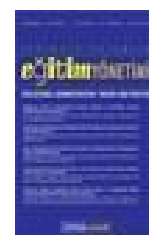




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The Effectiveness of Digital Game Playing on Vocabulary Learning for Chinese EFL Students

Zhang Ying ¹, Norhiza Binti Ismail ²

<p>Article History</p> <p>Article Submission 30 September 2022</p> <p>Revised Submission 15 October 2022</p> <p>Article Accepted 10 November 2022</p>	<p>Abstract</p> <p>English as Foreign Language (EFL) students have found it difficult to master vocabulary. Many students find vocabulary lessons tedious, particularly those who were raised in the internet world. When it comes to learning English vocabulary, digital games have become increasingly popular. This is particularly true when it comes to using games to teach vocabulary. However, investigations on the impact of English vocabulary development have not yielded a scientifically valid result. So, this paper presents an experimental study of how digital gaming can help students learn vocabulary. Initially, the student 's datasets are gathered and the datasets are split into control and experimental groups. Standard teaching and digital game teaching are provided to the control group and experimental group, correspondingly. To assess the student 's learning capacity, the McNemar test is conducted. Finally, the performance metrics of this research are examined and that are compared with other existing models to obtain our research with the greatest effectiveness. These findings are depicted through employing the Origin tool. This research concludes that the introducing digital gaming into the classroom can promote student engagement, social and emotional development, and motivate students to take risks. It has been observed that the famous multiple-choice quiz game improves students' attitudes toward studying and raises their academic achievements, according to this research</p> <p>Keywords: English as Foreign Language (EFL); Vocabulary learning; Digital game teaching; Standard teaching; McNemar test; Origin tool</p>
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¹Language Academy, Faculty of Social Sciences and Humanities,Universiti Teknologi Malaysia, Malaysia, zhangying@graduate.utm.my

²Dr. Language Academy, Faculty of Social Sciences and Humanities,Universiti Teknologi Malaysia, Malaysia, m-nhiza@utm.my

Introduction

Immersion experiences lead to decreased anxiety and mental distress barriers, contextualization of learning, and increased chances for knowledge application in gaming contexts are all regarded advantages of digital game-based language learning. However, such advantages are contingent on good game design and the efficient use of learning techniques. The structure for assessing the suitability of language learning using computers activities provides six criteria that should be addressed when building digital games (i.e., potential for language acquisition, learner fit, message concentration, originality, effect, and usefulness). Learner fit, that also represents the amount of opportunity for teachers to interact in listening comprehension under right circumstances, and convenience, that also assign to the sufficiency of funds to enable student finalization of active students, are two of the six factors that stress the importance of functional group that are suitable for learners' educational needs levels, and that inspire their efforts at language use (Ahmed, B., & Ali, A. 2020). Fig.1 depicts the goal of digital game playing helpful in learning.

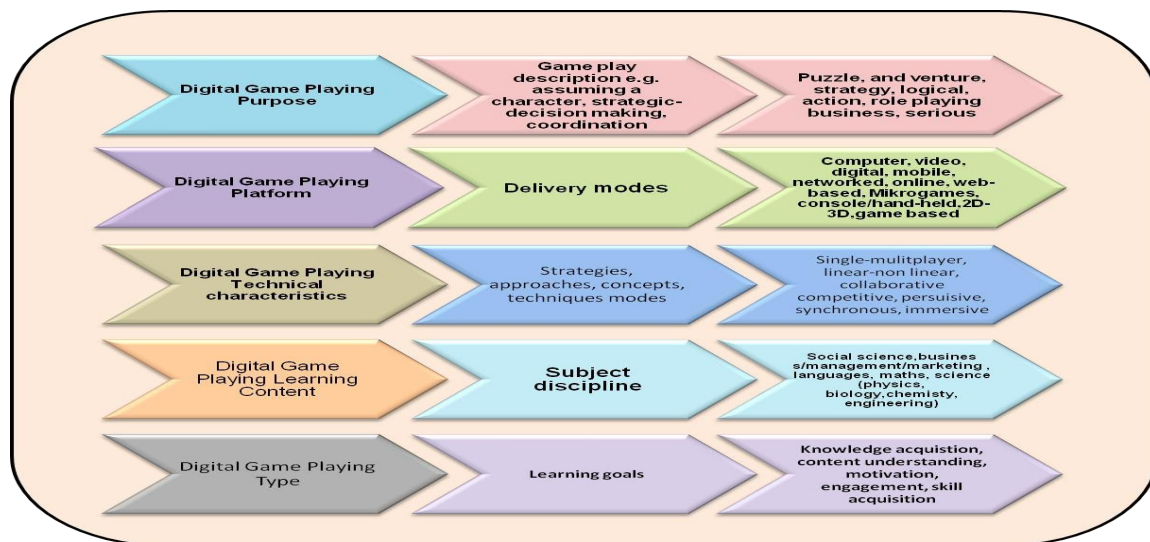


Figure 1. Goal of digital game playing.

As the allure of digital gaming has been noticed across virtually all socio-demographic categories, the ability of online game-based language learning (DGBLL) became a growing focus of study. This fascination stems in part from the ubiquitous usage of English, both traditional and digital, and especially in the realm of digital gaming. Despite a substantial quantity of research indicating the merits of DGBLL, digital gaming activity in formal learning situations have yet to be accepted. Although there has been research into EFL instructors' aversion to using digital technology, there has been little attention paid to their usage of, and views about, DGBLL (Andreani, W., & Ying, Y. 2019). When it comes to learning English vocabulary, digital games have become increasingly popular. This is particularly true when it comes to using games to teach vocabulary. However, investigations on the impact of English vocabulary development have not yielded a scientifically valid result. It's also critical to look at the educational possibilities of digital games, as this might lead to a richer and more creative ESL gamers' language learning environment.

This is due to the dynamic instructional environment that technical improvements in digital games have produced. With the advancement of gaming technology, educators and academics should figure out how to employ digital games to increase students' language acquisition while simultaneously offering an enjoyable and engaging learning environment (Blume, C. 2020). As a result, an expanding range of instructional technologies are being used to help students enhance their talents in hearing, communicating, learning, and manuscript ion. Because vocabulary are the cornerstones of the four things that students must master. Computer-assisted language learning

(CALL) methods have been increasingly integrated into vocabulary learning in recent years, particularly those linked to serious vocabulary learning with games (Castillo-Cuesta, L. 2020). However, we are aware of only a few published studies of the relevant papers on digital games for vocabulary learning (DGVL) that comprehensively explain the following: the current state of publication, Theoretical frameworks, research problems and discoveries, and field implementation are all covered by digital games for learning vocabulary (Chen, C., Liu, H., & Huang, H. 2019). So, the purpose of this study game-based vocabulary development is to make things easier to Chinese college EFL learners to study vocabulary through playing digital games.

Problem Statement

Most instructors do not expect to employ games in their future teaching, based on their opinions about digital games in education. The primary reasons why teachers do not use digital games in their classrooms are a lack of time and technological challenges. However, although complexity may be regarded as a barrier to adapting digital games, most instructors did not find it difficult to include digital games into their lessons. Because instructional games are designed to be entertaining, they may have a poor impact on learning outcomes "the more entertaining a game is, less effective it is as a learning tool", illustrating that finding a balance between learning and gaming is a constant challenge in game design. The emphasis in education has shifted from teacher-centered to student-centered, as well as the concentration is no longer on the teaching process. It is more concerned with how students learn from every source, at any time, and in any location. The use of digital games in EFL instruction, particularly for young learners, is one of the transformations brought about by the introduction of technology.

Digital games have been shown to affect learners' motivation, meta cognition, and strategic action in numerous studies. Unfortunately, there is currently a dearth of understanding about how digital games and self-regulated learning relate to the language learning process of young learners. Due to the tiresome experience of learning English words, English acquisition can be exceedingly tough for EFL or ESL students, resulting in lower intrinsic learning motivation and poor learning results. First, a synthesis found that it was difficult to determine if digital game-based learning on vocabulary acquisition was helpful for English as a Foreign Language/English as a Secondary Language due to the low quality of current studies. Existing digital games does not provide secondary pupils with high-quality learning opportunities.

Literature Review

The use of digital games to learn English vocabulary has become increasingly popular. The fact that games can be used to teach vocabulary is particularly true. However, no scientifically valid results have been found regarding English vocabulary development. According to views about digital games in education, most instructors do not anticipate incorporating games into their future teaching. Teachers refrain from using digital games in their classrooms for two main reasons: lack of time and technological challenges. However, even though complexity may be considered a barrier to adapting digital games, most instructors had no difficulty incorporating them into their lessons. Educational games are designed to be entertaining, which may hinder their effectiveness as a learning tool. In the current educational model, educator-centeredness has been replaced by student-centeredness, and the teaching process no longer occupies most of the attention. "The more entertaining a game is, the less effective it is as a learning tool", illustrating the difficulty in achieving a balance between learning and gaming. Many of the illnesses described in (Chen, H., & Hsu, H. 2020) have numerous odontogenic keratocysts. Several odontogenic keratocysts were found in a 12-year-old female child. There were no further abnormalities discovered during the research. In (Coleman, T. E., & Money, A. G. 2020) fine-grained data is used to find precise deviations from the norm.

'Digital Twins' in engineering were used to study these new data-driven health-care approaches philosophically and morally. Online approaches were used to connect physical objects and show their current state. Imposing database systems and interpretation can reveal moral inequalities. The ethical and social implications of digital twins are investigated. Data has becoming more important in the healthcare system. This technique has the potential to be a social

equaliser by enabling effective equalising boosting strategies. Allergic rhinitis is a long-term global epidemic in (Ebrahimzadeh, M., & Sepideh, A. 2017). Traditional Chinese or Chinese–Western medications are often used by Taiwanese doctors to treat it. Allergy rhinitis dominated treatment of respiratory illnesses with traditional Chinese medicine on an outpatient basis. Traditional Chinese medicine and western medical therapy for allergic rhinitis are compared in Taiwan. According to (Feng, S., & Boyd-Graber, J. 2019), using high-dose-rate (HDR) brachytherapy eliminates radiation, Outpatient treatment is possible, and shortens diagnosis times. By changing delay at each dwell position, a single-stepping device could further improve dose dispersion. Because of the shorter processing intervals, no error checking is possible, such errors can be harmful to patients, Treatments with HDR brachytherapy must be performed correctly. This study (Jiang, Y., & Dewaele, J. M. 2019) proposed a residential sewage treatment and also technologies to develop the rural environment. In (Khalifa, A., et al, 2020) physicochemical and organ chlorine insecticides were evaluated in samples collected from chosen vegetable farms in Zamfara State, Nigeria.

QuEChERS with GC-MS was used to assess the testing technique and data. The purpose of (Lai, K., & Chen, H. 2021) was to apply moderator analytics to see how the eight different regulating factors influences the impact sizes in criteria 1 and 2 in order to demonstrate a variety of L2 vocabulary learned through digital games acquisition circumstances. Finally, advice and repercussions are given to game creators, education professionals, and scholars in the field. Li, R., et al, 2021 proposed that students play every prompted issue in 30 seconds to complete the game for every topic. 35 Indonesian primary school students, ages 7 to 12, participate in this initiative. After their involvement in the game, all pupils agreed that the game motivates them to study English. The purpose of (Li, Z., 2022) was to see how five popular word learning applications were regarded by Chinese and Hong Kong students. Information on their perceptions and experiences with various aaplications was gathered through interviews and questionnaire surveys. When learning English as a second language, numerous studies have demonstrated the value of having a big vocabulary (EFL). Mobile game-based learning (MGBL) is recently been promoted as a viable method for acquiring and retaining knowledge. The impact of Digital Phrases, an innovative user English language teaching app (application) with game-related character traits (MEVLA-GF) but no game-related functions (MEVLA-NGF), on educators' learning perceptions and performance is investigated using a combined analysis method combining quantitative and qualitative approaches (Mody, R. N., & Bhoosreddy, A. R. 1995).

Several studies have found that studying through a game is more pleasurable and productive. As a result, several mobile applications for learning a foreign language, notably English, such as Fun Land and Monkey Puzzles World Tour, have been designed and can be downloaded for free on Android phones. Regrettably, the app was not designed with Indonesian elementary school students in mind. PowPow, a game app, was improved to meet these demands by assisting Indonesian students in learning English vocabulary (Ng, L. L., et al, 2021). Because virtual reality gaming opens up new possibilities for researching its efficacy in language learning, the advantages of virtual worlds games on English vocabulary development, and the possibility of incorporating virtual reality in classroom teaching techniques, must be investigated. As a conclusion, the goal of this investigation is to see if virtual reality (VR) and personal computer (PC) playing influences vocabulary learning and affective perception in English learners (Nguyen, N. T. T. 2021). The impact of DGBL on EFL can be described in terms of students' developmental phases, because students at different school levels study different aspects of English, ranging from simple to sophisticate. Cognitive complexity, motivation or desire, and stress or anxieties are examples of mediators. We looked at a variety of studies to learn more about the DGBL and their relationships. Last but not least, we'd want to talk about how crucial factors like teachers' roles, in-game education, and prior knowledge influence students' DGBL methods (Pratama, L. D., & Setyaningrum, W. 2018). The study investigates how participants in massively role-playing games use vocabulary acquisition strategies (MMORPGs).

The participants are seasoned internet gamers between the ages of 24 and 25. The information was gathered through semi-structured online interviews with all of these (ESL) Guild Wars 2 participants, a prominent MMORPG online game, in addition to analyzing the learning new words tactics utilized during internet gaming by ESL gamers (Reinders, H., & Wattana, S. 2015). The purpose of this study is to assess how successful various social media platforms are at

helping learners when acquiring vocabulary in a foreign language. Another purpose is to provide recommendations for using social networks in vocabulary training in terms of its impact on student accomplishment as well as teachers' and students' perspectives on the method (Reinhardt, J. 2017). The goal of this study is to look at how digital games can help students improve their English as a Foreign Language (EFL) grammar and vocabulary. According to the structure of Reference for Languages (FR), the survey included 68 students at the B1 level. The students were all involved in a few of 2 Communicative Grammar courses. In this work, data was collected and analyzed using a mixed-method technique. Pre- and post-questionnaires, and also writing rubrics, were employed as instruments. Students received continuous feedback while playing digital games throughout the course of a 5-month academic semester (Salihu, S. O., & Iyya, Z. 2022). Digital-game based language learning (DGBLL) is one of the more quickly expanding scientific fields of second language acquisition research, and several research have shown that COTS (commercial off-the-shelf) games can aid vocabulary learning. COTS games are created for amusement, whereas serious games, which have been shown to improve language and content understanding in studies, are intended for educational reasons (Tsai, Y., & Tsai, C.. 2018).

The research has looked at what a high - resolution digital video game affects high school students' enthusiasm to learn languages. There were 241 male students divided into three groups: Readers who have delved into the story of the game; Viewers, who observed two classmates play a computerized video game. The participants were given a pre- and post-test on a language learning motivation measure (Wang, Z., & Cai, Y. 2021). As digital gaming has risen to prominence and become a global activity, computer-assisted languages learning (CALL) researchers and second/foreign language (L2) educators have begun to analyze games as feasible L2 learning and teaching (L2TL) resources (Yang, Q., et al, 2020). There has been an increasing interest in the possible impact of online games for language acquisition in recent years. It is claimed that games are stimulating, reduce affective barriers to learning, and increase second or foreign language (L2) contact, among other things (Zou, D., Huang, Y., & Xie, H. 2021).

Methodology

This research gives an experimental investigation of how digital games might aid students in their vocabulary learning. In the beginning, student data is acquired, then the data is divided into two categories: control and experimental. The experimental and control groups get standard instruction using digital games, respectively. Fig.2 indicates the overall methodology used.

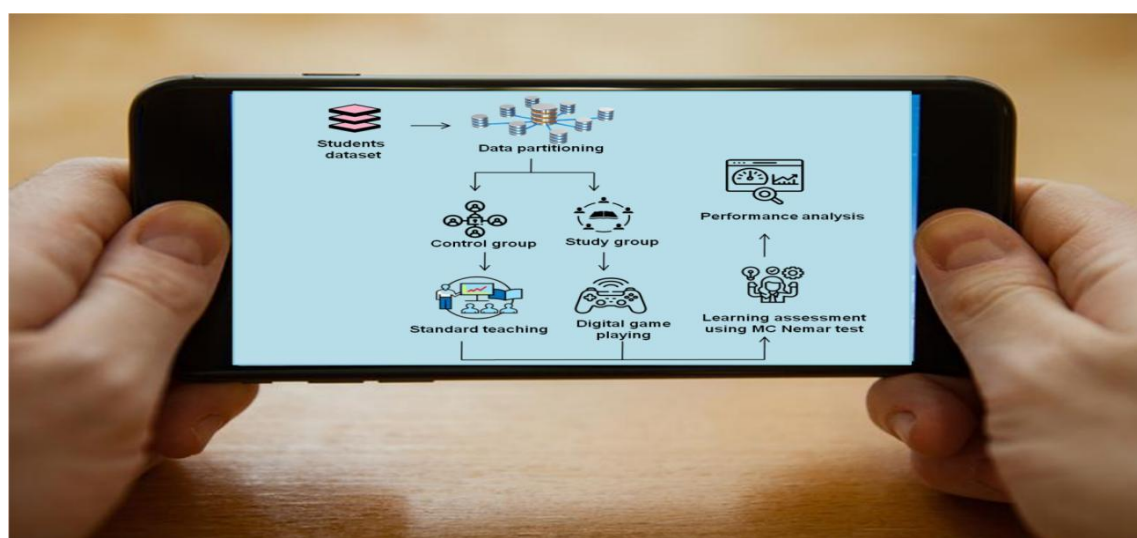


Figure 2. Overall Methodology

Student's dataset

564 first-year undergraduate (194 males, 370 females) from 26 English speaking and listening classrooms at a comprehensive university in China were taught by six professors (three male

English L1 users and three female Chinese FL users). The datasets of the students are first acquired, and then divided into control and study groups. Each group having 282 students. Partitioning a database entails separating different elements of the data recorded in the database into different partitions, or pieces. The practice of dispersing data across different tables, drives, or sites in terms of improving query processing performance or database manageability is known as data partitioning. These people were 18.6 years old on average (SD = 0.72). They had spent at least six to eight years studying English. They each took two 2-hour basic English classes: hearing and speaking, as well as reading and writing in English. In term of their English proficiency entrance exam scores when they first arrived at the university, participants varied from low intermediate to intermediate to high intermediate (Table 1). All of the participants were non-English majors who were studying liberal arts and humanities, social studies and management, economics and business, law and politics, science, and other courses at the institution.

Table 1. Data description

Variable	Category	Frequency	Percentage
Gender	Male	194	34.4%
	Female	370	65.6%
English proficiency level	Low- intermediate	143	25.4%
	Intermediate	154	27.3%
	High-intermediate	267	47.3%

Control team

For this team, 282 students are included with their English proficiency level and these students are taken into the standard teaching regarding the assessment.

Standard teaching

By holding teachers and schools responsible about what occurs in the classroom, guidelines enhance transparency. Aligning learning to criteria not only assures a higher approach to learning, but it also helps teachers navigate the evaluation process and stay on track. New teaching tools are indeed being integrated into residency and recredentialing standards, swiftly replacing time-honored surgical training approaches. Several causes, including cultural, professional, and legal pressures, have forced surgical residency programmes to look for new ways to train residents.

Study group

For this group 282 students are included for learning digital game playing.

Digital game playing for learning

When it comes to sociability, teamwork, problem-solving (using memory and mathematics abilities), and visual motor coordination, digital educational games may help pupils improve these talents. Digital instructional games may also serve as role models for good learning habits. Students' mathematics learning is considered to be more successful with digital game-based learning than with traditional teaching. Pupils reported loving math more when participating with games based on arithmetic, and studies revealed that students were more involved only with topic.

Statistical analysis

The McNemar exam is used to assess a student's ability to learn. The quality of the proof it against hypothesis is measured by the statistical test in (1). They may utilize the basic test statistic y_{12} to build an exact conditional test if we condition on the number of discordant pairings ($y_{12} + y_{21}$) as we did in the exponential testing.

$$e(y_{12}|m) = \binom{m}{y_{12}} \left(\frac{1}{2}\right)^m \quad (1)$$

McNemar's one-sided p-value is calculated by adding probabilities.

$$\text{one - sided t - value} = \sum_{y_{12}=0}^{\min(m_{12}, m_{21})} e(y_{12}|m) \quad (2)$$

This is equivalent to 2 times the 1-sided p-value. In this case, the p-value is equal to one if y_{12}
 $= \frac{y_{12} - y_{21}}{\sqrt{y_{12} + y_{21}}}$ Type I error rates will not surpass the nominal threshold in the precise conditional test.

$$W(Y) = \frac{y_{12} - y_{21}}{\sqrt{y_{12} + y_{21}}} \quad (3)$$

When the probability function f is given in (3). If $(m_{12}|m)$, then (5) should be replaced with

$$\text{mid} - t - \text{value} = 1 - \frac{1}{2}e(m_{12}|m) \quad (4)$$

A nuisance parameter, p , is used to express the chance of a discordant pair. By increasing throughout the whole range of p , we are able to remove the obtrusive parameter. After simplifying, they have the precise unconditional one-sided p-value in the following formula.

$$\begin{aligned} \text{mid} - t - \text{value} &= 2 \cdot [\text{one} - \text{sided } t - \text{value} - \frac{1}{2}e(m_{12}|m)] \\ &= \text{two} - \text{sided } t - \text{value} - e(m_{12}|m) \end{aligned} \quad (5)$$

It is possible to calculate the p-value for both sides of an experiment.

Results

As a result, this research offers an experimental examination of how digital gaming might aid vocabulary learning in pupils. The datasets of the students are first acquired, and then separated into control and experimental groups. The control and experimental groups get standard instruction and digital gaming instruction, respectively. McNemar exam is used to determine a student's learning ability. Existing methods includes Game Based Learning (GBL), Machine Learning (ML), Reinforcement Learning (RL), and Student Centered Learning (SCL). The study shows the comparison between existing method such as Game based learning (GBL), Machine based learning (MBL), Reinforcement learning (RL) with proposed Digital game playing learning (DGPL).

Efficiency

Learning efficiency of performances accuracy and speed per unit of time spent learning. The increase in a learner's exactness as a consequence of their contact with learning software is focused on performance enhancement. The following figure 3 depicts the comparison of digital game playing learning.

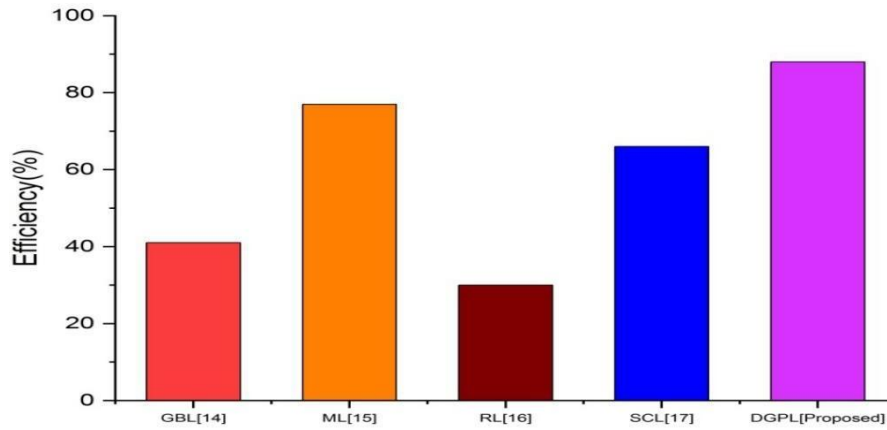


Figure 3. Comparison of digital game playing learning

The existing method includes GBL (Li, Z. 2022), ML (Mody, R. N., & Bhoosreddy, A. R. 1995), RL (Ng, L., et al., 2021) SCL (Nguyen, N. T. T. 2021) is low for efficiency when compared to our proposed methodology.

Satisfaction level

Learning satisfaction is the result of the procedures that occurred while the students' participation in education - learning activities. The following figure 4 represent the satisfaction level of DGPL.

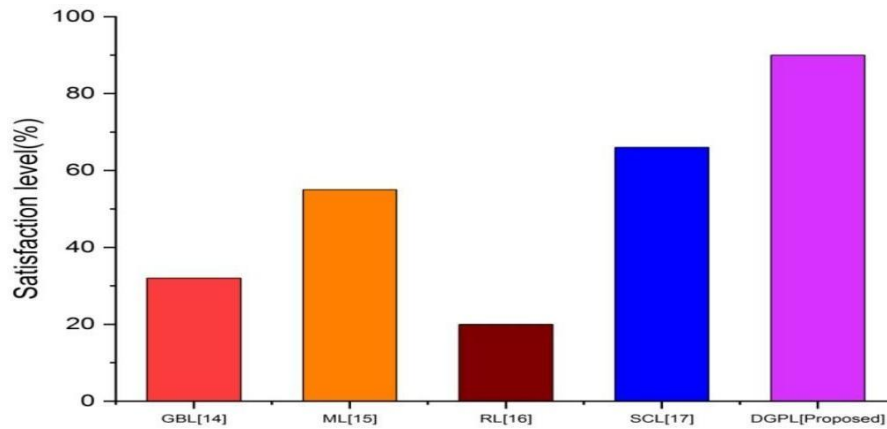


Figure 4. Represent the satisfaction level of DGPL

The existing method includes GBL (Li, Z. 2022), ML (Mody, R. N., & Bhoosreddy, A. R. 1995), RL (Ng, L., et al., 2021) SCL (Nguyen, N. T. T. 2021) is low for satisfaction level when compared to our proposed method.

Problem solving level

Learning to resolve conflicts necessitates the acquisition of a variety of skills. The search for a state-space representation of an issue is considered as problem solving. Operators are used to states in this formalism to transit from the beginning state to the objective state. Figure 5 shows the comparison of problem solving level of DGPL.

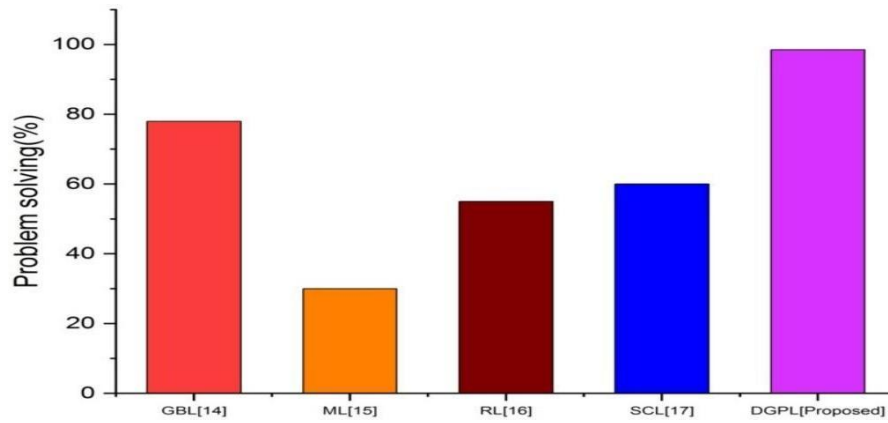


Figure 5. Comparison of problem solving level of DGPL

The existing method includes GBL (Li, Z. 2022), ML (Mody, R. N., & Bhoosreddy, A. R. 1995), RL (Ng, L., et al., 2021) SCL (Nguyen, N. T. T. 2021) is low for problem solving when compared to our proposed method.

Student learning interest

The need of learning interest does not merely imply that someone is keen to know over something. It also implies that when someone is interested in something, learning about it becomes simple and even pleasant. Figure 6 shows the comparison of student learning interest of DGPL.

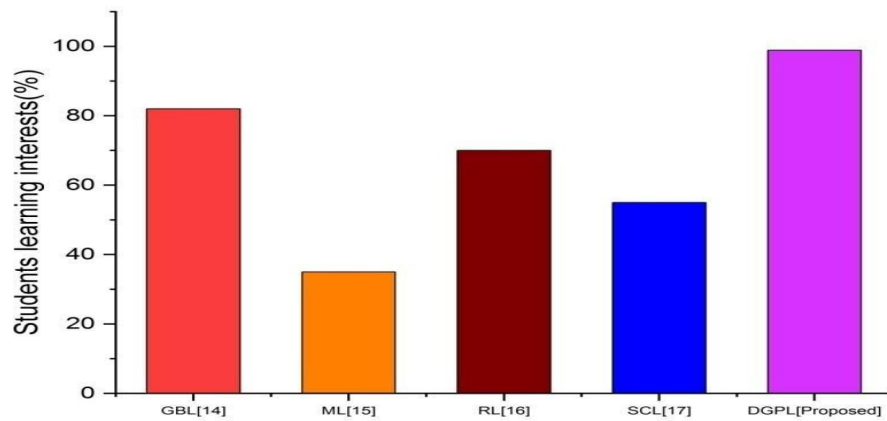


Figure 6. Comparison of student learning interest of DGPL

The existing method includes GBL (Li, Z. 2022), ML (Mody, R. N., & Bhoosreddy, A. R. 1995), RL (Ng, L., et al., 2021) SCL (Nguyen, N. T. T. 2021) is low for students learning interest when compared to our proposed method.

Statistical analysis

The McNemar test is used to determine a student's learning aptitude. Table.2 depicts the McNemar test results for control and study group.

Table 2. McNemar test results for control and study group

Criteria	Control group (n=282)		Study group (n=582)		X ² -value	p-value
	F	%	F	%		
Learning objective	80	35.9	70	35.9	-14.310	< 0.001
Learning experience	55	27.4	75	27.4	5.086	0.024
Learning engagement	25	12.1	35	12.1	1.538	0.216
Skill scaffolding	38	25.0	28	25.0	5.667	0.017
Digital gaming story line	84	35.5	74	35.5	91.173	< 0.001

Discussion

Digital games are one of the transformations brought about by the introduction of technology into EFL instruction, particularly for young learners. In numerous studies, it has been shown that digital games affect learners' motivation, meta cognition, and strategic thinking. At present, there is a lack of understanding of how digital games and self-regulated learning relate to young learners' language learning abilities. English acquisition can be extremely difficult for EFL or ESL students due to the tiresome experience of learning English words, resulting in lower intrinsic motivation and worse learning results. As a result of their views on digital games in education, most instructors do not plan on incorporating games into their future teaching. Rather than using digital games in their classrooms, teachers tend to refrain due to a lack of time and challenges with technology. Despite perceived difficulties in adapting digital games, however, most instructors were not having trouble incorporating them into their lessons. The more entertaining a game is, the less effective it is as a learning tool. Finding a balance between gaming and instruction is an ongoing challenge when designing instructional games. One of the effects of the introduction of technology has been the use of digital games in EFL instruction, particularly for young learners.

The digital gaming for learning has a greater efficiency when compared to other way of learning. The issue in GBL existing is combining fun game design with educational goals and curricula. Creating a gaming environment that is appropriate for all learners' abilities. Getting professors and parents to understand one other's cultures. Many professors scoff at game playing in their college courses because they do not perceive it as real learning, according to critics who argue that gaming is a fad that does not assist teach students anything significant. In GBL (existing) Games aren't usually made in the same manner. Learning and designing games takes time. Adult educators' greatest administrative dread will be wasted efforts. It can include items that are both affordable and pricey. Pedagogical and technical assistance may be required (Li, Z. 2022). Machine Based Learning (MBL) is indeed a method for teaching machines to handle data more effectively. We are sometimes unable to analyze the extracted information after seeing the data. Machine Learning uses a number of algorithms to tackle data problems. There is really no such things as a "one-size-fits-all" solution for fixing a problem, according to data analysts. If you have a huge data set to work with, machine learning techniques can be applied. Reinforcement and Deep Reinforcement Learning were also discussed. You now have a better understanding of neural networks, how they work, and their limits.

High error vulnerability in MBL (current). Each application necessitates specific knowledge. Large volumes of hand-crafted, structured instructional data are required. Learning must be supervised in general, and training set must be tagged. A significant amount of offline/ batch training is required. Do not study in real time in a progressive or interactive manner. Learning transferability, module reusability, and integration are all lacking. Because computers are opaque, debugging is difficult. In the 'long tail,' efficiency cannot be examined or guaranteed because they indicate correlation rather than causation or ontological relationships. The most major difficulty that Machine Learning tackles is a lack of good data. As AI engineers spend the majority of their time optimizing algorithms, data quality is critical for the techniques to function properly. Machine learning is one of the most popular technologies, according to data scientists and machine learning enthusiasts. It is the most successful Artificial Intelligence technique for

developing automated learning systems that can make decisions in the future without having to be constantly trained (Mody, R. N., & Bhoosreddy, A. R. 1995).

Existing cannot be used to address minor problems in RL. An overflow of states may occur from too much reinforcement learning, reducing the effectiveness. This method is not really the best choice for simple tasks. This approach requires a significant quantity of data and processing. Negative reinforcement is the process of removing something undesired in order to strengthen a habit. Punishment, on the other hand, comprises imposition of something undesirable or the removal of a positive stimulus in order to destroy or eliminate a behavior. On several levels, this theoretical model to interpreting human behavior has been questioned. First, it's been accused of circular reasoning because it appears to claim that reinforcement increases reaction strength while also describing reinforcement as something that enhances response strength. Because it feels better, it's easy to fall into the trap of rewarding and praising instead of disciplining. However, as positive reinforcement is indeed a training tool, it may cause children to expect rewards every time they behave in a desired manner, making it difficult to maintain. Because both favorable and unfavorable reinforcement lead to the modification of someone else's behavior, they may be seen as manipulation. This criticism is sometimes justified.

To prevent being manipulated, be open about the reason for your actions and the desired outcomes (Ng, L. L., et al, 2021). Each narrow application requires specialized training. Large volumes of hand-crafted, structured teaching data are required. In SCL (existing) for the instructor, classroom management may become more of a problem, perhaps interfering with educational tasks. In its single focus on students' needs, student-centered learning neglects to consider what the discipline 'needs,' or, more precisely, what the discipline's knowledge and information source structures are and how they are legitimated. It takes pupils longer to complete tasks, making it difficult to meet curriculum objectives (Ministry of Education of the People's Republic of China. 2014), Morley, J. 1999), Moivaziri, M., & Golzadeh, N. 2017), Movahed, R. 2014). It takes a very long time for teachers; therefore they are hesitant to adopt cooperative learning. It takes longer for students to finish assignments, making it more difficult to reach curriculum goals. Teachers are cautious to employ cooperative learning since it takes a long time. Cooperative learning demands specialized teacher skills, which not all teachers possess. The nature of student expectations, such as the fact that nature prefers to collaborate.

Individualization, engagement, and integration are required in a student-centered classroom. Individualization guarantees that students are able to design their individual activities and use real materials. Learners interact through working in groups and teaching one another. Advisory, community engagement, internships, and project-based learning are examples of student-centered teaching and learning techniques. In summary, a student-centered classrooms, or student-centered educational experience, is one in which the focus on teaching is moved from the teacher to the student, with the goal of fostering autonomous and independent students by putting learning responsibility in the hands of the students. Because student-centered classrooms emphasize cooperation, they rarely contain lines of desks facing a teacher's lectern or desk. Instead, desks or tables are set up in such a way that students may easily collaborate on projects or analyze reading (rather than listening to lectures). In the most basic form, this technique is pupils using cooperative learning to piece together the "puzzle." Each student is responsible for a specific aspect of knowledge, and then applies what they've learned and achieved to the wider body of work.

Students can choose two things in student-centered learning: what they might learn and how they should learn it. (This notion is also known as personalized learning.) In contrast to teacher-centered methods, SCL encourages students to participate as leader and decision-makers in their own learning. Instead being a successful teaching method, it has certain drawbacks, and are as follows: Learning becomes a time-consuming process. It's difficult to meet curricular goals on time. For effective learning, special trained teachers are required (Liu, Y. 2020). Repeated self-learning, as well as ongoing interaction and feedback, can enhance learning interest and motivation. As a consequence, game-based learning might be able to help students learn more effectively. Specific gaming aspects are adopted and applied to real life situations to interest people in game-based learning. Because of the driving psychology involved in game-based learning, students can connect with instructional resources in a fun and dynamic way. One disadvantage is that, despite a

teacher's best efforts, some children do not respond well to student-centered learning. This is more common in the lower levels, although it can also happen in higher level (Liu, M., & Huang, W. 2011).

According to course ratings, this accounts for around 15% of the lower level and less than 5% of the upper level. However, at the university and college level, there are many distinct teaching methods to be experienced. These pupils can learn in a variety of ways in a variety of other subjects. Another drawback is that students must collaborate in groups. They moan about having to work in groups. However, most concerns are followed by admissions that they are aware that they are prepared for the "real world." They value real-world experiences, even if they are unpleasant. Students also find it challenging to work in groups because they lack teamwork abilities (Nguyen, N. T. T. 2021).

Conclusion

According to research, introducing digital gaming into the classroom can promote student engagement, social and emotional development, and motivate students to take risks. It has been observed that the famous multiple-choice quiz game improves students' attitudes toward studying and raises their academic achievements, according to this research. English as Second Language (ESL) students have expressed difficulty learning new terminology. Many students, especially those who grew up in the digital age, find language classes dull. The existing methods are includes Game based learning (GBL), Machine based learning (MBL), Reinforcement learning (RL) with proposed Digital game playing learning (DGPL). Finally, we look at the research's performance indicators and compare them to those of other models to see which one is the most effective.

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