

## The Effects of Educational Games on EFL Vocabulary Learning of Early Childhood Students with Learning Disabilities: A Systematic Review and Meta-analysis

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### ABSTRACT

Educational games play an essential role in the life of the new generation. Although there are many criticisms, many studies focus on the importance of educational games in improving EFL vocabulary learning of early childhood students with learning disabilities in the target language. Researchers have begun to research how games are used in class to enhance vocabulary learning. This paper investigates the effects of educational games on EFL vocabulary learning of early childhood students with learning disabilities based on a literature review. Many studies focus on educational games' effect on various aspects of education. This concept paper aims to shed light on some of the benefits of games and the challenges teachers and early childhood children face in using educational games. This paper's results show that games are used not only for the success of early childhood students with learning disabilities in EFL classes but, more importantly, to motivate them and increase cooperation between children. Additionally, the results indicate that there are advantages and disadvantages of using games to learn English vocabulary.

### 1. Introduction

Early childhood education is a key element for every country's development (Mensah & Shayar, 2016). Vocabulary is one of the most difficult aspects of language learning. Vocabulary learning has been of great importance for more than two decades. A wide vocabulary is necessary for effective and valuable communication. Vocabulary acquisition traditionally has been a big challenge for students with special learning needs (Gentry & Lindsey, 2008). Therefore, understanding the strategies that language learners use to learn vocabulary is a matter of great importance (Al-khresheh, & Al-Ruwaili, 2020). There is an increasing interest in using educational games in teaching foreign languages. Educational games are used to entertain and facilitate the learning process (Ilomaki & Kankaanranta, 2009). In addition, the use of games has a significant impact on various social and cultural contexts, as it improves children's language and increases their cultural awareness. According to Taqizadeh et al. (2017), educational games enable children to learn vocabulary much better than using traditional strategies. Teachers need to consider the students' background when choosing strategies (Hynam, 2021). It is imperative to understand two important facts before using the game as an educational tool: The competence of children and their cultural comments must be taken into account. In addition, it should be beneficial for children with low language ability and should be easily practiced anywhere. Several course writers and experienced procedural guide scholars have asserted that games have great educational value (Derakhshan and Khater, 2015). This paper provides a rationale for implementing games as a stress-free tool for learning words. It is believed that games can have the ability to contextualize learning words.

To facilitate students learning a foreign language, (Rixon, 2008) said that 'Language learning is a hard task that can sometimes be frustrating. Continuous effort is necessary to know, produce and manipulate the target language. He also said that "Games can be at the center of teaching foreign languages". Well-chosen games greatly affect the learning process as they give students

a break and allow them to practice language skills. Educational games are highly motivating not only are they amusing but also challenging in the same time. Moreover, they utilize meaningful and useful language in real contexts. They also encourage and increase cooperation (Mohamed, 2021).

There has been much interest in educational games' potential for learning and teaching in recent years. They are popular with early childhood students - a recent survey showed that 79% of 737 children aged five to 15 played computer games at home alone at least a few times a week' (Ulicsak and Cranmer, 2010). At the same time, a growing number of research studies show that there are educational benefits to be derived from gaming in classrooms and, informally, at home. Playing educational games at school is seen to be one of a number of activities that can overcome what has been referred to as the 'digital disconnect' whereby children engage in rich and extensive uses of Information and Communication Technologies (ICTs) at home, but this knowledge and experience is then kept outside of the school gates (Buckingham, 2007).

To sum up, vocabulary plays a vital role in communicating. There are various ways of working with vocabulary teaching, with some popular methods being the use of translation, a communicative approach and educational games strategy. The study aims to provide a systematic literature review on the educational game strategy used in EFL teaching and how this strategy is relevant for early childhood students with learning disabilities.

## **2. Literature Review**

Early childhood students with learning disabilities who learn English have to deal with unfamiliar vocabulary during their language acquisition. In order to learn, recall and retain new words, learners should be involved in different task-based activities in their classroom, whether it is a guessing task, a describing exercise or conversation-making. These activities can also include vocabulary games that help learners develop and use words in different contexts by making the lessons more exciting and enjoyable. There are two popular approaches to vocabulary teaching worldwide: grammar-translation and audio-lingual methods. The grammar-translation approach focuses more on memorizing vocabulary lists for translation tasks and final assessments. The main feature of this strategy is to illustrate grammatical rules. The second approach is the audio-lingual approach, which focuses on attention to pronunciation and intensive oral drilling. These two methods focus on learning words in isolation from their contexts. Decarrico (2001) indicates that learners should not learn words separately or by memorization without understanding; moreover, learning new words is a cumulative process, with words enriched and established as they are met again. (Rohani, & Pourgharib, 2013).

In their study (Gentry& Lindsey, 2008) involved young students with learning disabilities in reading and writing and limited English proficiency. Assistive technology assistance was provided from the Franklin Language Master 6000b and Microsoft's PowerPoint 2003. Visual representations (e.g., student drawings) were also utilized to help the student connect to an individual vocabulary word in the context of the text read. Best practices pedagogy (i.e., trade book use, choice, discovery, interactive learning, reciprocal teaching, and repetition) were used and framed in a lesson structure entitled, Individualized Direct Vocabulary Discovery Method with Assistive Technological Scaffolding (IDVDMATS). This study provides learners with detailed descriptions of one student's special vocabulary learning needs following the IDVDMATS approach.

Ciamarella (2017) evaluates the effect of Kahoot! on vocabulary acquisition and retention and determine student satisfaction with using Kahoot as an intervention. The children participating in the study were classified with a learning disability or other health impairment and received instruction in a pull-out replacement language arts classroom. Single-subject multiple criteria across participants design were utilized. Data were collected to determine the percentage of vocabulary words each student acquired and retained during the baseline phase. Data were collected for the second time during the intervention stage and compared to the baseline data. The findings indicate that using game-based learning platforms can lead to an increase in vocabulary acquisition and retention. Further research is needed to determine the effect of Kahoot! on long-term vocabulary retention and reading comprehension.

Recently, Mohamed (2021) focused on learning EFL vocabulary using the educational game strategy. He assumed that it is difficult to try as much as possible to facilitate it for their learners. One of the best strategies that can be used is an educational games strategy. This research aims to check the effectiveness of using educational games' strategy in enhancing English vocabulary acquisition and retention at the first stage of basic education pupils. The research paper adopted the quasi-experimental pre-post test control / experimental group design. The study sample consisted of 40 male children and was equally divided into two groups: an experimental group and a control one. Students in the experimental group studied vocabulary through the educational game strategy, while students in the control group received traditional instruction. The study instruments included a pre-post vocabulary achievement test and a text course for grade six named Get Ready 6. The students submitted to a pre-post vocabulary achievement test. The results indicate a statistically significant difference between the mean scores of the experimental group and the control group in the pre/ post-test of English vocabulary achievement in favor of the experimental group.

Yeşilbağ et al., (2020) investigate the effects of educational computer games on students' academic achievement and attitudes towards the course. The research was conducted with 60 students during the school year of 2019–2020. The study was a quasi-experimental design with a pre and post-test experimental and control group. The subjects were taught through traditional teaching activities based on the English education program in the control group, while educational computer games were used as teaching activities in the experiment group. The academic achievement test ( $Kr-20 = 0,83$ ) and attitudes towards English scale (Cronbach's Alpha = 0.95) were conducted as the pre and post-test. Data analyses showed that the experimental group performed better than the control group in the academic achievement test. Nevertheless, there is no statistically significant difference between the two groups in terms of attitudes towards English. The findings suggest that computer games can be used in education as an ICT tool to increase students' academic success in English learning.

Scientific textbooks have been written on using games on learning target language vocabulary (Vasileiadou & Makrina, 2017). Likewise, Ashraf et al. (2014) deal with games' effect on children's vocabulary learning. As for the events, the participants are divided into two groups. Some of these groups learned the topics of target games. The number of that group was twenty-five. However, the other fifteen learned traditional vocabulary methods (their textbooks). The drawings are achievements of the use of games in vocabulary learning (Ashraf et al., 2014). Also, Calvo Ferrer (2017) investigated the effect of the game on vocabulary learning. In his study, the number of participants who practiced sports while playing games, while playing formal games, while playing financial games, while playing public financial games, in playing sports, while they were playing foreign games in playing games, and the number of participants who participated in practicing Foreign games in their textbooks. Their results in the pre- and post-period period, showed the participants who learned their vocabulary in a short period of time. In addition, the use of games is more attractive to children and motivated them to improve their English vocabulary (Lin et al, 2019).

Integrating games into an educational setting is a crucial issue, and integrating educational games as a sympathetic part of a bigger ecosystem of learning requires teachers to orchestrate a flood of complex organizational resources. Historically, research on digital game-based learning significantly focused on the coupling between game designs, previously established learning principles, student engagement, and learning outcomes much to the expense of understanding how educational games function in their intended educational contexts and how they affect the working processes of teachers. Given the important investments of time and resources teachers need to make in order to conduct game-based learning activities, the focus of past research is problematic as it obfuscates some of the pressing realities that highly affect games' viability as tools for teaching and learning. This research paper highlights the demands that implementing and using an educational game in formal educational settings puts teachers' working processes and skillsets. The paper is based on two case studies in which a researcher collaborated with K-12 teachers to use MinecraftEdu (TeacherGaming LLC, 2012) as a classroom activity over a five-month-long period. By documenting both the working processes involved in carrying out the game into the classroom setting, as well as the execution of the actual game-based classroom activities, the studies identified a wide variety of responsibilities that a teacher needs to take on if they are to make games a central part of a school curriculum. Ultimately, the paper highlights the importance of understanding the constraints under which teachers work, and argues that a better understanding of the contexts in which games are to be used, and the roles teachers play during game-based learning scenarios, is a necessary foundation for improving games' viability as an educational tool ( Marklund BB, 2016).

Peterson (2013) examined the effect of vocabulary learning during games in preschools in the Netherlands. At the time, five was 164, after only ten weeks left. Peterson conducted his experiment on sixty-seven students. These kids played games for fifteen minutes twice a week. His findings are in favor of positive educational games in vocabulary acquisition. Saffarian and Gorjian (2012) reported the same results in their study. The number of participants was 418 English teachers and 111 children. Children were taught in that trade using computer games in the classroom, while the children were taught regular activities. The data and Gorjian indicate a big difference in children's performance.

Besides, Sundqvist and Sylvèn (2014) emphasized the importance of games in increasing children's motivation to learn English vocabulary. Seventy-six English language students were in the fourth grade of elementary school. Books for study results: Most children are more confident and motivated to learn English vocabulary and add a fun element to the kids' class. Using the methods used to obtain better results. In contrast, Bytheway (2014) researched the use of vocabulary for children in learning processes. Her study includes six professional players. The findings reflect that using games helps children learn vocabulary in meaningful contexts. Therefore, the learning process is more affected and successful. Jensen (2017) showed the important role of games in developing English vocabulary acquisition. The goal helps improve your teaching of children's skills, improving their concentration skills. The research results reached more results in the sense that the vocabulary of vaccination games for children is in different games.

In Iran, Vahdat and Behbahani (2013) showed that games significantly affect vocabulary learning for English children as a foreign language. Forty middle school students participated in this research. Vahdat and Behbahani asked participants to take the TOEFL

test. The videos began to get studios, and the study results flared, while those who played the games participated in their vocabulary learning more than the females. Therefore, they concluded that gender and learning vocabulary across games are interconnected. In addition, they emphasized that educational games provide children with a meaningful context to right-hand them with some frequently asked questions, facilitate their understanding of other things, and improve their English skills and increase their vocabulary, including paying attention to certain aspects of the English language, including vocabulary. Children must know the English vocabulary to master English language skills. Vocabulary is important in supporting children's skills (Bakhsh, 2016). To speak and write in English, from the collection of thousands of thousands of Oxford Dictionaries (Peterson, 2013).

There is a close relationship between vocabulary and four English skills (Tuan, 2011). Children can practice all English language skills well if they learn vocabulary and understand its relevance to English language skills (Schmidt, 2010). However, that time had taught him vocabulary. Most children seem to have problems learning vocabulary due to a lack of motivation (Jung & Graf, 2008). Some other methods and methods can be printable. Using authentic materials can help children learn a lot of vocabulary. So it is a good idea to learn vocabulary. A direct interest is also beneficial if a native language translation is available. English is only used in the classroom. Using games with different activities is also a good way for early childhood students with learning disabilities to learn a lot of vocabulary in a short period.

## **2.1. Definitions of the study**

### **2.1.1 Educational Games**

Before moving on, it is crucial to note how the term game is defined by scholars and used in this study. It is important to note that many non-English scholars used the two words 'game' and 'play' interchangeably in their definitions. Games can be defined as educational technology related to learning. For Liu and Chen (2013), the digital game can help EFL children learn vocabulary by providing them with animation, sound effects, and a good motivation to learn foreign language vocabulary. Noradin and Cayan (2014) classify digital games into two main types: the first is educational games. Educators use this type to achieve specific learning objectives with fun items. Doing exercises can help players of these games learn foreign language vocabulary (Noraddin & Kian, 2014). Serious games are educational (Connolly et al., 2012 and Guerrero, 2011). Children or preschoolers use educational games to help them memorize vocabulary (Noraddin & Kian, 2014). However, Noraddin and Kian (2014) emphasized that all children of different ages can use serious games during teaching and preparation. The second type of games is unconventional commercial games. Connolly et al. (2012) showed that teachers or teachers use these games without any educational considerations or goals. These games are used for a fun element only. However, other researchers have indicated that all games (COTS) can be used to achieve educational and recreational goals (Ellaway, 2016). Mohamed (2017) defined educational games as games explicitly designed with educational purposes to be practised in an educational environment to bring enjoyment and pleasure to the learners and make the learning process easier.

### **2.1.2. Learning disabilities**

Learning disability: A learning disability is a disability that affects how an individual of average to above-average intelligence processed information (receives it, integrates it, and/or expresses it). The student with a learning disability may have language-based and/or perceptual problems that affect reading, spelling, written, language, or mathematics. For some, organization, time management, and social, interpersonal skills also are affected. Shaaban (2014) defines learning disabilities as "a term given to a child who suffers from problems in verbal awareness skills and vocal output, provided that the child has sound visual and auditory capabilities, and at least an average degree of intelligence."

The predominant legal definition, which is set forth in the Individuals with Disabilities Education Act (IDEA), provides:

The term "children with specific learning disabilities", is defined as those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which the disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. The disorder may include perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such terms do not include children who have learning problems primarily from visual, hearing, or motor disabilities, mental retardation, emotional disturbance, or environment, cultural, or economic disadvantage. Learning disabilities are diagnosed when the individual's achievement on individually administered, standardized test in reading, mathematics, or written expression is substantially below than expected for age, schooling, and level of intelligence (DSM-IV, p. 46).

Learning Disorders must be differentiated from normal variations in academic attainment and scholastic disabilities due to lack of opportunity, poor teaching, or cultural factors (DSM-IV, p. 47).

Learning disability characteristics may include some of the following, but not necessarily all of them:

May perform similar tasks differently from day to day;  
 May read well but find difficulty writing well, or write well but not read well;  
 May be able to learn the information presented in one way, but not in another;  
 May have a short attention span, be impulsive, and/or easily distracted;  
 May have difficulty telling or understanding jokes;  
 May misinterpret language, have poor comprehension of what is said;  
 May find difficulties memorizing information;  
 May have difficulties following a schedule, being on time, or meeting deadlines;  
 May get lost easily, either driving and/or large buildings;  
 May face difficulties reading maps;  
 May often misread or miscopy;  
 May confuse similar letters or numbers, reverse them, or confuse their order;  
 May have difficulty reading the newspaper, following small print, and/or following columns;  
 May be able to explain things orally, but not in writing;  
 May reverse or omit letters, words, or phrases when writing;  
 May have difficulty completing job applications correctly;  
 May have persistent problem with sentence structure, writing mechanics, and organizing written work;  
 May experience continuous problems with spelling the same work differently in one document;  
 May have trouble dialing phone numbers and reading addresses;  
 May have difficulty with math, math language, and math concepts;  
 May reverse numbers in checkbook and have difficulty balancing a checkbook;  
 May confuse with and left, up and down;  
 May have difficulty following directions especially multiple directions;  
 May be poorly coordinated;  
 May be unable to tell you what has just been said, and  
 May hear sounds, words, or sentences imperfectly or incorrectly  
 (National Resources for Adults with Learning Disabilities, pp. 12-13.)

## 2.2. Benefits of educational games

Several studies have confirmed that games positively affect children's vocabulary learning (Prensky, 2003; Leemkuil, 2006; Gee, 2012; Tüzün et al. 2009; Van Eck, 2006). Educational games provide an actual learning environment in which students collaborate (Derakhshan and Daoudi Khater, 2015). Huyen and Nga (2003) emphasized games' role by giving children an opportunity to apply English in a truly communicative context in their classroom. Likewise, Kalaycioglu (2011) emphasized the importance of educational games, as these games make students the center of activities in the classroom. That is why the games can be changed in line with their educational goals, ages, and level. Multiple media contexts are provided with games so that children participate in vocabulary learning. Thus, they are encouraged to interact with other classmates and gain vocabulary (Segal-Drori et al., 2010; Silsüpür, 2017). There are other benefits of games in various educational aspects (Tsai et al., 2011). Educational games help young learners learn vocabulary with more motivation than traditional teaching methods (Tuzun, et al., 2009).

Moreover, Tsai et al. (2011) emphasized that using a digital game can develop learners' verbal abilities and social skills. Likewise, many researchers have emphasized that technology provides children with an opportunity to learn four English language skills in the classroom and outside of it through social interaction (G, 2005; Wang et al., 2008). Children can develop their English by using these games in social contexts. Using games in the classroom gives children equal opportunities to participate in various activities. In particular, students with shyness and impairment in the English language can be transformed into actors in their participation and interaction using games (Taghizadeh, 2017). Educational games serve as a convenient way to learn vocabulary because they provide a useful context for vocabulary learning as well as add entertainment to the classroom. According to Pomerantz and Bell (2007), the use of a digital game, for example, provides an enjoyable element and plays an important role in the learning process of children (Taghizadeh et al., 2017). Moreover, it can create a child-friendly learning environment making it the center of classroom activities (Uzun, 2009; Liu et al., 2011; S? Nchez & Olivares, 2011; Gunawardhana & Palaniappan, 2015). For Tsai (2012), games can also enable early childhood students to overcome learning problems and increase their motivation and confidence. Using toys can also encourage them to collaborate with classmates (Sánchez & Olivares, 2011). Using games in education reduces feelings of fear and anxiety. Educational games can enhance the positive effects on children. Therefore, scholars and educators are keen to integrate games into the English language teaching process. According to Mahali et al. (2016), they may consider educational games as an effective, innovative way to enhance children's English language learning in the knowledge age. Nowadays, scholars and teachers have realized the use of games to facilitate English learning. Therefore, they began to look for the best ways to incorporate games into the classroom. They rate the use of games for activities on

various topics and lessons. Teachers can use educational games in many educational aspects, including motivating children and providing effective and complementary tools (Hamizul & Rahimi, 2015).

Abd El-Aleem (2014) mentioned the advantages of using games as follows:

1. Playing games is a vital and natural part of growing up and learning. Children experiment, discover and interact with their environment.
2. Games add variety to the range of learning situations
3. Sometimes classes are challenging for children and if they use games at the end, it can also be a way of motivating them, because if they know it, maybe during the class they are going to do their utmost for learning, just because they know that at the end of the class they are going to play games, and at the same time games are also one of the best techniques for stimulating and motivating them.
4. Games can be used to change a lesson's pace and so maintain motivation.
5. Games can be used to punctuate long formal teaching units and renew students' energy before returning to more formal learning.
6. Games can give "hidden" practice of specific language points without students being aware of this.
7. Games encourage students' participation and remove the inhibitions of those who feel intimidated by formal classroom situations.
8. Games can change the teacher's role from that of a formal instructor to that of manager or organizer of activities that students enjoy participating in.

Learning through games is not a new phenomenon. According to Bradshaw and Lowenstein (2007), learning games are a rather ancient technique; for example, games were used to coach soldiers for war. The much-quoted work by Avedon and Sutton-Smith (1971) made the following observations about the benefits of using games as educational tools:

1. Games with simulated environments engender more student interest than the more conventional classroom activities.
2. By participating in games, students will learn more facts and principles than by studying conventionally.
3. Learners will retain information learned in games longer than information presented through conventional methods.
4. Learners will acquire more critical thinking and decision-making skills by participating in games with simulated environments.
5. Learner's attitudes will be significantly altered by taking part in games.

### **2.3. Challenges involved in conducting educational games**

With the rapid development of the information technology industry, educational games have rapidly popularised. Many domestic and international experiences show that educational games play an important influence on young learners' growth. However, media reports and academic research information show that while educational games improve youth's learning interest, it also has many drawbacks such as the non-scientific design of the games, unreasonable educational and teaching methods, unsatisfactory game result, etc. In the future, teaching students cannot be separated from educational games. The inevitable way of improving the effectiveness of educational games is to understand the positive role of educational games correctly, to set a reasonable goal, to design the scientific content, to enhance the effect evaluation, to feedback timely information and to control the way of educational games (Bi, Tingyan & Song, Shihua, 2011) thoroughly.

Some researchers suggest that there is a major challenge in using games in the educational process (Marklund BB, 2016; Koh et al., 2011; Rice, 2007; Baek, 2008). Although many Arab educational institutions have encouraged the use of games in teaching, no specific strategies have been developed regarding the use of games. This has resulted from insufficient educational game equipment, poor teacher training, as well as weak government support for technology use (Koh et al., 2011). Other challenges are insufficient time, poor curriculum and the high cost of games (Moncada & Moncada, 2014; Rastegarpour and Marashi (2012); Koh et al., 2011; Rice, 2007; Baek, 2008). Gunawardhana and Palaniappan (2015) indicated that physical ailments might occur when playing these games continuously. According to Tejjzadeh (2017), children can suffer from addiction as a result of using games. Hence, negative impacts can occur when they play games for a long time. Chee, Mehrotra and Ong (2014) whom suggests that "the key challenges teachers face are not technology-centric but practice centric" (p. 313), identify technology

availability and literacy as a major bottleneck and guiding factor in the integration of digital game-based learning in schools. A fundamental issue with game-based learning in formal education is that games, in their current state, are not particularly reliable as teaching tools.

### 3. Conclusion

Educational games are designed to help both normal students and students with learning disabilities learn about certain subjects, expand concepts, reinforce development, understand a historical event or culture, or assist them in learning a skill as they play. Game types include board, card, video games, electronic games and recently online games. Educational games are designed to teach humans about a specific subject and teach them a skill. It is developed to educate the user of a specific subject or area of interest. They can be defined as games explicitly designed with educational purposes to be practiced in an educational environment to bring enjoyment and pleasure to the learners and make the learning process easier. Games aid in developing the skill and proficiency, where users are allowed to interact and manipulate objects. Teachers have always had the challenge of keeping their early childhood students engaged in the classroom; however, since mobile technology has been introduced and become part of our everyday lives, the challenge of keeping students focused on the learning task has dramatically increased.

This paper focuses on the positive and negative effects of using educational games on vocabulary learning for early childhood students with learning disabilities. Although there are downsides to educational games, these games benefit the learners' learning process, especially when used wrongly. This study suggested that teachers should pay attention to time and materials while designing or selecting a game through a literature review. Although games also have drawbacks to the vocabulary learning process, using them can help early childhood students gain their lesson through entertainment. By using games, children can remember all vocabulary without difficulty. Games are used not only to make children successful in EFL classes but also to motivate them and increase cooperation. At the start of a game-based learning project, the teacher should be able to review the educational environment's conditions. Organizational support structures, availability of hardware and software, and the availability of other resources or even the obstacles that may face the learning process need to be considered before designing the educational game. Basic practicalities like class timetables, educational objectives as stated by national curricula, and technological infrastructure all inform what type of game can (or should) be used and the design of gaming sessions and assignments.

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