IMPROVING YOUNG LEARNERS’ VOCABULARY ACQUISITION: A PILOT PROGRAM IN A GAME- BASED ENVIRONMENT

By: Vasiliki Stratidou
Supervised by: Eleni Griva

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Aristotle University of Thessaloniki
School of Italian, Faculty of Philosophy
Master Program: Language and Culture Studies
Specialization: Education Technology

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Abstract

Modern simulation mobile games have the potential to enhance students’ interest, motivation and creativity. Research conducted on the effectiveness of digital games for educational purposes has shown that such games are also ideal at providing users with “unforced learning opportunities” (Anderson, 2009, p. 146). The dissertation examines the issue of simulation mobile games in regard to the potential positive impacts on L2 vocabulary learning. Sixteen intermediate level students, aged 9-14, participated in the experimental study for two months. The participants were divided into experimental (8 participants) and control group (8 participants). The experimental group was planned to learn some new vocabulary words via digital games while the control group used a reading passage to learn the same vocabulary words. The study investigated the effect of mobile games as well as the traditional learning methods on Greek EFL learners’ vocabulary learning in a pre-test, an immediate post-test and a delayed retention test. A teacher’s journal and learners’ interviews were also used as tools to estimate the effectiveness of the implementation. The findings indicated that the experimental group outperformed the control group in acquiring new words through mobile games. Therefore, digital games proved to be an effective tool in learning English vocabulary.

Key words: simulation games, digital games, second language vocabulary learning, effectiveness, Greek EFL Learners
**Introduction**

The digital game industry is considered one of the fastest growing sectors of global economy. The value of the global gaming market was estimated to be worth 28.5 million U.S dollars in 2018 (Xania News, 2016). Evidence suggests that consumers between the ages 15 to 19 spent an average of 44 minutes playing digital games on weekdays and an average of 81 minutes on weekends and holidays (Bureau of Labor Statistics, 2017). It goes without saying that individuals nowadays play games more than ever.

Recent studies describe young people as “a generation of cyborgs” who have produced new orientations to entertainment and play (Buckingham, 2008). Digital games in particular have been considered an activity widely preferred by adolescents. The current generation, referred to by Prensky (2001) as “digital natives”, was born and grew up in a digital age where mobile phones, video game consoles, computers and many more digital tools work as part of their everyday routine. Games are fun and engaging and have a component that urges people to keep coming back to the game. The game world that the users are immersed in, a ‘magic circle’ as Salen and Zimmerman (2004) put it, is the most significant element that attracts users’ attention towards the game industry (p.105).

Many authors enumerate various potential advantages of games on young learners and especially on foreign language acquisition. Quinn (2005) states that learning is more effective when it is context-related, goal-oriented, challenging to the learners and interactive. These characteristics define most digital games while suggesting that the most efficient learning experiences are the ones that appeal to the learners’ needs and interests. In the same vein, Salen (2008) suggests that the importance of the gaming environment lies in the fact that kids among themselves are free to figure out and create learning and teaching arrangements that work for them. Games can work as a mean of language acquisition that matches all learning styles, as they offer various learning opportunities to learners in a pleasant and engaging environment. This realistic three-dimensional virtual context gives the user numerous possibilities of where to go and what to do, making him the protagonist of this goal oriented ‘micro world’ (Darley, 2009, p. 164).

This study introduces an innovative method into learning and specifically vocabulary acquisition, by trying to examine the role of digital mobile games with relation to vocabulary learning. It examines students’ vocabulary acquisition through digital game playing, in regard to how this method can work as an improvement over traditional methods.
of vocabulary acquisition. The study also measured the students’ motivation and attitude towards the project as well as gender differences on game playing. It seems that games on mobile devices can function as a widely anticipated novelty to vocabulary learning, especially for learners who grew up in the digital age. Despite the assumptions by many critics who suggest that what is learned from games is inappropriate, digital games remain a highly engaging activity, a fact that makes it imperative to harness their power in order to promote learning (Shaffer, Squire, Halverson & Gee, 2005).

More specifically, chapter one examines the issue of how learners learn and presents some learning styles and strategies that help learners retrieve and store information into their memory. Additionally, learner styles and strategies are given further attention in order to determine the ways learners acquire a second language. Chapter two deals with vocabulary acquisition and the importance of vocabulary in acquiring a foreign language. This chapter also highlights the teacher’s role at helping students who struggle with L2 vocabulary. Chapter three explores the link among digital games, play and language learning, presenting mostly positive outcomes for the players. More specifically, simulation mobile games are employed stating that they can effectively engage and motivate learners. Additionally, gender issues are also discussed, illustrating that no significant differences exist between males and females. Chapter four and five constitute the implementation of the research program. The ultimate aim was to identify vocabulary-learning opportunities in digital mobile games using a teacher’s journal as well as a pre-test, post-test and a delayed vocabulary retention test. The data collected were statistically analyzed (SPSS) in order to provide answers to the study’s research questions. The results indicated that games can constitute a part of the learning process as they transform language learning into the form that our rapidly changing world requires.
CHAPTER 1: Language Acquisition and Learning

It is a common belief that learners learn whatever they are taught. If they do not, then the problem lies with the inadequacy of the learner’s ability, motivation or persistence (Nuthall, 2004). Several researchers examined the issue of how learners learn. For example Novak and Gowin (1984) claimed that knowledge is constructed though the constant exposure to specific facts. Waring and Takaki (2003) further infer that vocabulary is learned incidentally while Bransford, Brown and Cocking (2000) clarify that “Children are able to learn almost anything through effort and will” (p. 95).

The main concept of learning is transferring information from short-term memory to long-term memory. Generally, information is typically forgotten when there is no repeat of the learning process. Craik and Lockhart (1972) suggested that the effectiveness of encoding information in long-term memory depends on how new information is processed and stored. They further commented that shallow processing does not lead to long-term retention whereas deep processing with semantic associations does lead to long-term acquisition. Oxford (1990) proposed some memory strategies that can help learners retrieve information when needed: create mental associations, use images and sounds, review and use actions. Similarly, drawing on Gee’s (2008) theory on how learners learn, it is important to note that learners acquire knowledge through experiences that they store in memory, through feedback that they get from their responses and with various opportunities to apply this knowledge into context. When all these conditions are met, then learning and long-term retention takes place.

1.1 Learning Styles and Strategies

Oxford (1990) defines learning strategies as “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations” (p.8). Learning strategies give learners the opportunity to be actively involved and manage their own learning. Ghani (2003) describes learning strategies as facilitators in the learning process that are employed by language learners to make language learning as effective as possible. Every task is performed by at least one strategy, though learners are not aware of it. Oxford (1990) divided strategies into 6 categories: metacognitive strategies for evaluating one’s learning, effective strategies for dealing with emotions and attitudes, social strategies for cooperating with others while learning,
cognitive strategies for linking new and existing information in the brain, memory strategies and compensation strategies. O’Maley and Chamot (1990) define that the best strategy that learners most frequently use is the cognitive one, repeating words and phrases out loud. Therefore, a context that could offer all these learning experiences to learners and would give them the freedom to use the appropriate strategies needs to be addressed.

According to Macaro (2001), learning strategy researchers state that awareness and careful use of strategies can lead to more effective language acquisition. Learning strategies give students the opportunity to take more responsibilities in their own learning and become more autonomous learners. According to Oxford (1990), it is important to distinguish between direct and indirect strategies. Oxford defines direct strategies when learners try to learn a foreign language through tasks (reading passages, listening tasks) and exercises focusing on vocabulary. They comprise memory, cognitive and compensation vocabulary learning strategies. On the other hand, indirect strategies imply that the attention of the learner is not completely focused on vocabulary acquisition but more on the messages conveyed. They include metacognitive, affective and social strategies. Writing down thoughts on the notebooks or playing games could function as indirect vocabulary acquisition strategies. On the notebook the learner can write down class assignments, new target language expressions, purposes and things to remember from the lesson (Oxford, 1990). Of course direct vocabulary learning strategies seem easier and more straightforward and for this reason they are widely used by teachers. However, instructors should focus on both direct and indirect strategies and design materials that are congruent with the students’ needs and interests. Various researches have shown that learners do not know automatically which strategy suits them. Learners who are taught the right strategies for their learning have shown higher levels of engagement towards the second language. For this reason, strategy training can lead to more effective learning. Nunan (1997) investigated the effects of strategy training on student motivation, student knowledge of strategies, the perceived utility of strategies and actual strategy use. The results indicated that the experimental group which was trained with various strategies outperformed the control group. Jie and Xiaoqing (2006) examined the relationship between learning styles and strategies in English language learners in China. Using questionnaires and interviews, the researchers concluded that learning styles affect learning strategy choices. Therefore, styles can affect the learning process so training learners into finding their strengths and weaknesses can produce positive learning outcomes.
Learning styles are used to describe “an individual’s natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills” (Kinsella, 1995, p. 171). It is a common belief that learning styles are concerned with how learners prefer to acquire knowledge and not with what they really acquire. Willing (1988) identified four major styles: communicative, analytical, authority-oriented and concrete. These styles were based on learner strategy preferences and are categorized into four groups. First, in the communicative group, learners like to learn by watching, listening to native speakers, talking to friends in English, watching television in English, using English out of class and learning new words by hearing them. In the analytical group, the learners like studying grammar, reading English books and newspapers, finding their own mistakes and working on problems set by the teacher. In the authority-oriented group, the learners prefer the teacher to explain everything while checking their own textbook, writing everything in a notebook, learning new words by reading. Finally, in the concrete group, the learners like games, pictures, films, videos, talking in pairs and practicing English in various contexts.

In the same vein, Reid (1995) asserts that three categories of learning styles are widely recognized and associated with the field of foreign language learning: sensory learning styles, cognitive learning styles and affective/temperament learning styles. As regards the category of sensory learning styles, three types are outlined; perceptual (visual, auditory, kinesthetic or tactile), environmental and sociological (Psaltou, 2010). Sprenger (2010) suggests some digital options for each learning style, “for the visual learner, videos, Web sites, text messaging, and movies on an iPod” (p.80). The auditory learner enjoys performing collaborative tasks on the computer, listening to songs on digital devices, and participating in “audio conferencing via the Internet” while kinesthetic learners could be benefitted by web-searching, “using an iPod or iPhone, and anything with buttons to push or things to touch” (p.80). Therefore, the challenge, on part of the teachers, is to create an environment and find the appropriate tools with which more learners can gain autonomy and reflect on the processes and styles that match their own learning.

Learning styles are general approaches to language learning, while learning strategies are specific ways to deal with language tasks in particular contexts (Oxford, 2003). According to Oxford (2003) “if there is harmony between (a) the student (in terms of style and strategy preferences) and (b) the combination of methodology and materials, then the student is likely to perform well, feel confident, and experience low anxiety” (p.2). Students can be encouraged by the teachers to use the strategies that reflect their learning
styles. If this does not happen and the learners are not able to find the strategies which work right for them, then they perform poorly, feel unconfident and experience anxiety (Oxford, 2003). Learners can benefit from their learning styles and match them with learning strategies. This is further clarified by Nunan (1999) who argues that knowledge of strategies is important, because if you are conscious of the processes underlying the learning that you are involved in, then learning will be more effective. In the light of this belief, Gee (2008) in “Learning and Games” states that digital games can work as a form of learning that matches all styles, as they offer autonomy to learners presenting learning as a form of pleasure. Digital games can offer people “experiences in a virtual world and they use learning, problem solving and mastery for engagement and pleasure” (Gee 2008, p. 24). According to Salen (2008), games give learners independence as they can determine how they learn by being “free to figure out and create learning and teaching arrangements that work for them” (p.10). Consequently, developing innovative learning strategies with new learning tools that could match learners’ styles and preferences needs to be further examined and given more attention.

1.2 Motivation and Learning

Learner motivation towards language learning is a serious issue that troubles language instructors. English language learners often lose motivation due to frustration and the fact that they find the methods used not appealing. Many scholars consider motivation as a major factor of learning. Miller (1992) in his study presented the issue of game and the fact that games can lower anxiety and increase engagement and motivation. Eseryel et al (2014) conducted a research to measure the impact of a multi-player online game on learner motivation. They found that designers as well as teachers must strive to design and incorporate motivational games in order to keep learners engaged. It is clearly profoundly important to understand the source of this motivation.

There are certain features connected with games that enhance motivation. Barret (2012) noted that games created this challenge of problem solving that engages students. Digital games incorporate this key feature of failure that is very different from the school failure. As Muhanna (2012) states, the failure in games is lowered as there is no anxiety. Players can start over and persist until they succeed. This kind of failure allows players to take risks and try different skills that might be proven costly in a classroom. Lepper, Iyenger
and Corpus (2005) revealed that digital games could increase intrinsic motivation and link the goals of winning the game and learning the material. Consequently, learning motivation, achievement and attention are significantly increased. Malone (1981) proposed a theory of intrinsic motivation in games and suggested that games are rewarding due to a combination of challenge, fantasy and curiosity. “Fantasy” refers to a world that players immerse themselves into using images from the game. “Challenge” is based on the level of difficulty of each game. Of course, the game needs to reach a balance and not be too hard or too easy, in order to keep the players engaged. Finally, “curiosity” is an element that absorbs players and makes them coming back to the game to find out what will happen.

Yet, what attracts and motivates players, as Buckingham (2006) comments, is the visual spectacle of the game, the storytelling, the emotions that the characters promote, humor and of course the impression that the game is relevant to their lives. The game is under the control of the player and the successful outcome is dependent upon various factors, like familiarity and playing skill (Darley, 2009). Games engage the players and they help them think by forcing them to be active. As Darley (2009) claims, playing a digital game is a physical as well as a mental ability. Players are absorbed in the game while they explore the game world by facing challenges that they feel they can accomplish. In many games, players feel the sense of agency or ownership. They have the opportunity to manipulate the digital world and make things happen (Grodal, 2000). This feeling of control motivates them as they feel that their choices matter and they do not just consume the words of an “author”. Similarly, all learning involves the sense of ownership and agency and the ability to give learners the opportunity to construct learning and not passively consume it.

Additionally, as Jenson and de Castell (2008) clarify, the introduction of different game controllers for each game can invite and encourage motivation. In the past, digital games were played by one player sitting in front of a desk using a keyboard, a mouse or just touch the screen of the specific machine. However, the introduction of various new controllers has transformed this reality as they can now determine the form of the game and what players can learn from each specific game. For example, the game Guitar Hero introduces guitar shaped peripherals that the players use instead of the classic controllers while the game Band Hero demands from players to use the microphone in order to perform specific actions. The player imitates playing the guitar by following the track that appears in the screen. The difficulty changes as the number of notes increase, the speed of play changes etc. Furthermore, the Wii wand and its various peripherals, like sports equipment
or music devices have introduced a whole new form of gameplay, as they encourage action in contrast to the past passive form of digital game playing. For instance, *Wii Sports* give players the opportunity to create an avatar and use it to play games through the avatar, like golf, boxing, bowling and basketball. The players need to imitate the actions of the specific sports game in order to succeed. This imitation is the element that motivates players into immersing themselves more in these new “real like” physically active games.

If educators want to transmit the players’ enthusiasm towards the games within an educational context, then there is a need to understand how the games manage to absorb and motivate players into this gaming experience. The main aim could be to design games that are more educational and manage to use commercial games into different and more serious contexts. It is possible that educational games cannot be as motivating as the ones designed for leisure purposes, since making the activity compulsory reduces the voluntary aspect of play (de Castell & Jenson, 2003) but there is much that can be learned through games about how motivation is created and sustained. Consequently, further research is needed to explore the learning potentials of digital games with a view to create an innovative, effective and more enjoyable learning environment for the 21st century learners.
CHAPTER 2: Vocabulary Acquisition

“There is a great divide between what we know about vocabulary instruction and what we do” (Greenwood, 2004, p.28). Vocabulary is an important component to language comprehension. Vocabulary plays a vital part in language learning. As Sedita (2005) points out “Vocabulary encompasses all the words we must know to access our background knowledge, express our ideas and communicate effectively, and learn about new concepts” (p.1). It goes without saying that a person cannot learn a language without mastering its vocabulary. Students with a wide range of vocabulary words can understand texts easier and get better scores on achievement tests (Stahl & Fairbanks, 1986). Broad vocabulary knowledge gives students confidence to communicate in the foreign language while using persuasive and powerful words (Bromley, 2007). The importance of vocabulary in acquiring a foreign language is well known and many teachers realize that they need to do a better job at helping students who struggle with L2 vocabulary (Tompkins & Blanchfield, 2004).

2.1 Vocabulary Acquisition Strategies and Teaching Techniques

In traditional teaching, the teacher plays an important role as he/she is considered the main source of knowledge and controls the activities used in the classroom. Scrivener (2005) characterized traditional teaching as the “jug and mug” (p. 17) where the teacher is the jug that pours knowledge to the students who are symbolized as empty mugs. Evidence shows that teachers usually fail at teaching the adolescents of today, as their teaching methods are based on traditional techniques, which are considered old and outdated. Nation (1990) examines three separate elements of vocabulary learning that influence a word to be difficult and discouraging to learn. First of all, it is the individuals’ first language that could influence the second language learning. As Nation (1990) reveals, acquiring a new word may be difficult because there might be no exact meaning with the mother tongue. Additionally, Nation (1990) suggests that the correlation with different words may complicate the process of obtaining new words. Secondly, it is the way a word is taught. Knowledge of a variety of instructional strategies and flexibility to change them are two of the most important assets a teacher can have. Students learn in different ways and employ different methods and as Rüütmann and Kipper (2011) reveal, the teachers should vary their use of instructional strategies so that they can relate to the students’ learning styles and needs.
A traditional classroom mainly focuses on grammar rules and memorization of vocabulary from texts or lists of words. As Richards (2010) further clarifies, traditional methods mainly include memorizing dialogues, practice with questions and answers, drills, guided speaking and writing with emphasis on memorization rather than the ability to use those words in context. The teacher is again in the center as she/he is in charge of the drilling and repetitive practice. In addition, another dominant vocabulary instruction method in L2 classrooms is the vocabulary workbook where words are presented with their definitions and students are asked to memorize the words. According to Bromley (2007), all these methods are outdated and do not follow the current modern teaching methods. Therefore, no instructors that follow these steps may achieve the desired results as far as vocabulary acquisition is concerned. As Bromley (2007) points out: “The goal of vocabulary instruction should be to build students' independent word learning strategies that can empower them for lifelong learning” (p. 536).

In recent years with the introduction of technology, new forms of vocabulary acquisition methods have been put into practice. Using technology in the classroom has definitely shown great potential while at the same time it has proven to be a big challenge in the process of foreign language learning and teaching. According to Kamaruddin, Zainal and Aminuddin (2009), a student’s performance is connected to the various materials used in the classroom. A student may be more willing and motivated to learn if there are different learning materials that could keep him/her interested. The learning and teaching environment should find the appropriate tools- everything which may help the learning process other than the traditional learning material (Sandberg, 1994). According to Sandberg (1994), technology can provide these learning tools in order to create a technologically rich environment that maximizes learning. With the aid of technology, learners manage to gain control over their own learning and become more active in the learning process. According to Pennington (1996), technology can increase the variety and diversity of learning opportunities by making the materials easier and more accessible to learners.

More specifically, Pennington (1996) points out that the digital environment is a highly motivating one where the learners can take risks and experiment in ways that might be psychologically threatening in a classroom or real life communication situations. This means that many linguistic elements like speaking can be better promoted through technology. More specifically, a learner can now chat online with other learners, listen to
online conversations and participate in online dialogues. Of course, this exposure to authentic materials brings better results and helps students improve in a faster and more efficient way. Also, the daunting feeling that some students encounter in a leaning environment is avoided through the online feedback that the instructor can pass on without the “threat of face to face confrontation and embarrassment” (Pennington, 1996, p.9). Some feedback may be even provided by the computer itself, by online analyzing the learner’s performance. Reading and writing in a computer assisted language classroom is also examined from a whole different perspective. Reading an interactive story online gets learners to a whole new level of reading a text. Pictures, sounds and a variety of motivating stories ensure student motivation. Students now have the ability to create an online essay adding video and sound in their assignments. These elements are the passage to an online virtual world, where creativity is connected to learning. Listening and speaking are also greatly facilitated as “communication tools (e.g. for electronic conferencing with teachers or other students)” (Hubbard, 1996, p.15). The internet is full of authentic materials like songs, web pages, radio and TV broadcasts, films, leaflets, flyers, posters that are now used in the learning process. Many teachers avoid these kinds of materials because the students may find them too difficult or they have no idea how to present those activities (Hubbard, 1996). This is though the kind of situation that a student may face in the English-speaking world and it’s the teacher’s role to help him/ her to find the way to gain confidence in a real situation. Dillenbourg (1996) in his paper mentions that “scaffolding provides the learner with the help and guidance necessary to solve problems that are just beyond what he could manage independently (i.e. within his ZPD). The level of support should progressively decrease (fading) until the learner is able to solve the problem alone” (p. 5).

Over the past years, there has also been an increasing use of mobile devices in the learning environment. Compared to other computer-assisted language learning methods and tools, mobile learning offers the capability of taking learning outside of the classroom. All mobile devices and especially mobile phones are the ideal tools to use in a classroom environment. According to Stockwell and Hubbard (2013), those devices are really convenient as they are portable and smaller than the computers. Thanks to their portability and size, students can practice in all environments with the support of those devices that are relatively easy to use and accessible to everyone. Of course, one of the major advantages that mobile learning has introduced in the learning process is that it has enhanced students’ motivation with fun interactive activities that promote creativity and engagement into the
mobile learning tasks and activities. These exercises need to be modified by the teacher or the designer in order to relate to specific syllabus goals and to focus on the students’ needs and interests (Hubbard, 1996). Mobile devices offer great flexibility to the teachers as well as to the learners, as they both choose activities that can suit their individual learning styles.

Speaking and listening are also well practiced through the mobile devices. Voice recorders help students rehearse and record their own speech and other people’s. By listening to their own voice for feedback or record themselves with a camera and then managing to correct their own mistakes, students analyze their communication skills and work with them. Learning is now put into context, as learners create stories, practice through role-playing and manage to use language in a real life situation. According to Anderson, Boyle, Farrell and Reiser (1987), language is better learnt if put into context as there is evidence that “memories are associated to the features of the context in which they were learnt” (p.13).

However, the lack of sufficient devices and software in a language classroom, the fact that most teachers receive insufficient training or even some cultural factors and teacher beliefs, constitute some of the barriers that contribute to limited use of technology in the classroom. Adding to that, some students may still be unmotivated to learn as they still see the concept of learning behind all those methods. Also, many schools can’t keep up with the rapidly changing technology, as upgrading equipment is often costly and schools may not have the manpower to handle the equipment. While this is often the case with computers, mobile tools may give a solution to this problem due to the fact that most students carry the mobile learning technology with them. Our study uses mobile technologies but also tries to examine the issue of vocabulary acquisition through the lenses of digital game playing, an environment that learners can “forget they are learning” (Tiris, 2010).

### 2.2 Digital Games and Vocabulary Acquisition

The best way to acquire second language vocabulary is still unclear. Several study results as well as educators and scholars may support the use of games in ELT in order to help learners who, as Oxford (1990) signifies, find great difficulty in remembering the large amounts of vocabulary necessary to achieve fluency. Games have the ability to motivate through fun that is “part of the natural learning process in human development” (Bisson & Luckner, 1996, p.112). Shaffer, Squire, Halverson and Gee (2005) discussed the impact of
games, and more specifically simulation games, on L2 vocabulary acquisition. Their results signified that the virtual world makes it possible to develop situated understanding and helps gamers acquire a general idea of the content. This situated understanding is a key feature in transferring knowledge from short-term memory to long-term memory. When learners are given opportunities to take part in the content design while dealing with actual, real-world problems in real situations, then information retention is enhanced (Kusunoki, Sugimoto & Hashizume, 2000). Therefore, when students are given meaningful opportunities in an effective learning environment, this can enhance their visual and auditory senses in order to draw their attention and increase their learning motivation (Liu & Chu, 2010).

Jong (2008) found that repetition can be a critical component for L2 vocabulary learning and as Waring and Takaki (2003) pointed out, more than 20 encounters are needed for a word to be learned. This element of repetition seems to be dominant in digital simulation games. Digital simulation games give the user the opportunity to face the same word several times during gameplay and use this word in order to achieve goals. As this new content is related to the real world, learning is made more attractive and can provide learners with a sense of satisfaction from overcoming real-life obstacles (Liu & Chu, 2010). This natural repetition gives the learner the opportunity to be constantly exposed to the target language through the game. Other entertaining media, like the movies, series or songs do not reuse the same vocabulary that often, making digital games a really powerful tool for vocabulary acquisition. In the same vein, Turgut and Irgin (2009) reveal that online games’ repetition allows a language learner to ‘bootstrap;’ to use known language’s vocabulary or grammar to decode unknown elements through constant exposure.

Because digital games are interactive, they have the ability to give immediate feedback. In The Sims for example the players follow specific actions and commands. If a player manages to “flirt” or “talk”, for instance, the game will respond instantly and show the player that he/she responded correctly. As Turgut and Irgin (2009) further comment, other similar simulation games give more acquisition opportunities by using menus, selecting items or following instructions in role-playing. Learners may be hesitant to participate in language classes because they might be afraid of negative feedback and making a mistake in front of their classmates, but they will be more willing to interact with a digital game. The game can give them valuable language feedback and offer opportunities to practice language before using this knowledge in other contexts (Turgut & Irgin, 2009).
Vocabulary learning is a complicated process that involves giving students a variety of opportunities to understand and use the words properly. Digital games seem to be efficient in offering these opportunities of situated learning and independence to students. However, learning based on digital games is a concept that is not very common nowadays among language teachers. Therefore, much can be learned from various researches based on learning through digital games in a variety of contexts. Digital games can offer this familiar environment without the presence of the teacher, a fact that confirms the idea that “learning can and should be fun” (Quinn, 2005, p. 11).
CHAPTER 3: Game Based Learning

Vygotsky (1978), Piaget (1950) and Dewey (1897) have examined the way people learn a language through various theories. Vygotsky’s (1978) sociocultural theory, Piaget’s (1950) constructivist theory and Dewey’s (1987) philosophy of pragmatism state that learners learn through hands-on experience. Vygotsky reflected upon the issue of play on a child’s educational development while also revealing that social interaction with the aid of certain tools is highly important in a child’s language acquisition. He also argued that education is better understood within a context. Adding to that, Piaget (1950) also argued that students build their own learning through participation emphasizing the importance of the context. Woo (2014) explained that “Students use games to explore and ultimately construct concepts and relationships in authentic contexts. The concept of learning-by-doing comprises core constructivist principles that underlie game-based learning” (p. 293). Dewey (1897) pinpointed the significance of school and the methods the teachers need to employ in order to explore the child’s needs, interests and abilities. Students need to learn in an environment where they feel comfortable and relaxed. Dewey, as Finstad (2010) mentions, also believed in learning through play and that games can seriously affect language learning.

Designers of modern digital games, like Resnick (2000) from MIT, have examined all those theories in pursuit of creating constructivist tools for kids. A deep investigation into the virtual worlds of digital games can reveal that those environments strongly align to all those past theories about play and learning. As Ondrejka (2006) points out, the virtual worlds of the games provide engaging playgrounds for experimentation, similar to the playgrounds the previous theorists had in mind. “Residents develop their skills as they build their knowledge around the possibilities the space provides” (Ondrejka, 2006, p.242). Therefore, it is important to examine new forms of play and learning in those digital environments with the aid of digital tools because as Prensky (2005) comments “educating or evaluating students without these tools makes no more sense to them than educating or evaluating a plumber without his or her wrench” (p. 12).

3.1 Studies focusing on Learning through Digital Games

The impact of digital games in the field of education has caught experts’ attention over the past years. More specifically their contribution to vocabulary development has been an issue which made the exploration of the potential of game-based technologies in learning,
obligatory (Squire, 2008). As studies show, the research on digital games and language learning is based on two main factors: digital games as an environment that facilitates learning and as a tool to support learning.

Gee (2003) introduced the importance of the games’ environment on vocabulary learning. He reflected upon their power to generate vocabulary in real situations that definitely make meaning easier to acquire. Games enable students to practice language in virtual worlds while they see how language is used in those settings. However, Gee (2003) does not agree with the incorporation of games into the educational system as he is mostly concerned about the forms of learning that can make specific aspects of language learning easier (e.g. vocabulary).

Schlimme (2002) believes that “games provide a context in which participants can discuss scenarios and outcomes in order to facilitate their understanding of other concepts and can improve children’s reading, spelling, spatial abilities and critical-analyzing techniques” (p.62). He also indicates that some kind of digital games present learners with new target words increasing the learners’ vocabulary levels. Games are surely advantageous and effective in learning and more specifically in vocabulary learning as they create this motivating context where students interact with the game in order to achieve its goals.

DeHaan (2005) in his study claims that it is the specific elements that the digital games contain that can aid language learning. Their constant repetition of images, words and clues could definitely contribute to learning. Associating images with a series of events in order to aid comprehension has always been useful while learning a language. Thorne, Black and Sykes (2009) discuss the user motivation towards digital games where learners are more willing to search and give information in the L2. Digital games definitely provide solutions to vocabulary acquisition by generating motivation and pleasure to learners.

Donmus (2010) has conducted a research on games and social networks in foreign language learning. His results revealed that games played through social networks motivate learners and help them construct their own learning. Similarly, he mentions that games can develop physical and mental abilities while holding the attention of the participants. Game-based learning can become the center of learning for students while making learning easier, fun and more interesting (Cheng & Su, 2012).

Dolati and Mikaili (2011) examined the effects of instructional games on promoting vocabulary learning. The participants of their study were 70 female students in the age of
12-13 years old, that were selected from one Iranian primary school in Iran. In order to gain better results a pre-test and a post-test were used. By analyzing those two instruments they found that games play an important role in vocabulary learning as they motivate and engage learners and especially the quiet and passive ones.

Mich et al (2004) examined the results of a specific game, named *Parling* on 8-11 year-old primary school children. The game asked from the users to read a story, with the words presented with pictures underneath, and then play a game that could help them memorize the vocabulary. The results revealed that games offer the right motivating and low-anxiety environment where learners can improve their vocabulary. DeHaan, Reed and Kuwada (2010) investigated the effects of a second language music video game on vocabulary acquisition and cognitive load. The results revealed that the players did recall some vocabulary confirming various theories on the educational value of video games. The authors comment that the interactivity of the game could be responsible for the vocabulary words that the learners could not recall. DeHann (2005) conducted another research on a Japanese student. The subject was asked to play a basketball video game for a month. The results revealed that although at first the participant’s attention was divided between playing the game and listening or reading Japanese, some positive learning outcomes were documented (his results were significantly higher on the post-test from the pre-test). Similarly, Liu and Chu (2010) used a specific learning program called HELLO to measure motivation and efficacy in L2 learning. The students used the program through hand-held devices. The findings indicated that games used for learning could result in higher motivation, satisfaction, confidence and better student performance. The researchers suggested that a blend of game based and non-game based learning should be used in the language classroom in order to achieve better results.

Chen and Huang (2016) examined two mobile English applications in relation to their effects on the learning performance. In their study, they reveal that the gamified functions of the apps correlate positively with the learning outcomes. Ragatz (2015) conducted a similar research on 41 students in a primary school and noticed that this video/instant generation learns in different ways. Therefore, he stated that the classroom should be transformed into an exciting place according to their current interests. From his study, Ragatz (2015) found that digital games could increase students’ motivation and vocabulary retention. As the studies show, mobile phones can be proven an essential tool in language learning. Saran, Cagiltay and Seferoglou (2008) in their study “Use of mobile phones in
language learning: Developing effective instructional materials” received positive feedback from the learners to the use of instructional materials on their mobile phones. In a similar study, Cavus and Ibrahim (2009) used a mobile learning tool to investigate mobile technologies in learning English vocabulary. The results showed that the participants expressed positive attitudes while learning new words through their mobile phones. Based on these assumptions, this current study will follow the same procedure trying to identify the results of three mobile apps on learning English vocabulary.

Smith et al. (2013) used games incorporated into e-books to test English vocabulary learning. The students took pre and post-tests to measure the new vocabulary acquired. One group (research group) used web-based texts and computer games while the other group (control) used a text, lists of words and multiple-choice questions. The results indicated that there was a significant difference in the post-tests scores as the research group outperformed the control group. In a Likert-scale questionnaire that was conducted afterwards, the students indicated that they experienced a higher level of challenge when playing games compared to simple memorization of vocabulary words in a text passage. Vahdat and Behbahani (2013) also used a control group with traditional teaching methods and a research group that used a serious game to measure vocabulary acquisition. Again, the research group had better scores compared to the control group. The researchers also performed an additional measurement comparing the males and the females of the research group. The results showed that the males outperformed the females of the group. Vahdat and Behbahani (2013) concluded that digital games are beneficial for learning vocabulary, specifically for males. Finally, the efficacy of games in language learning was further confirmed in a study conducted by Yien, Hung, Hwang and Lin (2011). The results indicated that the participants showed substantial gains when games were used in the nutrition language class. The same research also revealed that the game-based approach is equally beneficial to both males and females as far as nutrition knowledge is concerned. Therefore, digital games can be proven to be an appropriate tool that gives all students the chance to participate in the learning process.

3.2 The Role of Play in Learning

Play and learning are considered two unrelated notions in modern schools as play is regarded “a children’s activity, a trifle that occupies or distracts kids” (Bogost 2008, p. 120).
Digital games also fall into this category. They are part of the entertainment industry and they are generally viewed as an unproductive past time that interrupts social life and serious learning (Bogost, 2008). This association of play and leisure is not valid, though. In order to understand the real value of play in a child’s life it is important to forget previous assumptions and misunderstandings and see play as a “free space of movement within a more rigid structure” (Salen & Zimmerman, 2004, p.4). Within play, feelings of pleasure and self-initiative can be explored. So why not try to add those important elements into the learning process by investigating the possibility of play as a new learning experience?

The truth is that research on the link between digital games, play and educational results is increasing, revealing mostly positive outcomes for the players. Many studies have shown that digital games can even teach kids how to solve math problems, like Dragon Box or Wuzzit Trouble. These games are well designed having all the positive aspects of digital games while presenting a more visual and interactive representation system for learning mathematics that is significantly different from the traditional method. The game Minecraft is also used for several years in a variety of school projects. The game incorporates elements of building, farming and engineering so learners can explore its uses in architecture, ecology, agriculture and history. Minecraft: Education Edition (Fig. 1.3) is a more classroom-specific package that is designed to be used in a language classroom with the appropriate consoles. Furthermore, a study conducted by Adachi and Willoughby (2015) on the impact of FIFA sports game showed that digital games may be an effective tool to promote self-esteem as well as participation in sports among adolescents. Greitemeyer (2010) tested the social digital game Lemmings in which players have to protect small animals from danger. His results indicated that such games can influence social behavior as the participants, when confronted with a test situation, showed a positive attitude towards animals. Similarly, Civilization (Fig. 1.1) and Rise of Nations talk about history and civilizations while a project conducted on the game Quest Atlantis (Fig. 1.2) found that students learn the science behind the game as well the symbolic vocabulary (Barab et al., 2007).
The main power of games is that they offer situated learning, which is learning that takes place when the reasons and motivations are clear (Ondrejka, 2006). Users are exposed to different avatars that may inspire them while giving them incentives into learning the specific language used in order to achieve goals. Consequently, drawing on Gillespie’s definition on games and learning (as cited in Kalaycioglu, 2011, p.43):

Games are used frequently due to their benefits. They give students responsibility and the opportunity of being active physically and mentally, they are student-centered rather than teacher-centered, they easily grab children’s attention, increase their interaction and are fun to play in the formal academic process, and socialize students. In addition, students gain or develop many skills such as taking turns, working individually and working with others as a team toward a common goal (p.43).
“One day, we believe this kind of immersive, augmented reality will become a part of daily life for billions of people”, wrote Mark Zuckerberg on his blog. It seems that the idea of using games for teaching in no longer an odd fact but a reality. Despite the assumptions by many critics who suggest that what is learned is inappropriate (Shaffer, Squire, Halverson & Gee, 2005), digital games remain a highly engaging activity a fact that makes it imperative to harness their power in order to promote learning.

3.3 Games on Mobile Devices

“The future is increasingly mobile, and it behooves us to reflect this in our teaching practice.” (Hockly, 2013, p.83). Advancements in wireless technology have introduced a new learning model called mobile learning. Mobile devices offer new opportunities with their special qualities like “accessibility, personalizability, and portability” (Saran & Seferoglu, 2010, p.253) or “the physical characteristics” (e.g., size and weight), input capabilities (e.g., keypad or touchpad), output capabilities (e.g., screen size and audio functions), file storage and retrieval, processor speed, and the “low error rates” (Alzubi & Sabha, 2013, p.179) to the learning process. Their unique characteristics and especially their portability can open new doors to learning. Norbrook and Scott (2003) suggest that the most engaging factor when using a mobile device is the fact that the device is immediately available anywhere you want to use it. Learning through mobile devices can offer convenient and interactive learning opportunities, which can work as basic building blocks to the education of today. The students can access the device and learn anytime and anywhere, making the mobile devices a tool for a student centered process.

Games on mobile devices can function as a widely expected innovation to vocabulary learning as well, especially for learners who grew up in the digital age. Data shows that mobile apps and especially games seem to be the most popular past time according to the latest report by Nielsen. The report shows that 64% of users who downloaded an app in a 30 days period have downloaded a game (Fig. 1.4). Studies on the effect on mobile games and learning have shown that the mobility of the device gives the students the opportunity to access the game spontaneously; promoting a more personalized learning (Nah, White & Sussex, 2008). Chen and Chung (2007) highlighted the flexible learning process that mobile learning promotes without time or place constraint. Therefore, it can be assumed that digital games played on mobile devices can create a flexible, novel,
motivating environment for English Language Learning. In this respect, this study was designed to determine the effectiveness of mobile games in L2 vocabulary learning.

3.4 Simulation Games

Their realistic animation and scenarios as well as their fascinating interactivity are the key factors that render a simulation game an engaging experience for their audiences. In the light of this belief, Quinn (2005) stated that “the elements that make an experience engaging are the ones that make it an effective learning experience” (p. 1). Much research is based on the linguistic potential of the virtual worlds, which can be proven, above all, rich in opportunities for language learning. Many researchers have discussed this issue (Coleman, 2002; Crookall, 2002; Purushotma, 2005) highlighting their ability to promote language use in virtual contexts.

Simulation games manage to help learners assess the characteristics of a real situation by setting goals, plan responses and control their plans (GastaoSalies, 2002). Simulation computer games entail decision-making tied to direct hands on control (Darley, 2000). This form of play takes place in real time in relation to the events happening on the
screen. The fact that the player has the power to change the course of action is the most important element of the games. The key factor is that the learners feel that they can control their learning in a pleasant entertaining environment that keeps learners motivated. In the light of this belief, Ranalli (2008) revealed that the three elements of motivation in simulation games are need, search and evaluation. Purushotma (2005) asserts that a game like the Sims can be “modified to fulfill these criteria and do it in a manner that minimizes stress on part of the learner” (p.84) (Fig 1.5).

Schlimme (2002) claims that simulation computer games can provide a context in which participants can discuss all the possible scenarios in order to aid their general understanding of the situation. He also supports that some simulation games introduce a number of unfamiliar words to players which are needed in order to succeed. As a result, the players’ vocabulary competence significantly improves. Our study is based on Schlimme’s theory and tries to confirm his theory on games and vocabulary acquisition. Other scholars, like Turgut and Irgin (2009) as well as DeHaan, Reed and Kuwada (2010) experimented on the same issue. Their results revealed that digital games can promote language learning and are effective towards learning sub-skills, like vocabulary and pronunciation. Finally, Ranalli (2008) adjusted the simulation game The Sims for language learners. The results of his study revealed that the participants showed significant
improvement in vocabulary acquisition. Therefore, all those studies confirm that simulation games can effectively engage learners and present positive learning outcomes.

3.5 Games and Gender

Many studies have been conducted on the issue of games and gender. It might be the case that the male players outnumber the female ones. There is not a simple answer behind the reason of this imbalance. Some psychologists discovered that children learn important cognitive skills by playing digital games such as the ability to maintain attention and to orient things in space and these skills differ between boys and girls, because of their different exposure to the medium (Subrahmanyam & Greenfield, 1994).

Focusing on gender preferences concerning involvement with computer games it is important to consider the entertainment factor, as gender-specific preferences definitely exist. There is a differentiation of boys and girls from an early age according to hobbies, sports, professional ambitions and that girls are more interested in romance, make up, fitness, cooking and fashion. According to Cassell and Jenkins (1999), “girls are more interested in character centered plots, issues of friendship, social relationships, and bright colorful graphics” (pg. 10). This has been the case for several years as girls are not that interested in violent games as violence is a major factor for explaining the girls’ low interest towards the games (Subrahmanyam & Greenfield, 1998). A study conducted by Kafai (1996) on the issue of violence and the girls’ attitude towards the game confirmed that girls are less enthusiastic towards the games as “they had no particular interest in pursuing video game playing because they did not like the games, their content and their violent aspects” (pg. 62). It is understood that they prefer computer games that are set in settings that are more familiar and with more familiar characters.

In recent years though, the emergence of new games that successfully engage female characters has started to gain ground. It might be the case that more girls and women are playing games or that computer gaming has grown to the point that there is no room for diversity, that has lured the game industries towards designing new kinds of games in order to expand the market and find new consumer groups. According to data taken from statista, a data-collecting platform, casual games on cell phones and computer platforms have attracted more female recipients in recent years. More specifically, the percentage of girls and women playing on those consoles more than five days a week has soared in 2018 to
Statistics show that 60% of digital game purchasers are men and 40% are women (Fig. 1.6).

Women have always played games and in recent years due to the growth of the mobile games industry, women have shown a specific preference towards smartphone devices. Mobile games now account for more than 43% of the total time spent on mobile phones. That entails both men and women. Puzzle games constitute the 57.29% of games downloaded on mobile devices while simulation games account for the 13.72% (Infographic). It has become obvious that there is a swift of the focus of game designers from appearance to players themselves, casting a broad net that could include everyone (Paul, 2012).

To sum up, it is obvious that the situation has dramatically changed in recent years. Women have equally contributed in making gaming one of the world’s fastest growing markets. Boys and girls can be equally skilled at using digital games and the issue that boys are more likely to choose to play them has by far been outdated. Yet the stereotype that games are a pastime for adolescent boys is a stereotype that still endures over the years and one that is perpetuated by the fierce marketing of many big-budget games.
CHAPTER 4: The Study

4.1 The Purpose of the Project

The aim of this project was to measure the impact of digital games on students’ L2 vocabulary acquisition. In this study, the researcher incorporated three mobile games as a learning tool in order to teach L2 vocabulary to young learners. Moreover, there was also an attempt to evaluate the vocabulary acquired through the specific project implemented on 16 pre-Intermediate-Intermediate level students.

More specifically, this specific project is aimed at:

- examining the role of mobile games as an educational tool and especially for vocabulary acquisition
- measuring the learners’ engagement and motivation for L2 vocabulary learning in a game based environment.
- raising a number of assumptions and recommendations towards the use of digital games for educational purposes.

The main aim was to identify vocabulary-learning opportunities in digital mobile games. Considering the rapid growth of the digitized world, learning is not about teaching anymore but about creating a suitable learning environment that our ever-changing world requires. Consequently, digital games could function as the building blocks of this new learning experience.

4.2 Research Questions/ Hypotheses

On the basis of the issues raised in the study, the following research questions and hypotheses were formed.

Questions

Q1) Do digital games have an effect on young learners’ acquisition of foreign language vocabulary?

Q2) Is there a difference in vocabulary acquisition and retention between the learners who acquire vocabulary with digital games over those who acquire vocabulary with traditional methods?
Q3) Are males more efficient at acquiring English vocabulary through digital games than females?

**Hypotheses**

Ho1- Digital games have no effect on foreign language vocabulary acquisition

Ho2- Learners consider digital games inappropriate for learning a foreign language.

Ho3- Boys and girls cannot be equally skilled at using games

### 4.3 Participants

The sample of the study were 16 EFL learners attending classes at a primary and a secondary school in Thessaloniki. Sixteen students, aged 9-14 (N=11.8) (Fig. 1.7), participated in the research, half of whom learned new words with the aid of mobile games and constituted the experimental group and the other half, called control group, received traditional instruction without integrating technology. The participants were selected by administering an online placement test in order to determine their English language proficiency. The participants who scored 19-25 (M=3.93 years of English Language Learning) (A2- Pre Intermediate-Intermediate level) according to the CEFR (Common European Framework of Reference for Languages) were considered (Fig. 1.8). Most students started learning English at the age of seven or eight, while their exposure to the target language varied.

![Figure 1.7: Age distribution](image-url)
4.4 Design of the Game Based Program

Students need many opportunities to acquire L2 vocabulary in a variety of contexts in order to feel free and motivated to learn. As Tiris (2010) points out, game playing could be characterized as a method to engage learners in language learning in an environment that people can “forget they are learning”. Taking into consideration the high popularity of simulation games, the researcher employed three carefully selected mobile simulation games that offered various vocabulary learning opportunities. Through those games and the constant exposure of the learners to the specific language used, the researcher tried to prove, as Tiris (2010) mentioned in his speech, that “it is OK to use digital games in the learning process”.

The words that the participants were assigned to learn were based on the mobile games Township, Pocket city and Forge of Empires. All three games are simulation games, presenting words in real contexts as vocabulary might be learned better in context (Groot, 2000). Drawing on Prensky’s (2001) definition of simulation games, we discover that simulation games are “the creation of an artificial world which approximates the real one” (p. 2). In the game Township (Fig. 1.9), the participants could see the elements of a town grow depending on what they did. The game features various animals that need constant feeding, crops that need harvesting frequently and the collection of building materials in order to build houses and community buildings. The players follow and try to fulfill the new missions that encourage them to keep playing. When previous objectives are accomplished, new ones are added as those games are designed to be played for frequent chunks of time.
Additionally, this game gives the opportunity of socializing with other players, as there is the option to help other players with materials they have not produced or ask their help while sending them in-game presents.

![Township](image)

**Figure 1.9:** Township

The second mobile game that was chosen for this experiment is *Pocket city* (Fig. 1.10). *Pocket city* offers several missions to the players in order to control their choices, encouraging them to do specific things and teaching them how to follow the rules of the game. Various buildings, roads and other objects are created by moving icons that change according to their role. This game does not give the opportunity of socializing with other players, like *Township*, but it frequently replenishes the amount of money collected in order to encourage the players to construct more buildings and decorate their cities with parks and ponds.
The third game used is *Forge of Empires* (Fig. 1.11). This strategy game gives players the opportunity to create a city, significantly different from the cities built in the other two games, as this city has to be developed from the Stone Age and onward. Players can create a vast empire, take part in battles and win items through quests. When those quests are fulfilled, the player is awarded with coins - the same happening in the other two simulation games.
The games are based on Nunan’s (1999) criteria for vocabulary learning—presentation, practice (repetition) and production. They provide a list of problems and how to solve them. The vocabulary is constantly presented on everyday objects in order to make the definition clear in the learners’ minds and to make a connection of the word with the picture. As Darley (2009) claims, “Players achieve a sense of ‘agency’ inside the world of the game” (p. 158). They utilize and combine the objects found, a situation which encourages participants to use the new vocabulary words. Consequently, it is the feedback of the game that lets learning take place. Additionally, in those selected games players have an inventory to collect the items they find. This constant repetition of the objects in the inventory can aid the players’ vocabulary acquisition. The use of inventories, according to Chang, Hsu and Chao (2008), is a common feature of games which are also presented as an example in the game Runaway. In that event we realize that the games not only introduce new visually represented vocabulary items but also provide a variety of situations for users to practice and produce this newly acquired vocabulary.
CHAPTER 5: Implementation and Evaluation of the program

5.1 Procedure

To examine whether computer games are appropriate learning tools, this study incorporated learners who were willing to play mobile games in order to learn English. In addition, it considered learners who were Pre-Intermediate-Intermediate (A2-B1) level, meaning that they possess the appropriate skills in order to understand the language used in the game. The study was conducted as a case study. Case studies, as Yin (2003) points out, combine data from different sources, like diaries, observations, questionnaires or interviews. Consequently, this study used all these sources in order to accumulate valid and trustworthy results.

The project lasted for 2 months. Prior to participation in the project, the students in both groups were given a pre-test in order to measure their prior knowledge of the L2 vocabulary words that were extracted from the games as well as the reading passage. Participants in both experimental and control groups were tested. The pre-test was designed by the researcher and contained a set of 21 common words identified in the games and in the reading passage (10 multiple choice and 6 open-ended questions) (Appendix A). The students were given 20 minutes to complete the test. The aim of this test was to determine the familiarity of the learners with the language used in the games as well as in the reading passage.

Gee (2013) considered digital games as customizable learning opportunities that suit learners and encourage different approaches to learning. For this reason, three mobile games were used in order to try to identify examples of vocabulary learning opportunities in them. First, the teacher initiated a group discussion about digital games and tried to find out the students’ attitudes towards the games. The learners were asked to answer in the target language while the teacher created a spider-gram with the students’ answers. In that way the students had the opportunity to practice their oral skills while trying to understand the idea of the project. After that, the teacher tried to familiarize the learners with the content and the rules of the games by presenting the games selected in a prezi presentation and on some flashcards with pictures taken from the games. The learners saw the pictures and tried to guess the vocabulary hidden behind the cards. This activity was introduced in order to help them activate the image of the objects as well as the vocabulary mentioned behind each object in their minds. Then, the learners downloaded the selected games on their mobile
devices and tried to play with the aid of the teacher in order to make sure that they understood the rules of the games. The players understood quickly the concept of the tasks that needed to be fulfilled in order to achieve the games’ goals. The participants were asked to play each selected mobile game equally for 2 months. Each participant had six encounters with each specific game in 2 months’ time. The learners faced many encounters with the vocabulary used in the games as well, as they had to follow the rules in order to see their towns thrive. After each week, the teacher worked as a facilitator and coordinator by checking their game progress and recording their gameplay (length of time spent playing, the progress they achieved and the game they played more) in her personal journal. She also provided feedback and encouraged their active participation. The games were presented as a free time activity that the learners were asked to do after their homework. The students were responsible for the completion of the tasks as it was an individual activity and they had to do it on their own. In that way they achieved a sense of autonomy while performing a wide range of language functions in order to complete the task.

5.2 Estimation of the Effectiveness of the Program

Pre-Post tests

At the end of the project, the participants in both groups completed an immediate post-test in order to determine the participants’ acquisition of vocabulary words. This test used the same set of 21 words presented before in order to practice effect (Appendix B). The aim of this test was to measure the number of words acquired by the participants after playing the game and compare the results with the control group who learned the same words through a reading passage. A delayed vocabulary retention test with the same vocabulary items was given two weeks following the completion of the project in order to measure vocabulary retention (Appendix C). The test was presented as a matching activity. Nation (1990) reflects upon this belief stating that “the effort given to the learning of new words will be wasted if this is not followed up by later meeting with the words.” Thus, the “increase in vocabulary size must be accompanied by many opportunities to put this vocabulary to use” (p.119). The reliability of the tests was measured with a T-test analysis.
Teaching Journal

A teacher’s journal was also used as a tool to estimate the effectiveness of the implementation. The teacher kept records of each participant’s gameplay and wrote down their personal achievements and views of the games. This journal helped the researcher acquire an instant feedback of the process while recording the learners’ behavior towards the project. It consisted of a list with specific categories (time played, gender, age, students’ views, words learned). The journal was kept in a notebook and written by hand. The main aim was to measure learners’ motivation and whether the participants presented positive attitudes towards this game-based learning process. As Brown (2000) states “Our ultimate quest in this language teaching business is, of course, to see if our pedagogical tools can harness the power of intrinsically motivated learners who are striving for excellence, autonomy, and self-actualization.” (p.165)

Learner Interviews

Finally, learner interviews were also performed after the end of the project to determine the learners’ views and attitudes towards the experiment. The learners were asked whether they enjoyed the process, if they feel that games helped them learn vocabulary, the difficulties they encountered and the factors that determined their achievement. The interviews were recorded by the teacher and were conducted face-to-face in Greek, in order to make the learners feel more comfortable and receive the appropriate answers.

All instruments are highly significant, according to Harkness (2005), as they can give the researchers the opportunity to empirically evaluate the effectiveness of their study and assess the material acquisition through formative assessment. Since the study was small scale, using a higher number of instruments for data collection could help to validate the findings. Therefore, the instruments used were pre-test, post-test, delayed retention test, teacher’s journal and interviews. The data gathered from all the aforementioned instruments were assessed in order to make comparisons of achievement among the pupils of the two groups (experimental/control).
5.3 Evaluation- Results

An evaluation process was conducted in order to assess the feasibility of the project. The data collected were statistically analyzed (SPSS) in order to provide answers to the study’s research questions. The data analyses were performed based on the frequency counting method and the findings were recorded. The records of the pre-test were measured and compared using T-test analysis with the scores of the post-test as well as the delayed retention test of both groups.

5.4 Pretest Results

To test the null-hypothesis that (Ho1- Digital games have no effect on foreign language vocabulary acquisition), the researcher accumulated scores from the three tests and analyzed them in pairs. At first, the mean of the pre-test of the experimental and the control group was measured. The mean of the pre-test was (M=4) (SD=2.39). The results obtained from the pre-test showed no significant difference between the control and the experimental group, Sig. (2-tailed) =0.550>0.05, confirming the fact that they were in a similar language level (Pre- Intermediate-Intermediate).

5.5 Post-test Results

At the second phase, the researcher compared the results between the control and the experimental group in relation to their post-test performance. By the results indicated in Table 1.1 we can deduce that the experimental group (M=9, SD= 0.53) outperformed the control group (M=5.52, SD=2.12). According to the p-value of the two tests we realize that the p-value “Sig. (2-tailed)” is .00 which is lower than the significance level of 0.05 (t=-4.848, p<0.05) with df (14) (Table 1.1). The results indicate that the null hypothesis is rejected as there is statistically significant relationship between computer games and vocabulary acquisition.
5.6 Delayed Retention Test Results

In the third phase, the scores of both groups from the delayed retention test were compared in order to measure vocabulary acquisition. The results indicated in Table 1.2 signify that the experimental group (M=9.12, SD=0.83) presented better results as far as information retention is concerned whereas the control group (M=5.87, SD=1.35) had trouble in transferring knowledge from short term to long-term memory. According to the p-value of the two tests we realize that the p-value “Sig. (2-tailed)” is .00 which is lower than the significance level of 0.05 (t=-5.215, p<0.05) with df (14) (Table 1.2). Therefore,
from the collected results we can suggest that mobile simulation games can be viewed as an effective tool towards vocabulary acquisition.

The results of the 2 phases reflected a statistically significant relationship. Consequently, these results reject the hypothesis that digital games have no effect on vocabulary acquisition and retention as the participants remembered and acquired a significant amount of words through computer games.

Table 1.2: Delayed retention test results

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<th>Group Statistics</th>
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<tr>
<td><strong>Group</strong></td>
</tr>
<tr>
<td>Delayed test control</td>
</tr>
<tr>
<td>Delayed test experimental</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>t-test for Equality of Means</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
</tr>
<tr>
<td>Equal variances assumed</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
</tr>
</tbody>
</table>
5.7 Results Related to Gender

As far as the gender is concerned, our study’s results reject our previous assumptions (Ho3- Boys and girls cannot be equally skilled at using games) and the issue that boys are more likely to choose to play them has by far been outdated. Both males and females of the experimental group presented similar scores, males (M=9, SD=0.816) and females (M=9, SD=0) (table 1.3). The assumptions are further clarified by the p-value “Sig. (2-tailed)” of the test which is 1 and consequently higher than the significance level of 0.05 (a>0.05) with df (6) (Table 1.3). Therefore, from the collected results we can assume that females have started to express the same interest towards games as boys. It is though recommended that further research should be carried on the issue of gender and digital games with larger groups of students to make the findings more reliable.

Table 1.3: Experimental group gender results

<table>
<thead>
<tr>
<th>Group Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>gender</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Post test males</td>
</tr>
<tr>
<td>females</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test for Equality of Means</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Equal variances assumed</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
</tr>
</tbody>
</table>
5.8 Interviews

Students’ interviews were conducted in order to record the students’ attitudes towards the project. The researcher encouraged the students to answer the following questions upon the completion of the project (Table 1.4):

Table 1.4: Learners’ Interviews

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>What did you like most about the project?</td>
<td>The virtual world of the game</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>No pressure-relaxed environment</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>More interesting than the traditional method</td>
<td>20%</td>
</tr>
<tr>
<td>Did you encounter any difficulties?</td>
<td>Some words were difficult to remember</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>No difficulties</td>
<td>40%</td>
</tr>
<tr>
<td>Which are the benefits of the project in relation to learning?</td>
<td>Active engagement in the task</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>The video game provided opportunities for developing fluency with known and new vocabulary.</td>
<td>60%</td>
</tr>
</tbody>
</table>
Most students (60%) stated that learning vocabulary through computer games meant learning in a relaxed environment where they do not feel the pressure of learning. They pointed out that “Learning was fun. We didn’t realize we were learning”. They also mentioned that “Having fun motivated me to continue my learning for long hours”. More than half of the participants mentioned that they liked the virtual world of the games. A student also revealed that “The virtual world of the game helped me to get the meaning of new words easier”. Most students declared that they particularly liked the games and they found them “more interesting as we are not used to learning English in that way”.

As far as the second question is concerned, most students (60%) found acquiring new vocabulary words difficult. They said that “We couldn’t remember some words as we had difficulty understanding them”. A significant number of students (40%) mentioned that they did not encounter any difficulties and they found the project very interesting.

Concerning the benefits of the projects, most students mentioned that the project was beneficial as far as vocabulary acquisition is concerned as they managed to develop fluency with old and new acquired words. A student reflected upon this idea and mentioned that “I learned new words that I am sure I wouldn’t be able to learn otherwise”. Many students also mentioned their active engagement in the project as it was “different from what we are used to” and “I could control my own learning”. Therefore, we can assume that the participants were generally satisfied with learning vocabulary with computer games, shedding light to our second hypothesis (Ho2- Learners consider digital games inappropriate for learning a foreign language).

5.9 Teacher’s Journal Results

The analysis of the teacher’s journal led to the formation of four categories: 1) Teaching process, 2) Teacher’s role, 3) Students’ attitudes and 4) Overall evaluation (see table 1.5).
**Table 1.5: Teacher’s Journal**

<table>
<thead>
<tr>
<th>Teacher’s Journal</th>
<th>Goals</th>
<th>a) Words learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Teaching Process</td>
<td>a) Words learned</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Time management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Strategies used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Test completion</td>
<td></td>
</tr>
<tr>
<td>2) Teacher’s Role</td>
<td>Provide Assistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Encourage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Give instructions for the project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Organize learners’ work and monitor their progress</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Write and compare the scores of both groups</td>
<td></td>
</tr>
<tr>
<td>3) Students’ Attitudes</td>
<td>Students’ Behaviors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Their attitude towards the project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Whether the project facilitated vocabulary acquisition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Things that appealed to them</td>
<td></td>
</tr>
<tr>
<td>4) Overall Evaluation</td>
<td>Problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Students’ difficulties concerning the words used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Storage capacity and problems with mobile tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Cooperation problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning Outcomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Relaxing-stress free learning environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Motivation towards use of simulation games for vocabulary acquisition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Pleasurable learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Appealing graphics</td>
<td></td>
</tr>
</tbody>
</table>
Upon the completion of the task, specific learning and teaching goals had to be fulfilled. The data collected in the teacher’s journal recorded the words learned on each specific stage, the time the students dedicated to the project and the strategies used. Some words like field, barn, farmhouse, corn were easier learned even from the first stage while others like plough, yield, harvest, wheat took most learners more time to acquire. Some students preferred to repeat the vocabulary words after the fulfillment of each task while others found it easier to write them down in their notebooks. Two students said that they didn’t need to follow either of those strategies to remember the words as the constant repetition of the words in the games helped. Most students played for 15-20 minutes each time while three students played for more than an hour. Finally, the teacher made sure that after playing the games, the learners completed the appropriate tests. The teacher’s role was that of a facilitator as she gave instructions and assistance when needed. The teacher needed to give the initial instructions to the learners and organize their work so as to make sure that they will fulfill the tasks. After each stage, the teacher recorded the scores of the participants, asked about their views towards the games and wrote down the things that mostly appealed to them. Most students revealed that “the images and the repetition of the words helped” while others found the “bright colorful graphics and everyday objects very appealing”. The students generally expressed a positive predisposition towards the project, as most students revealed that they won’t delete the games upon completion of the research.

Some difficulties that were recorded had to do with storage capacity, as some students complained that “we had to delete the games because of space shortage in our phones”. A couple of students also complained that their devices were too slow for the games or encountered some internet connection problems. One student revealed that he found some of the words like cultivate, plough, reap and haystack too difficult to learn and not age appropriate. Overall, most students expressed significant improvement at acquiring vocabulary words through digital games as they revealed that they learned in a “fun, interesting and motivating environment”. The game contained a form of “pleasure that is not available elsewhere” and a “fake realism” that appeals to almost everyone.
CHAPTER 6: Discussion

The aim of this study was to measure the impact of digital games on students’ L2 vocabulary acquisition. In this study, the researcher incorporated three mobile games as a learning tool in order to teach L2 vocabulary to young learners. Moreover, there was also an attempt to evaluate the vocabulary acquired through the specific project implemented on 8 pre-Intermediate-Intermediate level students as well as examine the participants’ motivation and engagement towards the project. Therefore, the main aim was to present digital games as the new building blocks that could create a suitable learning environment that our ever changing world requires.

Several sources were used to strengthen the reliability and validity of the results. A teacher’s journal as well as a pre-test, post-test and delayed vocabulary retention test were used. The data collected from teacher’s journal and student’s interviews indicated that learners are positively predisposed to the English Language but they need to be further motivated. Digital games could function as the building block that could bring motivation into foreign language learning. On this present study all participants expressed a positive attitude towards the project and spent a considerable amount of time playing the games. Some players readily took the game as a fun and interesting way of learning, others were intrigued by the opportunity to compete other players, while others saw this task as a chance to get good grades. Most participants approached the games with vague interests and then developed a deeper interest in achieving goals and fulfilling tasks. The fact that participants’ interest was intrigued upon the game begins should raise important questions for educators about the new academic interests hidden in digital games (Squire, 2007).

The reason why the digital games have this motivating and intriguing effect towards young learners is clearly illustrated by Shaffer et al. (2005) who mention that the virtual context that the games provide helps users to become masters of their learning. This situated understanding with pictures, graphics and voices can make a real context for learning. Students’ interviews revealed that the natural repetition of the games gives the user various opportunities to acquire the language easier. In addition, this pressure-free, relaxed environment proved to be beneficial for language retention.

The results collected from the various sources implemented in this project revealed that digital mobile games can be used as a tool for vocabulary acquisition. The feelings of relaxation and entertainment created a positive predisposition towards the project while they
stimulated the students’ motivation for learning in a game-based environment. For this reason, as the results of our study have signified, the use of games in education could be introduced as a method of learning that conforms to the students’ interests while creates an intriguing and motivating environment for language learning.

6.1 Conclusion and Further Suggestions

Our research showed that learners playing digital games tend to learn better and retain the new vocabulary for longer periods than those who attended the traditional learning method. Students gained a higher degree of autonomy while learning with mobile devices. Consequently, this game-based concept introduced in this study could serve as an example of how digital games can be incorporated in the learning process.

As traditional teaching methods could prove inadequate to promote language learning, teachers should focus on opportunities for meaningful engagement of the learners. Instructors could assist learners by raising their awareness of the potential of digital games and not discourage them. Classroom instruction needs to take into account students’ interests into the activities offered, so that students will feel motivated and challenged. The results of the study are really important for second language teachers, specifically in state schools, as they should try to transform the English classrooms from an opportunity for rest and relaxation to a more engaging and fun environment. As Bromley (2007) points out the goal of instructors should be to build students' independence that focus more on understanding and developing lifelong learning skills. Consequently, new teaching and learning methods need to be examined that can motivate learners and bring positive learning outcomes.

Digital games could function as a self-learning tool and supplement to classroom learning, as the hours spent in the classroom cannot be proven sufficient for language learning. This method can also take into account the needs of different students, as each student can learn at his/her own pace. Students feel that they are in control of their learning. Of course not all games are suitable for language learning. To ensure that learning takes place, it is the teacher’s role to choose the right games that appeal to the students’ interests, promote motivation and challenge. According to Ruben (1999), simulation games are proven to have more long-term and lasting effects on learners due to their active involvement in a reality-like context.
To summarize, the present research shed light on various aspects of the use of digital games for vocabulary learning: 1) Students regard digital games as an effective vocabulary learning tool, 2) they tend to favor digital games when it comes to learning compared to the traditional learning methods and 3) teachers need to retain students’ interests in the learning process by finding motivating ways to ensure learning effectiveness. For this reason, as the results of our study have signified, the employment of games in education could be presented as an opportunity to teach in a way that conforms to the students’ interests while increasing student engagement and motivation towards learning.

6.2 Limitations

There are aspects of this study that limit its generalizability but also provide focus for future research. For example, the sample was small. Further research should be carried out with larger groups of students to make the findings more reliable. In addition, the vocabulary sample used was rather limited. Therefore, further investigation is needed in order to use a larger number of vocabulary words.

Another issue we should take into account is the individual differences and strategy use of each student. Learners vary in strategy use and their strategic behavior is an aspect that requires attention. Cohen (1998) emphasizes that learning strategies are directly linked to the learner’s learning styles. Some students might be better at putting a cognitive strategy in operation, as they could manage to infer words from the context and memorize them. In this research, though the sample was relatively small, different strategies were recorded. Therefore, it would be preferable to use a bigger sample in order to determine the most dominant strategy used among the learners. Ellis and Sinclair (1989) maintain that once strategies that promote and facilitate learning have been identified, learners should be trained and taught in the use of those good strategies with the help of the teacher.

It is also worth mentioning that students in the control group encountered some difficulties related to comprehending the text because of the specific vocabulary used. However, teacher enforcement and support encouraged them to participate in the learning process. In effect, the findings suggest that such methods need further reinforcement in order to promote language learning. However, given the limited number of the participants and the restricted content, the results cannot be regarded conclusive. For this purpose, further
research with bigger samples overcoming those limitations observed is needed to confirm the aforementioned results.

Finally, the results of this study have implications for designers of educational digital games, teachers, and students. Language teachers are advised to use digital games in their classrooms, especially for vocabulary building. Students could use mobile games as an effective tool for self-study and foreign language learning. Perhaps a “new paradigm that can deeply affect the future of education” is around the corner and all we have to do, as educators and researchers, is to explore its endless opportunities (Barry, 2008, p.265).
References


Research (Faculty of Languages and Islamic Studies) 2003. Vol. 4.


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Appendix A

Words selected for the study

Games

<table>
<thead>
<tr>
<th>Township</th>
<th>Pocket City</th>
<th>Forge of Empires</th>
</tr>
</thead>
<tbody>
<tr>
<td>wheat</td>
<td>fountain</td>
<td>spear</td>
</tr>
<tr>
<td>barn</td>
<td>cultivate</td>
<td>horn</td>
</tr>
<tr>
<td>field</td>
<td>crops</td>
<td>land</td>
</tr>
<tr>
<td>corn</td>
<td>farmhouse</td>
<td>plough</td>
</tr>
<tr>
<td>feed</td>
<td>residential area</td>
<td>grain</td>
</tr>
<tr>
<td>harvest</td>
<td>plant</td>
<td>yield</td>
</tr>
<tr>
<td>hungry</td>
<td>powerplant</td>
<td>trail</td>
</tr>
</tbody>
</table>

Reading passage

Aji and his Farm

crops
barn
horn
hungry
harvest
yield
plant
farmhouse
land
wheat
grain
plough
cultivate
field
harvest
Appendix B

PRE-TEST AND POST TEST

Επέλεξε τη σωστή απάντηση

1
Τί δείχνει η εικόνα;
- wheat
- barn
- field
- corn

2
Πώς ονομάζεται αυτό το κτήριο;
- barn
- fountain
- farmhouse
- land

3
Τί δείχνει η εικόνα;
- spears
- horns
- trails
- farmhouses
**4**

<table>
<thead>
<tr>
<th>Τι δείχνει η εικόνα;</th>
</tr>
</thead>
<tbody>
<tr>
<td>trails</td>
</tr>
<tr>
<td>powerplants</td>
</tr>
<tr>
<td>fields</td>
</tr>
<tr>
<td>fountains</td>
</tr>
</tbody>
</table>

![Image](image1)

**5**

<table>
<thead>
<tr>
<th>Plough σημαίνει</th>
</tr>
</thead>
<tbody>
<tr>
<td>θερίζω</td>
</tr>
<tr>
<td>οργώνω</td>
</tr>
<tr>
<td>φυτεύω</td>
</tr>
<tr>
<td>καλλιεργώ</td>
</tr>
</tbody>
</table>

**6**

<table>
<thead>
<tr>
<th>Τι σημαίνει harvest?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**7**

<table>
<thead>
<tr>
<th>Πώς ονομάζεται αυτό το κτήριο;</th>
</tr>
</thead>
<tbody>
<tr>
<td>wheat</td>
</tr>
<tr>
<td>grain</td>
</tr>
<tr>
<td>powerplant</td>
</tr>
<tr>
<td>spear</td>
</tr>
</tbody>
</table>

![Image](image2)
8. Τι κρατάνε οι πολεμιστές:
- grains
- horns
- spears
- fountains

9. Είναι γεμάτο νερό και στολίζει μια πόλη. Τι είναι:
- land
- fountain
- powerplant
- farmhouse

10. Ο αγρότης μαζεύει τα:
- powerplants
- barns
- crops
- spears

11. Τι σημαίνει yield;
12 Αυτό δεν είναι ένας δρόμος αλλά ένα

- fountain
- corn
- farmhouse
- trail

13 Τι σημαίνει hungry;

14 Από ποιον καρπό παράγεται αυτό το σνακ;

- plant
- horn
- corn
- wheat

15 Ο μύλος που παράγει φαγητό για τα ζώα λέγεται

- fid mill
- feed mill
- feedle mill
- fied mill
Residential area ονομάζουμε μια περιοχή με

- houses
- trees
- factories
- shops
Appendix C

DELAYED VOCABULARY RETENTION TEST

ΗΛΙΚΙΑ:
ΑΓΟΡΙ ΚΟΡΙΤΣΙ
ΕΠΑΙΞΕΣ ΤΟ ΠΑΙΧΝΙΔΙ Η ΔΙΑΒΑΣΕΣ ΤΟ ΚΕΙΜΕΝΟ;
ΤΙ ΣΟΥ ΑΡΕΣΕ ΠΕΡΙΣΣΟΤΕΡΟ;

ΠΟΣΕΣ ΑΠΟ ΑΥΤΕΣ ΤΙΣ ΛΕΞΕΙΣ ΘΥΜΑΣΤΕ; ΑΝΤΙΣΤΟΙΧΙΣΤΕ ΜΕ ΤΙΣ ΣΩΣΤΕΣ ΕΙΚΟΝΕΣ.

1. Plough
2. Feed Mill
3. Horn
4. Wheat
5. Corn
6. Field
7. Spear
8. Trail
9. Barn
10. Harvest
There was a boy called Aji who loved farming so much that he chose to be helping his father in his farm. They lived in an isolated farm, away from any residential area. They only had a powerplant nearby to get electric power when they needed. One day, his father told Aji that he needed to take the “sapi” (cows) to the market in the town. “I leave you in charge of the farm, make sure you harvest all the crops in the field and look after the plants,” said his father before he left.

Once his father left, Aji followed the narrow trail and went up to a haystack to blow his horn huuuuuhhggg! Aji never used any weapons to frighten his animals. He had his spear hidden in his house, only to catch fish and scare the crows. He only used his horn. Upon hearing the horn, all the cows, horses, sheep, chickens and ducks gathered around the haystack. “I call all of you so that we could have a meeting,” announced Aji. “My father had left, thus, I am now in charge of the farm and I think we should equally divide the works that need to be done," added Aji. “Agree?” asked Aji. “Agree!” cheered the farm animals.

“Now, the first thing that we have to do is to reap the wheat,” said Aji. Thus, all the animals and Aji went to the paddy field and started harvesting the grain.
returned to the farmhouse at night, they stored all the rice in the barn. "You all can rest and sleep now, we will continue the harvest tomorrow," said Aji.

On the next day, Aji went to the barn and discovered that the wheat had gone. Aji immediately blew his horn huuuuuhgg! All the animals immediately gathered around him. "It appeared that the wheat we had gathered yesterday is gone," said Aji. "Does anyone know what has happened to the wheat?" asked Aji. The chickens looked at each other and one chicken immediately replied, "We ate the wheat, we are so sorry, we were so hungry."

"Never mind, we still have plenty of crops we could collect today," said Aji. "That should make up for the loss of the wheat," added Aji. "Today, we are going to harvest the corn," announced Aji. Then, all the farm animals followed Aji to the farm. The animals worked together with Aji in harvesting the corn. Once they finished, they immediately went back and stored the corns in the barn.

On the next morning, Aji was surprised to see that the corns had gone. He immediately went to the top of the haystack and blew his horn. All the animals quickly gathered around the haystack. "I found out that the corns we had gathered yesterday has already gone, does anyone know anything about it," asked Aji. The cows were shoving themselves against each other. One cow finally confessed, "We actually ate the corns yesterday, we were tired and starving, we are really sorry."

Aji heaved a sigh. "Never mind, we still have the taraps (tropical fruit native to Borneo) to be reaped," said Aji. "Everybody, follow me to the tarap farm," ordered Aji. Aji
and the animals harvested the fruits and they stored them in the barn once they returned to the farmhouse.

On the following day, Aji went to the barn and found out that the taraps had been also eaten. He immediately blew his horn and all the animals quickly gathered around him. “I have just discovered that the taraps has also been eaten, does anyone know anything about it?” The horses immediately replied, “Yes, we have gobbled all the taraps because we were so hungry.”

The animals gathered around the fountain and started drinking water. They were thirsty, hungry and worried. “What should we do now?” asked one of the ducks. “We have harvested all the crops and now, all of them are gone,” said one of the sheep. “It appears that the grains that we gathered are also the food that we all eat,” said Aji. “We have to figure a solution on this problem,” said one of the cows. “We have a wide land that we could use to cultivate crops, why don’t we use it all?” asked one of the horses. “If we use all the land, we have enough crops to eat and to sell,” suggested one of the chickens.

“That is a good idea, we should use all the land to plant the crops,” exclaimed Aji. “We all are going to plant the crops and harvest its yield together, is that alright?” asked Aji. “Yes,” answered the animals. They all went to the wide land and start to plough the land and plant the seeds. After several weeks, they all started to harvest the crops and they had more than enough crops not only for sell but also as their food. In the end, Aji fed his animals with the crops they gathered and they lived happily ever after.
IMPROVING YOUNG LEARNERS' VOCABULARY ACQUISITION