between play and language learning in addition to being a favorable activity among people. Moreover, considering that online games are lexical rich, vocabulary learning through games seems to be very promising.
Section Two: Vocabulary Learning

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Introduction

Contrary to the native speakers, who possess a firm ground of vocabulary, second/foreign language learning starts primary at enriching words background knowledge and remains as far as learning the language is concerned. It is hardly debatable that its importance may be lowered or discounted along time or within higher levels of proficiency. For a language learner, vocabulary is evermore of capital interest mainly because it incorporates the four skills of language. Vocabulary, also, is well-accepted by its practical utility in a variety of interactional situations. Whether speaking or writing, the success in conveying messages is fundamentally related to the amount of words one disposes. As the role of vocabulary cannot be questioned, the intention in the present chapter is to provide some working explanations of vocabulary as well as the notions of word and word's knowledge. Besides, it attempts to cover the taxonomy of vocabulary types according to different theoretical backgrounds. Also, it discusses the significance of vocabulary as it has evolved in the four skills of language. Furthermore, it provides an explanation for incidental and intentional ways of learning vocabulary and tries to reveal which is the better way to approach vocabulary. Moreover, it aims at covering some comprehensive strategies and steps for vocabulary learning and how to apply an effective vocabulary measurement. Finally, it intends to discuss the effectiveness of vocabulary learning through games.

1.2.1. Defining Vocabulary

Nobody describes vocabulary better than Harmer (1991) saying “if language structures make up the skeleton of a language, the vocabulary provides the flesh and the vital organs” (p. 153). Grammar without vocabulary cannot afford conveying meaning to language. A sentence structure without interpretations becomes only some meaningless graphics. Indeed, without vocabulary language is a meaningless matter.

As defined by the Oxford Basic English Dictionary (2006), “vocabulary is all the words that somebody knows or that are used in a particular book or subject, or it is all the words in a language” (p. 425). Following this definition, vocabulary is defined at three different levels. First, as to be related to an individual, vocabulary is all words he/she knows. Another definition which goes in the same path would be the one of Wikipedia the Free Encyclopedia. This last indicates that “a person's vocabulary is the set of words within
a language that are familiar to that person” (para. 1). Second, as to be used in a body of literature, it is all words that exist from the beginning to the end. Third, as to be on its own, vocabulary is all words that make a language.

Moreover, Jakson and Amvela (2000) claim that vocabulary, lexis, and lexicon can be used as synonyms. However, for Heibert and Kamile (2005), “vocabulary is the knowledge of meanings of words” (p. 03).

Vocabulary is then inclusively characterized as words' knowledge fulfilled with an understanding of their meaning. It is the knowledge about the stock of words that constitute a language in addition to a sense of meaning surrounded by these words used in written or spoken communication. Moreover, because languages are ever expanding, there is no exact number of a language vocabulary. Vocabulary is accepted for its flexible nature. It expands, fortifies and deepens over time. Indeed, learning vocabulary is a long life journey especially a target language vocabulary.

1.2.1.1. The Notion of “Word”

According to Jakson and Amvela (2000), “the term 'word' is used to designate an intermediate structure smaller than a whole phrase and yet generally larger than a single sound segment” (p. 57). In other words, a word is a larger unit than a single sound and smaller than a phrase. Nonetheless, Carter (2012), presents what he calls an "orthographical" definition instead where he declines that “a word is any sequence of letters (and a limited number of other characteristics such as hyphen and apostrophe) bounded on either side by a space or punctuation mark” (p. 20). Carter defines the word notion corresponding to how it is written. A grouping of letters and a predetermined sequence of other qualities that is surrounded in both sides by indentation or punctuation marks are what make a word for Carter (2012).

1.2.1.2. The Notion of “Word Knowledge”

A word is much more than only a figure or a drawing. A word has meaning(s), has forms and a variety of uses that depends on the speaker or the writer. Moreover, word knowledge incorporates some distinctive aspects. According to Thornbury (2002), a word's knowledge depends upon knowing its form and meaning. While the word form refers to how the word looks like or how the word sounds, the notion of meaning takes more aspects
such as the word meaning(s), as in the dictionary; the grammatical behavior, for example how it is used as a noun or a verb; the word’s frequency; the connotations; the register of the word whether spoken or written; the collocations of the word and the word derivation.

Harmer (2006) reflects the notion of words knowledge from a different perspective. He classifies the aspects of word meaning in knowing its definition, meaning in context, polysemy, synonyms, antonyms, connotation, or hyponymy (Harmer, 2006, pp. 18-19). Harmers' focus on meaning brings about seven aspects of worlds knowledge. The first aspect is the definition that the dictionary provides for the word or what the word is literally referring to. The second is the meaning in context, or the intended meaning of the addressee. The third aspect is to have knowledge about the words' different meanings or uses. The fourth is to know the opposite or also, an equivalent of the meaning which represents the fifth aspect as well. Moreover, the sixth is the idea or image that is associated with the word in addition to the seventh aspect which refers to where the word fits in world of words. To know a word, it is not necessary to be familiar with all aspect mentioned. In most cases, the aspect that reflects the particular context the item is used in is possibly sufficient. Yet, the more one's insight about a single word expends, the more he/she upholds the ability to use it effectively and trustfully.

Nation (2005), for this part, suggests three categories of word knowledge, namely form, meaning, and use. First, he claims that form should be classified into written, spoken, and word's parts; Then, comes meaning to be classified into three other aspects. Meaning can be as associated with form, as expressed by concepts and referents, or other meaning associations. Third and last, he restrains the word use, in its turn, into three other classifications: grammatical function, collocations, and use constraints. Moreover, he further differentiates between productive and receptive knowledge introducing a set of questions. Nation's (2005) classification is summarized in the following table:

<table>
<thead>
<tr>
<th>What is Involved in Knowing a Word?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spoken</td>
</tr>
<tr>
<td>R What does the word sound like?</td>
</tr>
<tr>
<td>P How is the word pronounced?</td>
</tr>
<tr>
<td>Written</td>
</tr>
<tr>
<td>R What does the word look like?</td>
</tr>
<tr>
<td>P How is the word written and spelling?</td>
</tr>
</tbody>
</table>
### Table 2: What is involved in knowing a word? (Nation, 2005, p. 584)

#### 1.2.2. Types of Vocabulary

The first distinction is the oral/printed vocabulary. Oral vocabulary refers to the words we acknowledge while listening. However, printed vocabulary refers to the set of words that we understand when we write or read silently. “Oral vocabulary is the set of words for which we know the meanings when we speak or read orally. Print vocabulary consists of those words for which the meaning is known when we write or read silently” (Heibert & Kamile, 2005, p. 03). This is how learners learn what the word looks and sounds like, how it is spelled and pronounced.
Another distinction divides vocabulary into receptive and productive. On one hand, “receptive vocabulary refers to the words we understand through reading and listening” (Hanson & Pauda, 2011, p. 05). It is the set of words that people assign meaning to while listening or reading. Receptive vocabulary refers to all of the words that a person understands; still, may or may not feel comfortable to produce. On the other hand, “productive vocabulary is the set of words that an individual can use when writing or speaking” (Heibert & Kamile, 2005, p. 05). This last, also known as expressive vocabulary, is to the arrangement of words that learners recognize, understand and feel comfortable to produce. It refers to the terms that can be called to the mind of a person and used trustfully. This type is related to productive skills of language, namely writing and speaking.

Eventually, the productive/receptive distinction was originally termed corresponding to the receptive skills, namely listening and reading; and the productive skills, namely writing and speaking. Both productive and receptive vocabularies represent a degree of word knowledge and understanding for the word. However, productive vocabulary endures more attachment to the employment and usage of words.

Another distinction of vocabulary divides vocabulary on the bases of its redundancy in use and writing in particular. Nation (2000) distinguishes four kinds of vocabulary in the text; high frequency words; academic words, technical words and low frequency words (p. 15). Academic vocabulary refers to the vocabulary that is often found in academic texts than in any other genre. The high frequency words are the 2000 most commonly used words within a language. Yet, low frequency words are words that rarely meet our use of language. They consist of the rest than the 2000 high frequency words mentioned. According to Milton (2009), “learners will tend to know more of the high frequency words than the lower frequency words” (p. 25). Finally, Technical words are those words which are common and closely-related to a specific topic. They differ considerably from a subject to another. As soon as one recognizes those words, he/she directly discovers what topic is being discussed.

It is important first for the learner to learn how to recognize high frequency words before any others. The most used words in the language will able him to have a basic understanding of the language and then grow from there. They form the firm ground that learner should stand on.
Another way of classifying vocabulary is in terms of its breadth and depth. “Breadth involves how many words are known, and depth involves how much is known about each word” (Corrigan, 2008, p.110). On one hand, breadth of vocabulary is regarded as the quantity of words that one knows. In other words, it is concerned with the size of vocabulary. It involves the aforementioned aspects of knowing a word. On the other hand, there is the term depth. Depth of vocabulary refers to the quality of vocabulary knowledge. In other words, how well you know the vocabulary items you have in mind, not only in terms of meaning or meanings, but also in terms of grammatical function, syntax, morphology and other aspects.

The more distinctions researchers reveal, the more vocabulary confirms its place within language. Vocabulary whether approached in its oral or written form; productive or receptive function; high or low frequency forms, or in the sense of quality or size, is still a vital item in language learner life.

1.2.3. The Importance of Vocabulary in Language Learning

The ability to function in the world is largely due to the language one uses. Indeed, the social presence of people is highly affected by language skills. Wilkins (1972) states that

If you spend most of your time studying grammar, your English will not improve very much, you will see most improvement if you learn more words and expressions. You can say very little with grammar, but you can say almost anything with words (p. 111).

Vocabulary is one component that combines the four skills of language. It affects the way people express themselves, and the way they communicate. Besides, unless learners obtain an adequate vocabulary background, they will not be able to master any of the four skills of language. Shedding light on the importance of vocabulary requires locating its place within the four skills of language.

1.2.3.1. Vocabulary and Reading

First and foremost, the ability to read is basically dependable on the recognition and understanding of vocabulary used. The correlation between vocabulary and reading appears to be taken for granted. One cannot read effectively if he/she just cannot
understand the words he is reading or what meaning they hold. “Vocabulary knowledge is fundamental to reading comprehension; one can't understand text without knowing what most of the words mean” (Nagy, 1988, p. 02). Moreover, Words knowledge is crucial for effective reading. According to Biemiller (2005),

Teaching vocabulary will not guarantee success in reading, just as learning to read words will not guarantee success in reading. However, lacking either adequate word identification skills or adequate vocabulary will ensure failure (as cited in Butler, Urrutia, Buenger, Gonzalez, Hunt & Eisenhart, 2010, p. 1).

1.2.3.2. Vocabulary and Writing

Developing the writing ability depends largely on vocabulary knowledge. In fact, one of the challenges that face the writer is that words are more required in their complex use. In written forms, words are required to be represented in their multiple, complex meanings than in oral forms. It is the choice of vocabulary and its use what creates a good reading script. According to Wilkins (1972), “without grammar very little can be conveyed; without vocabulary nothing can be conveyed” (p. 111-112). Moreover, a direct correlation assembles both vocabulary and writing. Limited vocabulary knowledge, in its turn, limits the writing ability. Learners feel quite troubled when they fall into an inadequate choice of words greatly because vocabulary holds within the meaning of message and the purpose of the writer.

1.2.3.3. Vocabulary and Speaking

Vocabulary takes an intrinsic stand within the speaking skill. Indeed, the more vocabulary the learner acquires the more he/she will be encouraged to speak, interact and participate. Bishop, Yopp and Yopp (2009) assert that “students’ knowledge of words impacts their achievement in all areas of the curriculum because words are necessary for communicating the content” (p.15). Moreover, the learner will be able to express himself/herself correctly and sufficiently when, on contrary, the less vocabulary the learner has, the less his/her willingness to interact would be. Thus, vocabulary background affects learners' motivation to learn.
1.2.3.4. Vocabulary and Listening

Learning vocabulary is merely the same as learning to listen. Both serve for the same path. Without vocabulary knowledge, the learner cannot listen effectively and understand the message conveyed by the speaker. Understanding vocabulary is fundamental for listening comprehension because unknown vocabulary interferes with comprehension. “More vocabulary is necessary in order to engage in everyday spoken discourse than was previously thought” (Adolphs & Schmitt, 2003, p. 425). Moreover, vocabulary plays an important role in learners' grasp of others talk in interactional situations. Failure to distinguish the different meanings and uses of vocabulary may lead to disagreement and confusion. Hence, causes breaks and failure in communication. Indeed, adequate word knowledge leads to an adequate decoding of speech. Besides, as concluded by Heibert and Kamil (2005), “comprehension is a function of oral language and word recognition” (p. 03). For example, to understand directions one may only need to understand simple vocabulary such as “left” and “right”.

In learning a foreign language, the lack of vocabulary causes much damage in communication whether while speaking, writing or decoding the language transmitted to them. All language skills, namely speaking, listening, reading and writing are deeply harmed by limited lexical repertoire. However, in the same time, vocabulary learning cannot occur without exposure to language. While vocabulary deficiency damages the four skills, it, also, cannot be learned without using the four skills. In other words, listening, speaking, writing or reading the language are the only methods one can use in order to learn vocabulary.

1.2.4. Intentional and Incidental Vocabulary Learning

Due to the flexible nature of the language, learning vocabulary seems an everlasting task. Yet, even if some vocabulary learning falls in schools, it is not limited to school environment. Indeed, most teachers pay little attention to put a considerable emphasize on new vocabulary items. However, for the purpose of discovering the most effective way to learn the target language vocabulary, the incidental, or implicit, way of learning a word and the intentional or the explicit way of learning have been receiving a considerable attention.
An intentional explicit learning of vocabulary clearly consumes a lot of time and effort. In line with this method, learners need a sustained focus on the content area of vocabulary. In other words, if learning only happens to be this way, then learners will have to spend months in learning vocabulary. Besides, Folse (2004) concludes that “explicit attention to vocabulary is rare” (p. 9). Learners learn vocabulary more often in an incidental way than intended even at an educational environment. What characterizes vocabulary is being a part of everything that involves language. According to Nagy, Perman, and Anderson (1985), “for the most part, vocabulary growth in school occurs informally and incidentally rather than formally and intentionally” (as cited in Bintz, 2011, p. 46). In other words, students should be taught how to learn vocabulary and acquire it more like a habit. Besides, Frey and Fisher (2009) claim that “informal and incidental vocabulary learning is quite efficient and effective” (p. 46). Learning words incidentally facilitates the productive use and grants more confidence for vocabulary use. Moreover, Loewen (2005) argues that incidental focusing on form is more effective to learn vocabulary rather than learning vocabulary focusing on forms.

Furthermore, learners can do much more independent from the teacher and the classroom. For a language learner, it is in terms of certainty that formal education is not enough to enrich the target language vocabulary. In order of overcoming the disregard of vocabulary and revealing its nature as a high priority of language learning, it is up the learners to take advantage from other sources of language.

1.2.5. Vocabulary learning strategies and steps

It is not an easy task to come at a satisfying definition of the term strategy. However, a learner strategy or a language learning strategy refers to learners attempt to learn (Takac, 2008, p. 53). Moreover, Nation (2000) further discusses the term strategy to involve four different aspects. He claims that a strategy needs to:

1. Involve choice. That is, there are several strategies to choose from.
2. Be complex. That is, there are several steps to learn.
3. Require knowledge and benefit from training.
4. Increase the efficiency of vocabulary learning and vocabulary use.

(Nation, 2000, p.352)

Nonetheless, there is a wide range of different vocabulary learning strategies as demonstrated by the classifications of different researchers. However, one comprehensive
listing of vocabulary learning strategies is presented by Schmitt (2007). He divides Vocabulary learning strategies into five categories summarized as follows:

First, determination strategies are used by an individual when faced with discovering a new word’s meaning without recourse to another person’s expertise. It involves, analyzing available pictures or gestures, guessing meaning from textual contexts, and using a dictionary whether bilingual or monolingual. Second, social strategies involve interaction with other people to improve language learning. It is represented in asking the teacher for a synonym, paraphrasing, learning and practicing new words with a study group, interacting with native-speakers. In addition, memory strategies (or mnemonics) involve relating new words to previously learned knowledge, using some form of imagery or grouping such as using semantic maps, using the keyword method, or associating new words with its already known synonyms and antonyms. Besides, cognitive strategies entail manipulation or transformation of information about words to be learned, although they are not so specifically focused on mental processing as memory strategies. Written repetition, keeping a vocabulary notebook, and putting English labels on physical objects are examples about the strategies that can be use in this context. Eventually, meta-cognitive strategies involve a conscious overview of the learning process and making decisions about planning, monitoring, or evaluating the best ways to study such as rehearsal, testing oneself and studying words continuously over time.

Another set of researchers claims that vocabulary learning stands on the hold of several steps. Brown and Payne, 1994; Cook, 2001 maintain that vocabulary learning proceeds through a collection of steps that learner has to follow. Brown and Payne (1994) describe the process of vocabulary learning as follows:

(a) having sources for encountering new words, (b) getting a clear image, either visual or auditory or both, of the forms of the new words, (c) learning the meaning of the words, (d) making a strong memory connection between the forms and the meanings of the words, and (e) using the words (as cited in Singhakowinta, 2013, p. 31).

In order to learn vocabulary according to Brown and Payne (1994), several steps are required. First, it entails a generated language input where new words may come across. Sources of new words can prevail in classroom, television, dictionaries or digital games. The exposure to new language items is most important and considered as the first step in
vocabulary learning. Second, the creation of a mental picture to the new item either one see what it refers to, listen to what it means, or just create a mental picture by association with the first language words. Third, the learner gets the meaning of the new item whether deeply or from the context. Fourth, he/she associates the new meaning to a pre-existing knowledge. Fifth and last, the learner practices the new linguistic item or uses it in collocations, sentences, or conversations.

Cook (2001), for this part, holds that vocabulary learning is the process of getting meaning and acquiring words. She affirms that

Getting meaning strategies include guessing meaning from situation or context, using a dictionary, making deductions from the word-form, and linking lexical items to cognates. While acquiring word strategies include repetition and rote learning, organizing words in the minds of learners, and linking lexical items to existing knowledge (as cited in Rabadi, 2016, p. 48).

Naturally and without any prior intentions, one may found himself/herself just following such strategies and steps. However, observing those steps and strategies, one can only notice that one of the examples that those steps occur in is while playing with digital games. Digital games, if chosen properly, can provide a generated source of vocabulary and facilitate vocabulary practice and use.

1.2.6. Vocabulary Assessment

The assessment refers to the critical evaluation in order to test the quality or the presence of something. Through a well-crafted test, a designer may be able to determine the learners' level of knowledge in addition to their strengths and weaknesses. Moreover, when considering a vocabulary test, designers usually ask themselves a variety of questions. In order to prepare a vocabulary test, designers should ask themselves the following questions: (a) how should I test vocabulary? In response to this question, the answer falls in the way vocabulary has been taught in the first place, whether taught in isolation or in context; (b) which kind of vocabulary should I test? In this case a designer should encounter what the learner expects and recognizes; (c) which format(s) should I use? Again, the teacher should follow the format he/she used while teaching and never introduce an unfamiliar format to the learner; (d) how many items should I include? In fact, the more items in a test, the more it reliable it is considered to be; (e) how important is the
context? It is important to consider the degree of contextualization because tests are given in isolation or to a given extent of context; (f) is there any tools or resources that can help me? There are many tools that can help the designer such as internet resources, images and others (Coombe, 2013, pp.113-116).

Furthermore, a person's vocabulary measurement occurs in both classifications of depth and breadth as well as in terms of productive and receptive knowledge of vocabulary. In one hand, the classification of depth and breadth refers to the size and the quality of words. Both have a variety of ways of how to be measured. While vocabulary breadth is commonly referred to by the question “how much vocabulary one has?”; vocabulary depth is referred also by the question “how much one knows about the word?”. However, words can be tested in isolation, in sentence context and in texts (Nation, 2000, p. 569). In addition, vocabulary measurement is related to the aspects of word knowledge. Yet, there is no ultimate perfect testing method, each method have several advantages and disadvantages.

1.2.6.1. Tests of Vocabulary Breadth

Vocabulary size tests that have been dealt with so far focus to a large extent on the Form-Meaning Link (Read, 2014, p. 04). One example of such formats is checklist tests where the learner is given multiple answers and asked to tick the appropriate answer. Milton (2009) claims that “some of the best-researched tests of vocabulary are checklist tests of passive vocabulary recognition, designed to give an estimate of vocabulary breadth or size” (p. 53). In such tests the form is deceptively simple. They intend to give the illusion of simplicity; however, they are not what they seem. In other words, they intend to be trickier. These types of tests represent a passive knowledge of words. One advantage of the checklists is that they are quick and enjoyable. They enable the designer of testing a big amount of words in a relatively easy manner. Thus, the learner does not lose concentration meanwhile. Conversely, the disadvantage of checklists is that they give a potential degree of guessing the right answer.

Furthermore, Nation (2000) states that “tests of vocabulary may encounter multiple-choice (recognition) or no choices (recall)” (p. 567). Both recognition and recall tests depend open giving meanings, names, or explanation to the vocabulary item. Recognition tests refer to the passive form when the learner is provided by the information of what can
lead him to the word to choose from. However, the recall test is when the answer is a response to the foreign language stimulus. Gap-fills are one way of doing this.

### 1.2.6.2. Measuring Vocabulary Depth

Measuring vocabulary depth refers to measuring how much the learner knows about a vocabulary item. One example of such tests is definition map. “…all concept of definition maps require that students look for a class, characteristics, and examples” (Daller, Milton & Treffers-Daller, 2000, p. 132). One example of tests that can be used for vocabulary depth measurement is word association where the learner is given a word and asked to provide words that are related to it. Also, polysemy tests can be considered as another type of vocabulary depth tests. The test can be a question to afford synonyms or antonyms of words.

### 1.2.7. Learning Vocabulary through Games

One of the challenges of learning is preserving the fun element and games are the best in such a field. Raphael (2010) sustains that “Making learning fun is a key to any teaching situation and especially to teaching vocabulary” (p.15). The relaxation and pleasurable atmosphere that games provide while learning make it easier for the learner to concentrate and recall the vocabulary items he/she needs in addition to the challenge and competition that motivate learners for more practice and participation. Games can thus be seen as both providing opportunities for developing richer vocabularies as well as practicing existing lexical items of learners. Good computer games specially are vocabulary rich and provide a creative means for vocabulary learning. Doff (1988) states that communicative activities such as games are most effective to motivate students to be more actively involved in the speaking activities to produce the words they have known. The relaxation atmosphere, the interactional entertaining nature, and the learning potential that games supplies are what makes online games unique in the field of learning vocabulary.

### Conclusion

For second/foreign language learning, vocabulary is quite important. Even advanced levels of learners continue to fill out their lexical knowledge. In this respect, it is necessary for learners to have knowledge about vocabulary learning strategies and steps. However,
because of its flexible nature, the best way to learn vocabulary is to never lose sight of the fun element within. It is also preferable to be a subject of incidental and unconscious learning. Therefore, maintains learners' motivation and interest for vocabulary learning.
Chapter Two:

The Effectiveness of Online Games in Vocabulary Learning

Section One:

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Introduction

The present section aims at testing quantitatively the effectiveness of online games in enhancing vocabulary package. It starts with an explanation of the case study, the experiment and the treatment. Then, the post test and findings are analyzed and compared in order to confirm or reject the research hypothesis.

2.1.1. Presentation of the Case Study

The game chosen as a case study namely “Criminal Case” is an online puzzle game where the player acts through his avatar as a detective to solve a criminal act. For the present research, the online version played on Facebook is opted for. The game uses text-based illustrations and instructions where the player has to indicate clues in the crime scene by using the mouse or (if using smart phones and tablets) just touching the item named on the screen. Moreover, the game starts from the police station and requires investigations, collecting evidence, going through analysis and autopsies as well as interrogating suspects and collecting suspects' profile. The game cannot be completed (arresting the criminal) unless the player collects evidence and indicates the killer profile. The main purposes behind choosing the game is because of its lexical content, the diversity and difficulty of vocabulary in addition to being accessible, and combines the characteristics of a good learning game.

2.1.2. Population and Sampling

The target population of the present research is second year Master students, option “Language sciences and TEFL” at Larbi Ben M'hidi University, Oum El-Bouaghi. The motive for this choice is the ease of contact, the collaboration of teachers, and the proficiency of learners in comparison with the difficulty of the game chosen. The target population (110) student is divided into two groups taught by the same teacher and in the same conditions.

The scope of the present case study is restricted to a portion of the target population. Arikunto (2002) states that if the subject of a population is less than 100, it is better to take all of them. But if the subjects are more than 100 subjects, we can take 10% - 15% or 20% - 25% or more (as cited in Pratiwi, 2009, p. 24). Subsequently, 11 till 27 students are considered to be enough for a representative sample and to have reliable experiment results, taking into consideration that the free will is at the heart of games, an
announcement during the class was made for both groups. Eventually, a voluntary sample of 30 students participated in the study. For a representative sample, a non-probability voluntary sampling was used. The result was a heterogeneous sample of 30 students.

2.1.3. Choice of the Method

In order to investigate the effect of online games (independent variable) on vocabulary (dependent variable), an experiment and a questionnaire are implemented in the present research. First, the experimental research design was conducted as the main tool for gathering data. As mentioned before, criminal case was chosen to fulfill the “online game” part. The sample was divided equally into an experimental and a control group. Both groups took a pre- and a post test of vocabulary with the purpose of investigating learners’ efficiency in vocabulary and to test the progress of both groups as well. The vocabulary used to form the tests has been exclusively taken from the game and results were analyzed using the t-test to confirm or reject the research hypothesis. Second, a questionnaire was submitted to all members of the experimental group in order to investigate their attitudes, feelings, and points of view about the game in order to get the overall conclusions.

2.1.4. The Research Design

Both experimental and control group took the same pre-test. Right away, the experimental group participants were invited to play the game via Facebook. The control group participants were also friends at Facebook but never invited to play the game. Facebook notifications allowed us to monitor both groups (how frequently the experimental group subjects are playing and if any subjects of the control group tries the game). After five weeks, the same post-test was administered for the two groups. The study was designed as presented in the following table:

<table>
<thead>
<tr>
<th>The Experimental Group</th>
<th>The Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants 15</td>
<td>Number of participants 15</td>
</tr>
<tr>
<td>Added on Facebook</td>
<td>Added on Facebook</td>
</tr>
<tr>
<td>Pre-test</td>
<td>Pre-test</td>
</tr>
<tr>
<td>Invited to play criminal case and asked personally to take a look.</td>
<td>Not invited to play criminal case and was asked not to play.</td>
</tr>
</tbody>
</table>
Treatment period 5 weeks  5 weeks period
Post-test  Post-test
A student’s questionnaire /

Table 3: The design of the study

2.1.5. The Procedure

2.1.5.1. The Pre-Test

The pre-test was administered in March 7th, 2016. Both the experimental and the control groups took the same test in the same conditions. Taking into account the lexical items used in the game, the pre-test was designed in four exercises (Appendix A). The first exercise was a check-list test. Students were given a set of pictures and a number of answers to choose from. The second exercise was on the form of naming object as well. A set of pictures of diverse objects were given and students were asked to name them without providing them with options. Then, the third exercise was on form of filling in the gaps where students were given a definition, or a description of an event to guess what it is. Finally, the fourth exercise with more focus on context was divided into two sections. In the first section, a description of a crime was made and students were asked to identify the name of the crime. Besides, in the second section, students were given some newspaper stories and asked to fill in the blanks with the suitable verb. Learners took time as much as they needed to answer the test to enable following the treatment in most valid way. The participants, also, were given a set of numbers to indicate their identity and the results were as follows.

- Pre-Test Results

The marks obtained by students in the pre-test are presented in the following tables:

<table>
<thead>
<tr>
<th>ID</th>
<th>Exercise1 (x/19)</th>
<th>Exercise2 (x/19)</th>
<th>Exercise3 (x/6)</th>
<th>Exercise4 (x/6)</th>
<th>Total (x/50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>002</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>003</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>004</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>ID</td>
<td>Exercise1 (x/19)</td>
<td>Exercise2 (x/19)</td>
<td>Exercise3 (x/6)</td>
<td>Exercise4 (x/6)</td>
<td>Total (x/50)</td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>001</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>002</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>003</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>004</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>005</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>006</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>007</td>
<td>12</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>008</td>
<td>10</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>009</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>010</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>011</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>012</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>013</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>014</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 4: Pre-test results of the control group
As can be noticed from a first sight to the table, the pre-test marks clearly show deficiency in vocabulary package. In both groups, students' marks range from 7 to 27. The majority of students were not able to get an acceptable score in the test regardless to their general language proficiency or results obtained in formal university exams.

### 2.1.5.2. The Treatment

After the pre-test was done, participants of the experimental group received an invitation for the game on Facebook. With the goal of maintaining the aspects and characteristics of a “game”, the players were not restricted to a limited time to play in or how many times they should play. Total freedom was granted for them. Besides, in order to be able to follow the treatment, the members of the experimental group were asked to send “energy” and ask for “energy” each time they play. In such manner, their frequency of playing could be recorded as follows:

<table>
<thead>
<tr>
<th>ID</th>
<th>1st week</th>
<th>2nd week</th>
<th>3rd week</th>
<th>4th week</th>
<th>5th week</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>///</td>
<td>/////</td>
<td>//////////</td>
<td>//////////</td>
<td>//</td>
<td>29</td>
</tr>
<tr>
<td>002</td>
<td>///</td>
<td>/////</td>
<td>/////</td>
<td>//////////</td>
<td>/</td>
<td>23</td>
</tr>
<tr>
<td>003</td>
<td>/</td>
<td>/////</td>
<td>//////////</td>
<td>/////</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>004</td>
<td>//</td>
<td>/////</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>005</td>
<td>/</td>
<td>///</td>
<td>//</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>006</td>
<td>/</td>
<td></td>
<td>/////</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>007</td>
<td>/////</td>
<td>//////////</td>
<td>/////</td>
<td>/</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>008</td>
<td>//////////</td>
<td>/////</td>
<td>/////</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>009</td>
<td>/</td>
<td>///</td>
<td>//</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>010</td>
<td>///</td>
<td>/////</td>
<td>//////////</td>
<td>//</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>011</td>
<td>///</td>
<td>//////////</td>
<td>//////////</td>
<td>//</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>012</td>
<td>//////////</td>
<td>//////////</td>
<td>//////////</td>
<td>//////////</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>013</td>
<td>///</td>
<td>/////</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>
Table 6: Frequency of players entering as observed

The above table shows how much time players entered the game. It clear that not all of them started directly as invited and asked perhaps this is back to being a busy week, and maybe they just had no interest then. However, it also shows that the second and the third weeks were the weeks with higher frequencies. This is probably because it was the holiday, and maybe because they just got to know the game and started to get familiar with it. The fourth week comes next in frequency. However, the previously mentioned interpretations are to be confirmed or rejected after the analysis of the questionnaire.

For the control group, participants were added just to allocate any disturbance in the process of the experiment. Moreover, it is noteworthy that the characteristic of Facebook in showing all the players in the game allows indicating any kind of disruption.

2.1.5.3. The Post-test

With the end of the treatment period, the post test was administered to the members of both groups. It took place in the last days of the fourth week. The post test took the same design as the pre-test (Appendix B). There were four exercises (a check list exercise, another to name objects…etc.) but with different pictures and sentences to avoid learners remembering them.

- Post test Results

The following tables illustrate the scores made by the participants in the post test:

<table>
<thead>
<tr>
<th>ID</th>
<th>Exercise1 (x/19)</th>
<th>Exercise2 (x/19)</th>
<th>Excsecise3 (x/6)</th>
<th>Exercise4 (x/6)</th>
<th>Total (x/50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>002</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>003</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>004</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>ID</td>
<td>Exercise1 (x/19)</td>
<td>Exercise2 (x/19)</td>
<td>Excsecise3 (x/6)</td>
<td>Exercise4 (x/6)</td>
<td>Total (x/50)</td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>001</td>
<td>18</td>
<td>14</td>
<td>6</td>
<td>5</td>
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</tr>
<tr>
<td>002</td>
<td>12</td>
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</tr>
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<td>42</td>
</tr>
<tr>
<td>004</td>
<td>5</td>
<td>4</td>
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<td>0</td>
<td>10</td>
</tr>
<tr>
<td>005</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>006</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>007</td>
<td>16</td>
<td>12</td>
<td>5</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>008</td>
<td>13</td>
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<td>6</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>009</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>010</td>
<td>12</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>011</td>
<td>15</td>
<td>15</td>
<td>5</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>012</td>
<td>17</td>
<td>14</td>
<td>5</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>013</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 7: Post test results of the control group
According to the above tables, participants' marks range from 6 to 44. Accordingly, there could be an estimation of an increase in the results which means that students developed vocabulary during the treatment period. However, nothing can be for sure until all the computations are done.

**2.5.1.4. Scoring**

In the present research, the tests were not graded out of 20 as normal tests, instead, each correct answer took one point. Since each of the tests was in the same number of answers, the scoring was out of 50. Therefore, it was scored out of 19 points for the first exercise, 19 points for the second exercise, 6 points for the third and 6 points for the last one (Appendix C and D).

**2.5.1.5. Materials**

The first three exercises of the pre- and post test alike were created using the vocabulary implemented in the first two cases of the game (the game is divided into several cases of crimes, each case contains several crime scenes, suspects, investigations…etc.). The fourth exercise for both the pre- and post test was adapted (with some enhancements to fit the study) form a lesson plan designed by Ubben and Faulkner (2003).

**2.5.1.6. Statistical Means**

To investigate the impact of playing criminal case on learners vocabulary, the t-test was used to analyze data gathered from both the pre- and post tests of both the experimental and the control groups and investigate whether there was a significant different in results. The t-test was mainly chosen for being a powerful mean that is able to confirm or reject the hypothesis. In addition, it fits the research in terms of the sample that was voluntary chosen and was divided into two different scores. Miller (1974), states that “The t-test is the most powerful of the related sample tests and should be considered first” (p. 79). All the calculations were made using the statistical program SPSS.
2.1.6. Data Analysis

2.1.6.1. Procedure

For the computation of the t-test for independent samples, the following formula is used:

\[ t = \frac{(\bar{x}_1 - \bar{x}_2)\sqrt{(N_1 + N_2 - 2)N_1N_2}}{\sqrt{(N_1S_1^2 + N_2S_2^2)(N_1 + N_2)}} \]

As noticed, the computation of the calculation of the two groups’ means (which is the score average of a set of scores) \( \bar{x}_1 \) and \( \bar{x}_2 \), the two groups’ variances: \( S_1^2 \) and \( S_2^2 \) is needed. Those lasts are represented by the formulas as follows:

\[ S_i^2 = \frac{\sum X_i^2}{N_i} \]

- \( N \) is the number of students.
- \( \sum X \) is the sum of the students’ grades.

However, when using SPSS we just need to enter the data and the steps necessary and the calculation will be automatically done. Beyond, it seems noteworthy that after indicating the \( t \) value, it is necessary to check level of significance value.

Significance level shows how much a pattern of difference in your data is probably true. The most common percent to mean that an academic research is proper enough to uphold true findings is 95%. However, no research package will show 95% or even 0.95. Instead, it will show the rest 5%, that is, 0.05. The value 0.05 means the considerable value of not being true. In other words, if the level of significance < 0.05, this means that we reject the null hypothesis in favor of the alternative one, that is, there is a significant difference between the two statistical series. However, if the level of significance > (above) 0.05, this means that we accept the null hypothesis, that is, there is no difference between the two statistical series.

- Presenting the data as entered to SPSS program:

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>( X_1 )</td>
<td>( X_2 )</td>
</tr>
<tr>
<td>01</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>02</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>03</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>
Observing the scores from the table above, one can see a slight difference between grades of the pre and the post test of the control group. Besides, it also differs from the pre-test grades of the participants in the experimental group. The marks of the post test show a significant increase which means that the experimental group was the one had more profitable development of his vocabulary package. However, results cannot be proved unless the t test value confirms it.

After comparing the pre-results of both groups, the t test is being used in two different ways for two different reasons. First, it attempts to investigate if there was a significant increase in the post test scores of the experimental group in comparison with pre-test scores in order to investigate whether there was a significant improvement in vocabulary during the treatment period. It helps a great deal determining if the experimental group had a significant statistical development or not. Second, it intends to eliminate any external suspicion and ambiguity in the result by applying another t-test between the control and the experimental group in terms of the post-test scores.
• Pre-test Results (The Experimental Vs. The Control Group)

Using SPSS, the t test was used to investigate whether there is a significance difference between the experimental and the control group results of the pre-test. T test results appear as follows:

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assumed</td>
<td>11,616</td>
<td>,002</td>
</tr>
<tr>
<td>Equal variances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>not assumed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Level of significance 0.169 is higher than 0.05; thus, there is no statistical significant difference between the scores of the experimental and the control group. As the results shows, both groups can be considered at the same vocabulary level. Therefore, we are allowed to start the analysis.

2.1.6.2. The Experimental Group (Post-test Vs Pre-test Grades)

After listing the data into SPSS, the results show as two tables. The first table includes both groups' number of participants, means, standard deviation and standard error.

<table>
<thead>
<tr>
<th>groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>grades</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-test</td>
<td>15</td>
<td>14,33</td>
<td>6,455</td>
<td>1,667</td>
</tr>
<tr>
<td>post test</td>
<td>15</td>
<td>29,00</td>
<td>12,519</td>
<td>3,232</td>
</tr>
</tbody>
</table>

Table 10: Mean value (the experimental group)

As the above table makes clear, scores differences are apparent in the mean difference. While the pre-test takes the value 14,33, the post test takes the value 29,00 which means vocabulary of students has developed their during the treatment period. However, we cannot be sure it was a significant increase unless t statistics proves the existence of a significant change in rates. This would be illustrated in the following table:
Table 11: The experimental group t-value (pre-test vs. post-test results)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Equal Variances Assumed</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
<td>df</td>
</tr>
<tr>
<td>Low grades</td>
<td>9.27</td>
<td>.00</td>
<td>4.03</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>High grades</td>
<td>20.95</td>
<td>.001</td>
<td>4.03</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Table 11: The experimental group t-value (pre-test vs. post-test results)
The table distribution shows clearly, the $t$ value equals -4.033, and the level of significance 0.000. However, the results are more amenable to analysis when obtained as follows:

- 0.000<0.05. That is, the degree of significance is less than 0.05.

The difference between the scores is proved to be statistically significant. Thus, the treatment period had a vital impact on the learners' vocabulary. Nevertheless, the results cannot signify that the improvement was a result of playing criminal case. Yet, it is deemed the control group post test grades took way less grades than the post test grades of the experimental group.

2.1.6.3. The Control Group vs. the Experimental Group (Post-test Grades):

SPSS results shows as follows:

<table>
<thead>
<tr>
<th>groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>grades</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>15</td>
<td>29.00</td>
<td>12.519</td>
<td>3.232</td>
</tr>
<tr>
<td>Control group</td>
<td>15</td>
<td>12.13</td>
<td>3.739</td>
<td>.965</td>
</tr>
</tbody>
</table>

Table 12: Mean value (the control group vs. the experimental group)

The above table includes the number of participants, mean, standard deviation, and standard error for both groups. Again, in a first sight the mean of the control group shows a significant difference than the mean of the control group. Moving to $t$ statistics the following table shows up:
### Levene's Test for Equality of Variances

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>Sig.</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>23,294</td>
<td>.000</td>
<td>5.00</td>
<td>28</td>
<td>.000</td>
<td>16.867</td>
<td>3.373</td>
<td>9.957 - 23.777</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>5,000</td>
<td>0.000</td>
<td>16.4</td>
<td>78</td>
<td>.000</td>
<td>16.867</td>
<td>3.373</td>
<td>9.732 - 24.001</td>
</tr>
</tbody>
</table>

### t-test for Equality of Means

Table 13: The experimental group vs. the control group t-value
As the distribution of the table shows, the t value equals 5.00 and the degree of significance equals 0.000. However, the results are most amenable for analysis when obtained as follows:

- $0.000 < 0.05$. That is, the degree of significance is less than 0.05.

There is a statistically significant difference between the experimental group scores and the control group ones. At once, the conclusion is accepted as follows: the improvement of vocabulary that the participants in the experimental group has is, definitely, a result of the treatment period. In other words, the null hypothesis is rejected in favor of the alternative one and playing criminal case does affect positively the vocabulary of the learner.

As noticed from the results obtained, not all participants had a significant increase. To test the relation between the progress that each player had and the rate of the exposure to the game (whether extensive and intensive exposure differ in effectiveness in learning), another test that would be beneficial for the study is correlation.

**2.1.7. Correlation between Frequency of Playing and Scores**

In order to investigate whether the difference in the experimental group post test scores was due to the extent participants were exposed to the game; the test of correlation is used. Once more, the test is used by SPSS. In goal of composing this computation, first we had to obtain data as to be amenable for research. First, the progress (P) of each participant in the experimental group was counted using the formula: $P= X2 - X1$ where $X2$ represents post-test grade and $X1$ refers to the pre-test grade. For more validity of the research, those who did not had any progress or conversely had worse scores are pointed out by 0. The result obtained is illustrated in the following table:

<table>
<thead>
<tr>
<th>ID</th>
<th>Progress</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>002</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>003</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>004</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>
After entering the data into SPSS, a table appears including the calculation. However the correlation relationship cannot be significant unless the level of significant is less than 0.01. After the calculations were done, the results were obtained as follows:

<table>
<thead>
<tr>
<th>Progress</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.808</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>frequency</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.808</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>15</td>
</tr>
</tbody>
</table>

**.correlation is significant at 0.001 level (2-tailed).

Table 14: Progress value and frequency (correlation test)

Table 15: The correlation test

As the above table makes clear, Pearson correlation between frequency and progress equals 1 at the progress and 0.808 (More than the half way into 1). Then, it can be said that both vocabulary progress and frequency of playing have a powerful correlation but is it significant? As mentioned before, correlation is significant when equals or less than the
0.01 level (2-tailed). From the table above (highlighted circle) the data is obtained as follows:

- 0.000< 0.01, thus, the correlation between the progress that participants made and the period of exposure o the game is significant.

As shown by the results, the more time players took playing the game the more there results in the post test was better thus, the conclusion comes as follows: as much as the players spend more time playing criminal case as much as their vocabulary improves. Furthermore, for more investigation about the results obtained, a questionnaire was submitted to the learners.

2.1.8. Findings and Discussion:

The experimental design of the study sought to explore the effectiveness of playing online games, particularly criminal case, on improving EFL learners’ vocabulary package. Criminal case is the game presented as the case study .After obtaining the results of the treatment observation and gathering the data of the pre- and the post-test, the t-test was used in two ways.

First, the application of the t-test between the results of the experimental group per- and post test in order to investigate if the treatment period had a significant positive effect on the learners vocabulary. The results obtained from the test indicate a significant difference in the scores. The scores of the post-test witnessed a great increase after the treatment period. That is to say, the treatment period had a significant effect on learners’ vocabulary.

Second, the application of the t-test between post test scores of the control and the experimental group in order to investigate whether the improvement of the experimental group was as a result to playing criminal case or not. The results obtained from the t-test reveals a significance difference between the control group and the experimental group. The experimental group has achieved higher scores than the control group on the post test. This great increase in marks is due to the treatment phase. That is to say, playing criminal case helped learners to increase their vocabulary knowledge.
Eventually, the conclusion of the results comes as follows. The positive findings from both tests show that online games are an effective technique for learning vocabulary. Online games help the students to practice, discover and expand words knowledge.

In the other hand, when considering the marks of each individual in isolation, one can only notice the difference in post test scores between the members of the experimental group. Some of them had, even, lower marks than the pre-test. In order to investigate the reason behind such results, a correlation test was used. The results obtained from the test show a positive correlation between the additional marks and the frequency of playing criminal case. That is, the more students play online games the more they acquire and remember the words.

**Conclusion**

The participants witnessed a significant improvement as a result of playing the online game chosen. Therefore, playing online games and criminal case in particular has a positive impact on learners' vocabulary package. It carries a great potential enriching the players vocabulary repertoire. Besides, criminal case had the potential to establish a positive correlation between the frequency of playing and learning rate. The post-test scores varied considerably corresponding to the frequency of their playing the game. In other words, the more learners are exposed to such games, the more the effectiveness of learning appears. Online games that are lexically rich, adjusted to the players' level and combine the good game characteristics are a good vocabulary learning strategy for language learners.
Section Two: The Questionnaire

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Introduction

The present section attempts to test qualitatively the attitudes and the viewpoints of the participants about the use of online games in enhancing vocabulary repertoire. It covers the analysis and discussion of the questionnaire findings to support the experiment outcomes and collect the overall result.

2.2.1. The Student's Questionnaire

The questionnaire's main purpose is the collection and analysis of data about the participants' attitudes, experience and point of view while engaging in this experiment. It is used mainly to investigate participants' views about criminal case and its function as an educational strategy.

2.2.2. Administration and Description of the Questionnaire:

The questionnaire was administered to the experimental group of the present study. Students answered the questionnaire in class and handed it back the same day. The questionnaire consists of 14 questions encapsulating close and open ended forms. Questions diverse between multiple choices, yes/no questions and most of the latter were introduced to elicit teachers' justifications and explanation after ticking one of the options. The questionnaire is divided into two sections. The first section investigates the background information, such information may affect the research such as age (Q1), gender (Q2), and another question where they were asked about the reason they engaged in this experiment (Q3). while the second is devoted to uncover the students’ attitudes toward criminal case and their point of view about its use as an educational tool.

2.2.3. Analysis of the Results

- Section one: background information

  Question one: Age? ...........
As noticed from the figure above, generally speaking, the age of participants is enclosed by 22 and 24. However, the most frequent age is 23 which means that the majority of participants are 23 years old. The less frequent answer is 24, that is, only one person. And still 13.3% are 22 years old. That is 2 participants. In fact, the age is a valid index for the reliability of data.

**Question two:** Gender: male/female

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 17: Participants' gender**

As shown in the table and the figure above, 86.7% are female participants, while only the other 13.3% are male participants. The participants' gender shouldn't be surprising. In fact, going back to the population the result becomes cloudless. The population is considered by 110 students, females are the primary dominant gender within the population.

**Question three:** What is the reason you volunteered for this experiment?

A. Only To help.

B. Interested in the game.

C. Other, please specify ...............
As the above table and figure makes clear, 46.7% of the participants specify that the reason they accepted the announcement was only to help while the other 46.7% stated that they were interested in the game. One participant, however, responded: “I wanted to increase my vocabulary and since the game does not take much time I accepted”.

So the problem of participants was resolved, but it lead to a more serious issue of how much time they took playing and did the characteristics of a good learning game was clear to every participant? This situation is what led in the first place to the section two.

- Section two: Criminal Case

**Question four:** How long have you been playing "Criminal Case"?

A. One week  B. Two weeks  C. Three weeks  D. Four weeks  E. Five weeks

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One week</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Two weeks</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Three weeks</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Four weeks</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Five weeks</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 19: How long participants have been playing**

**Figure 4:** How long participants have been playing
According to the above figure, three people out of 15, only, played the game for four weeks which represents 20% of the whole experimental group. Besides, there were four people who played for four weeks and another 4 took only two weeks; whereas 4 people played for a week only. That is, 26.7% for each. For more investigation about the time they took playing comes question number 5.

**Question five:** How frequent have you been playing?

A. Once a week  B. Once in two or three days  C. Once a day  D. Twice a day  E. more.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once a week</td>
<td>0</td>
</tr>
<tr>
<td>Once in two...</td>
<td>4    26.7</td>
</tr>
<tr>
<td>Once a day</td>
<td>9              60</td>
</tr>
<tr>
<td>Twice a day</td>
<td>1              6.7</td>
</tr>
<tr>
<td>More</td>
<td>1              6.7</td>
</tr>
</tbody>
</table>

**Table 20:** Frequency of exposure to the game  

**Figure 5:** Frequency of exposure to the game

The results presented in the table and figure reveals the frequency of the playing activity. Four people stated that they were playing once in two or three days which makes 26.7% of the participants in the experimental group. Moreover, the vast majority included that they were frequently playing once a day. Yet, 6.7 percent included that they were playing twice a day and the same percent played more.

**Question six:** Have you tried to compete with your friends to score more in the game?  
A. No  B. Yes
The results in the figure above show that there was a sort of disagreement between the players about the competition in the game. 53.3% of participants responded positively that they try to get better results than their friends in the game while 46.7% responded negatively.

**Question seven:** While playing, did you face any difficulties in words?

- A. No
- B. Yes

As the figure above makes it, the overwhelming majority of students 93.3% have faced problems with the vocabulary used by the game. While only 6.7% that is, one person included that he/she did not. These rates imply that the vast majority of learners regardless to their proficiency in the language still have problems when it comes to vocabulary which represents a real challenge for EFL students. That last leads us to the next question.

- If yes, were you able to overcome those difficulties?
  - A. No
  - B. Yes
Table 23: Overcoming difficulties in the game  

According to figure 8, almost all participants (93.3%) could overcome difficulties of vocabulary faced while playing the game. Eventually, all the problems students faced and overcome could be attributed to two things; first, students' possession of some compensatory strategies; second, and most importantly, difficult words and expressions have to become acquired.

**Question eight:** while playing, were you curious about who the killer is?

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Somehow</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Yes, very much</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 24: Curiosity for the game

As it shown in the previous figure, only 4 participants out of 15 claimed that they had no feeling of curiosity toward the game while the other 11 participants were divided between somehow, yes and yes, very much. Therefore, criminal case was relatively effective in arousing students' curiosity.
**Question nine:** Do you consider the stories that each case has as an important aspect in the game?  

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>7</td>
<td>46.7</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>53.3</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 25:** The importance of stories within the game

As the figure makes clear, once more participants were in a kind of disagreement about the importance of the stories that each case brings. 53.3% responded by yes, while the other 46.7% responded negatively. This leads to the next part of the question.

- If yes, please justify

For the participants' relatively small number, their justifications are deemed better to be included as they are. This last resulted in the following table.

<table>
<thead>
<tr>
<th>Option</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Without the story you can't catch the killer</td>
</tr>
<tr>
<td></td>
<td>The story made me more involved</td>
</tr>
<tr>
<td></td>
<td>The ambiguity factor is fun</td>
</tr>
<tr>
<td></td>
<td>curiosity</td>
</tr>
<tr>
<td></td>
<td>Because I was able to experience vocabulary in context</td>
</tr>
</tbody>
</table>

**Table 26:** Participants' justifications about the importance of stories

The justifications of the participants turn around two main ideas. First, that the story was important as a part in the design of the game itself (without it you can't perform in the game). Second, that the stories of the game collects aspects of involvement, ambiguity, curiosity, and illustrate vocabulary in context.
**Question ten:** Have you noticed any improvement in your vocabulary while playing the game?  
A. No  
B. Yes

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>8</td>
<td>53.3</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>46.7</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 27: Vocabulary improvement**

As can be seen from the above figure, 53.3% of students answered No, while the other 46.7% responded by yes. This led to the second part of the question.

- If yes, please explain how?

The responses the participants are illustrated in the following table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Gradually I started to remember objects easily.</td>
</tr>
<tr>
<td></td>
<td>The game provides illustration to vocabulary.</td>
</tr>
<tr>
<td></td>
<td>Learning interesting words.</td>
</tr>
<tr>
<td></td>
<td>Learning through exposure to neglected vocabulary in school.</td>
</tr>
<tr>
<td></td>
<td>I know new words I didn't know before.</td>
</tr>
<tr>
<td></td>
<td>I just remember the item next time I see it.</td>
</tr>
<tr>
<td></td>
<td>Playing the game helped me to learn new vocabulary that is used in specific places like the market, kitchen, Garden,…many of them were new for me. After repletion the scenes in the game many times the new vocabulary become a part of my linguistic repertoire.</td>
</tr>
</tbody>
</table>

**Table 28: Participants’ explanation about learning vocabulary**

As the above table shows, the explanations of the participants make it more clear how the learning occurs. Most of those who answered included that they started to remember strange objects easily by the next time they see them. Vocabulary practice and exposure is revealed in the nature of the answers such as in the expressions "new" and "interesting" words in addition to exposure.
**Question eleven:** Have you been exposed to this type of vocabulary at middle school, high school, or university?

A. None of them  
B. Some of them  
C. Most of them  
D. All of them

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>D</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 29:** Vocabulary exposure

**Figure 12:** Vocabulary exposure

Figure 12 shows that the majority of students which represent 66.7% claim that they were exposed to only some of the vocabulary used in the game. However, 20% responded by none of them and 13.3% by most of them while none of the participants assert that they were exposed to this type of vocabulary. This last led to the next part of the question.

- If your answer is B, C, or D, did you remember those words easily?

A. None of them  
B. Some of them  
C. Most of them  
D. All of them

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of them</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Some of them</td>
<td>7</td>
<td>58.33</td>
</tr>
<tr>
<td>Most of them</td>
<td>2</td>
<td>16.66</td>
</tr>
<tr>
<td>All of them</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Σ</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 30:** Vocabulary recall

**Figure 13:** Vocabulary recall

As the table and figure above shows, the majority of participants (58.33%) answered that only some of them could be recalled. Not being able to recall or remember vocabulary one used to know is the major problem of vocabulary learning this is majorly due to the lack of use and practice of words. The rest of the answers was divided in 25% of answers was none of them while the other 16.66% responded most of them.
**Question twelve:** According to you, which of the following is the common way of learning vocabulary?

A. Incidental way of learning  
B. Intentional way of learning

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 31:** Participants' views about the way of learning

**Figure 14:** Participants’ views about the way of learning

From the figure above, the overwhelming majority of participants state that learning vocabulary should be in an incidental way, while two people out of 15 only includes that it should be intentional.

**Question thirteen:** Do you consider "criminal case" as an effective learning tool?

A. Not at all  
B. Somehow  
C. Most of the time  
D. All of the time

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>46.7</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 32:** Participants' views about criminal case

**Figure 15:** Participants' views about criminal case

As the above table makes clear, the greater number of participants agrees that criminal case is an affective educational tool. However, the answer splits apart between 33.3% for somehow, 46.7% responding most of the time and 6.7% insist that it is an affective learning tool most of the time. Rest of the participants 13.3 percent responded negatively.

**Question fourteen:** Do you think that "criminal case" can be adapted in an educational setting?  
A. No  
B. Yes
As the above figure shows, the adaptation of criminal case in an educational setting divided participants into two different views. Though the majority of them responded by yes, still, 40% responded negatively and that criminal case cannot be adapted in an educational setting.

2.2.4. Reliability and Validity Test

In order to test the reliability and validity of the questionnaire and invest it in the most reliable and valid way, the questionnaire was tested under the scale of Cronbach’s Alpha once more using SPSS. Cronbach’s Alpha is a test for the reliability of psychometric tests such as psychological measurements of abilities and attitudes. It tests the consistency of the answers.

Generally, the percent in which the questionnaire is accepted between researchers as reliable is 70% or more (that is, 0.700 or more). Any percent less than that, the research will not be reliable enough. Using SPSS, the results were as follows:

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td>Σ</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 33:** The adaption criminal case in educational setting

**Figure 16:** The adaption of criminal case in educational setting
As shown in both tables (the circled area), the validity of the questionnaire including the 15 question takes all the 100%. However, Cronbach's alpha equals 0.779 that is; the questionnaire is 77.9% reliable. After considering the reliability and validity of the questionnaire, now results can be considered efficient.

### 2.2.5. Discussion of the Results

Based on the analysis of the questionnaire, the results obtained can be classified into three main views. The first view is concerned with the participants' impression about the characteristics of the game chosen. In this respect, the overwhelming majority of the participants asserted that curiosity, fun, drama and challenge were definitely lovable ingredients within the game. In addition, the engagement factor is revealed within 46.6% of participants. Although the sample consists of students who are preparing for their graduation dissertation still, 46.6% did not mind to engage in the experiment just for playing the game.

The second view refers to the extent of their exposure to the game vocabulary and how much they will be able to recall while playing. 66% of participants claim that they were never exposed to this vocabulary except for some of them and more than half of the participants (58%) mentioned that only some of the vocabulary they were exposed to was easily remembered. This clearly indicates the neglecting of vocabulary and the lack of use.

Eventually, the third view refers to the attitude toward using online games particularly criminal case in educational setting. In this sense, a large portion of the participants held a very positive idea about the game chosen. 86.7% of participants assert that criminal case is an effective learning tool. Their answers were divided between
somehow, most of the time and all of the time. Yet, 60% of the participants think that criminal case can be adapted in an educational setting. Although 60% represent a fine number of participants that agree; there still a confliction in views. Some of the participants, though agree that it is an effective learning tool; still, uphold a negative thought of placing it in an educational environment.

Conclusion

The analysis and interpretation of the results allow us to say that online games have a positive effect on vocabulary learning. Online games, if chosen properly, grant the use, practice and exposure to new lexical items. The relaxation atmospheres and the entertainment factor are the most engaging characteristics in the design of games. It is undoubtedly that the case study combines most of the mentioned characteristics of a good learning game namely, drama, exploration, challenge, competition, fantasy, goals, interaction, outcomes, rules and safety. The participants, also, hold a very positive idea about the game chosen as more than half of them agreed to integrate it in an educational setting.
General Conclusion

Because vocabulary learning is a major concern for EFL learners, it essentially requires an enjoyable atmosphere. Learning vocabulary should not be entirely dependable on the classroom setting, but it should expend to influence the way people spend their free time. For this reason, online games are believed to be one effective learning strategy.

This study is conducted primarily to explore the effectiveness of online games in vocabulary learning. To achieve this aim, the research hypothesis was that if learners play online games, then this will have a positive impact on their lexical package. The first chapter in the study arranged some of the necessary theoretical information which served as a solid basis in the analysis and interpretation of the results in the field work. The second chapter, concerned with the investigation of vocabulary learning through online games, held three different analyses: the t-test, the correlation test, and the questionnaire.

The findings gathered in this study confirmed that online games, particularly criminal case, are an effective vocabulary learning strategy. It establishes a positive correlation with vocabulary learning. The results, also, revealed that participants had a very positive idea about the use of online games as a strategy of learning. The majority of participants, also, did not mind the integration of criminal case into educational setting.

Though the present research applied an experimental study to obtain reliable results, it doesn't claim to be avoiding limitations. The lack of the materials (internet connection and devices) was a barrier that prevented collecting more participants. In addition, the members of population were preparing for their graduation dissertation which created another obstacle for participants to have less than the ordinary free time.

Furthermore, on the basis of what has been discussed in both chapter of the study, a set of recommendations are put forward. First, whatever was the academic level of the language learners, vocabulary is a high priority as far as learning the language is concerned. Learners should consider more attention and emphasize on vocabulary learning. Moreover, as online games proved to be an effective learning tool, learners' attention should be drawn into a correct choice of online games focusing on their educational value without losing the sense of entertainment.

Further research can be conducted on the effects of massively multiplayer online games (MMOGs) and massively multiplayer online role playing games (MMORPGs) in
particular on other aspects of language especially pronunciation. Online games, nowadays, provide not only worldwide multiplayer games but also the possibility to interact with native speakers through games whether in written or oral forms. Massively multiplayer role playing game provide a good opportunity to develop learners’ speaking skill.


Appendices
Appendix A

You Can Never Learn Enough Vocabulary

**Exercise 01:** Tick the suitable word

1. Leaf  
   1. Spring  
   1. Helmet  
   1. Lantern

2. Feather  
   2. Gear  
   2. Cap  
   2. Lightbulb

3. Sunflower  
   3. Screw  
   3. Hat  
   3. Flashlight

1. Canoe  
   1. Pinwheel  
   1. Oar  
   1. Barrel

2. Boat  
   2. Wind chime  
   2. Shovel  
   2. Bucket

3. Watering can

1. Aerial  
   1. Cutter  
   1. Broom  
   1. Bowtie

2. Satellite dish  
   2. Wire cutter  
   2. Mop  
   2. Necktie

3. Pocket knife

1. Kite  
   1. Briefcase  
   1. Ruler  
   1. Safety pin

2. Skipping rope  
   2. Backpack  
   2. Bowling pin  
   2. Zipper

3. Bag  
   3. Ruling pin
Exercise 02: What are the following objects?

A. For school:

1. ............  2........  3...........  4..........  

B. In the kitchen:

1. ..............  2.........  3..........  4..........  5..........  6............

C. Around the house:

1. ............  2.Garden .........  3.............  4................

5............
**D. Other objects:**

1. ............  2.............  3.............  4............

**Exercise 03:** Fill in the gaps

01. A dissection performed on a dead body to find possible causes of death is called……..

02. The room used for analyzing clues in a police station is………………

03. The place where a crime happens (usually surrounded by yellow tape) is called………

04. The object that is used in a murder is called……………

05. ……………is a person which the police doubt that he/she has committed a crime.

06……………..is a distinctive sign worn on one`s clothing as a mark to declare the membership to the police organization.

**Exercise 04:**

**A. What crime did they commit?**

A.______________________                              B. ____________________

Tom Hardy set fire to his                              Ronnie Tyler pulled out a gun from
school after failing all his exams.                    his pocket and shot the bank guard

five times in the head.

C. ______________________

John Smith got drunk one night
and decided to drive home.
he turned a corner he crashed into
another car and killed the driver.
B. Complete the short newspaper stories with a suitable verb

POLICE THEFT

A Television set (1) _______ from a
Liverpool police station while officers
were out fighting a crime.

WANTED MAN JAILED

Fugitive James Sanders,
who escaped from jail in
1975, (2)__________
in Texas after ringing the
FBI to check if he was still on the
wanted list.

PLANE DRAMA

A drunk who tried to open an airplane
door at 30,000 feet (3)__________
for the rest of a Denmark to Thailand
flight.
### Appendix B

**You Can Never Learn Enough Vocabulary**

**Exercise 01:** Tick the suitable word

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Rifle</td>
<td>3. Hummer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Lightbulb</th>
<th>1. Wheel</th>
<th>1. Tennis bat</th>
<th>1. Needle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Syringe</td>
<td>2. Tire</td>
<td>2. Tennis racket</td>
<td>2. Flashlight</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Bike</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Receipt</th>
<th>1. Rat</th>
<th>1. Dog Belt</th>
<th>1. Portrait</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3. Hamster</td>
<td>3. Photographs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Door welcome  
2. Door mop  
3. Doormat

1. Traffic cone  
2. Traffic stopper  
3. Stop sign

**Exercise 02:** What are the following objects?

**A. For school:**

1. ………….          2………….            3…………..          4…………

**B. In the kitchen:**

1. ……………..     2…………        3………….            4.…………       5……………

6…………….

**C. Around the house:**

1. …………….     2………      3…………….    4.……………..           5………….
**D. Other objects:**

1. ............ 2. ............ 3. ............ 4. ............

**Exercise 03:** Fill in the gaps

01. A person who suffers injury, loss, or damage from another person is called.............

02. A..................is person who is guilty of breaking/not respecting the law.

03.................. is the process of analyzing evidences and examining the crime scene.

04. The mark that a finger makes when it touches something is called..................

05. The rules or standards that are applied by the court are called....................

06..................is anything used by lawyers/attorneys and admitted by the court to prove or disapprove matters of fact in a trial.

**Exercise 04:**

A. What crime did they commit?

A.______________________ B._____________________

Sally Dunham took a 9mm gun John Dark was caught at
And shot her supervisor once at the customs with $900,000 worth
the forehead. of cocaine hidden the doors of his car.

C._____________________

John stain was selling heroine at
the street corner.
B. Complete the short newspaper story with a suitable word or a verb

CAMPER DIES

Camper John Barnes, sadly (1)__________
after a 200-meter fall into a rocky ravine.

UNLUCKY BURGLAR

Burglar Frank Gort broke down and sobbed when he (2)__________ to seven years in jail claiming it was his unlucky number.

An understanding judge in San Antonio, Texas, took pity and gave him eight years instead.

STABBED IN THE BACK

Mr. Clarence Ramsey (3)___ seriously _______ yesterday when a man came up behind him and stabbed him in the back. Turning around to face his attacker, Mr. Ramsey was surprised to hear him say, “Sorry I thought You were somebody else.”

Thanks For Collaboration
Appendix C
You Can Never Learn Enough Vocabulary

Exercise 01: Tick the suitable word


1. Lantern
Exercise 02: What are the following objects?

A. For school:


B. In the kitchen:


6. Cutting board

C. Around the house:


D. Other objects:

**Exercise 03:** Fill in the gaps

01. A dissection performed on a dead body to find possible causes of death is called **autopsy**

02. The room used for analyzing clues in a police station is **laboratory**

03. The place where a crime happens (usually surrounded by yellow tape) is called **crime scene**

04. The object that is used in a murder is called **murder weapon**

05. A suspect is a person which the police doubt that he/she has committed a crime.

06. A badge is a distinctive sign worn on one`s clothing as a mark to declare the membership to the police organization.

**Exercise 04:**

A. What crime did they commit?
   
   A. Arson  
   B. Murder  
   C. Manslaughter

B. Complete the short newspaper stories with a suitable verb

POLICE THEFT  
WANTED MAN JAILED

(1) **Was stolen**  
(2) **Was arrested**

PLANE DRAMA

(3) **Was rescued**

---

*My Sincere Thanks For Your Participation*
Appendix D
You Can Never Learn Enough Vocabulary

Exercise 01: Tick the suitable word

2. Flashlight 1. Wheel 2. Tennis racket 2. Syringe
Exercise 02: What are the following objects?

A. For school:


B. In the kitchen:


6. Fork

C. Around the house:


D. Other objects:

**Exercise 03:** Fill in the gaps

01. A person who suffers injury, loss, or damage from another person is called a victim.

02. A criminal is person who is guilty of breaking/not respecting the law.

03. An investigation is the process of analyzing evidences and examining the crime scene.

04. The mark that a finger makes when it touches something is called finger prints.

05. The rules or standards that are applied by the court are called law.

06. The evidence is anything used by lawyers/attorneys and admitted by the court to prove or disapprove matters of fact in a trial.

**4. Exercise 04:**

A. What crime did they commit?
   
   A. Murder          B. Smuggling
   
   C. Drug dealing

B. Complete the short newspaper story with a suitable word or a verb

CAMPER DIES          UNLUCKY BURGLAR

(1) Died          (2) Was sentenced

STABBED IN THE BACK

(3) Was seriously injured
Appendix E

Student's Questionnaire

Dear student,

This questionnaire is a part of the experiment you volunteered for. It aims at investigating your attitudes, feelings, and expectations toward "Criminal Case" and its effectiveness in learning new vocabulary items. Please, tick (×) the appropriate and/or give full answers in the broken lines.

May I thank you again for the efforts and the time devoted for both the questionnaire and the experiment

Mrs. Derbouche Assia
Department of English
Larbi Ben M’hidi University

Section One: Background Information

1. Age: ............
2. Gender: Male. ○ Female. ○
3. What is the reason you volunteered for this experiment?
   A. Only To help. ○
   B. Interested in the game. ○
   C. Other, ○ please specify .........................

Section Two: Criminal Case

4. How long have you been playing "Criminal Case"?
   A. One week ○ B. Two weeks ○ C. Three weeks ○
   D. Four weeks ○ F. Five weeks ○

5. How frequent have you been playing?
   A. Once a week ○ B. Once in two or three days ○
   C. Once a day ○ D. Twice a day ○ F. more ○
6. Have you tried to compete with your friends to score more in the game?
   A. No  ○   B. Yes  ○

7. While playing, did you face any difficulties in words?
   B. No  ○   B. Yes  ○
      • If yes, were you able to overcome those difficulties?
        B. No  ○   B. Yes  ○

8. While playing, were you curious about who the killer is?
   B. Not at all ○   B. Somehow  ○   C. Yes  ○   D. Yes, very much ○

9. Do you consider the stories that each case has as an important aspect in the game?
   A. No  ○   B. Yes  ○
      • If yes, please justify
        ..........................................................................................................
        ..........................................................................................................

10. Have you noticed any improvement in your vocabulary while playing the game?
    A. No  ○   B. Yes  ○
      • If yes, please explain how?
        ..........................................................................................................
        ..........................................................................................................

11. Have you been exposed to this type of vocabulary at middle school, high school, or university?
    B. None of them  ○   B. Some of them  ○   C. Most of them  ○   D. All of them  ○
      • If your answer is B, C, or D, did you remember those words easily?
        B. None of them  ○   B. Some of them  ○
        C. Most of them  ○   D. All of them  ○
12. According to you, which of the following is the common way of learning vocabulary?
   C. Incidental way of learning  ○  B. Intentional way of learning  ○

13. Do you consider "criminal case" as an effective learning tool?
   C. Not at all  ○  B. Somehow  ○  C. Most of the time  ○  D. All of the time  ○

14. Do you think that "criminal case" can be adapted in an educational setting?
   A. No  ○  B. Yes  ○
Résumé

Apprendre le Vocabulaire a été toujours difficile et une tâche très importante pour la l'apprentissage de la deuxième langue étrangère et pour montrer l'importance du vocabulaire, la présente expérience tente d'étudier l'efficacité des jeux sur internet dans l'amélioration du vocabulaire des apprenants de la deuxième langue étrangère. À cet égard, une hypothèse de recherche principale a été mise en avant. Cette hypothèse a été approuvée par une expérience (un jeu sur internet appelé "Criminal Case" que les apprenants jouent sur internet). Ensuite, un questionnaire a été soumis pour enquêter sur les attitudes des participants à l'égard de l'utilisation des jeux sur internet dans l'apprentissage du vocabulaire. Sur la base des résultats et conclusions, l'hypothèse de recherche a été confirmée par le fait que l'utilisation des jeux sur internet est effectivement répondre aux exigences d'un apprenant pour maîtriser le vocabulaire de la deuxième langue étrangère d'une manière agréable. Par conséquent, il est recommandé que les enseignants attirent l'attention des élèves sur l'importance de ces outils dans l'amélioration de leur contexte éducatif.
ملخص

الاستعمال المناسب والمتمدد للمفردات عنصر هام في استخدام اللغات الأجنبية ومنه تحاول الأطراف الحالية التحقيق في فعالية الألعاب عبر الإنترنت في تحسين مفردات اللغة الأجنبية لدى المتعلمين. وفي هذا الصدد، تم ضبط فرضية رئيسية وهي أن اللعب بالألعاب الإلكترونية على الإنترنت سيكون له تأثير إيجابي على ذخيرة المفردات الأجنبية للأفراد. من أجل التحقق من صحة الفرضية قمنا بتطبيق وسائلين للبحث. منهج تجريبي باستعمال لعبة على الفيس بوك حيث قمنا باختبار امكانيه تطوير المفردات الأجنبية باستعمال هذه اللعبة هذا من جهة. من جهة أخرى، قمنا بتوجيه استبيان للأفراد للمشاركين في التجربة. بعد تحليل النتائج تأكدنا من صحة الفرضية المطروحة ولذلك فمن المستحسن وضع شروط تعليمية ممتعة و جلب ولفت الانتباه الطلاب على مثل هذه الوسائل مع التركيز على القيمة التعليمية التي تحتوي عليها.