

Gamification as a Tool to Improve Vocabulary in English Language in High-School Students

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Abstract

Gamification has gained popularity among educators who perceive it as a useful tool for carrying out the teaching-learning process optimally. The lack of positive results in the learning of English as a foreign language has become one of the main challenges Mexico faces considered the language as a priority. English teachers know the importance of finding options to present new words to students in a way they could learn appropriately. Vocabulary is a meaningful key of language learning, based on it, other skills are developed. Through unplugged gamification there has been determined the relation between the strategy and academic results in written tests in vocabulary area, specifically nouns, among fourth-semester students in high-school education at Plantel Norte, Escuela de Bachilleres. The study follows a quantitative approach with a quasi-experimental design, correlational scope, and a longitudinal study moment when nouns have been measured based on tests administered before and after the development and use of these low-cost games.

Keywords: Gamification, vocabulary, nouns, strategy.

1. Introduction

The most spoken second language (L2) around the world is English with more than a billion users and it is also the most spoken language considering native and foreign speakers with more than 1.4 billion, followed by Chinese, Hindi, and Spanish (Eberhard et al, 2023). Latin American countries such as Argentina, Bolivia, Cuba, and Costa Rica have better usage of the language than México, which is rated with a very low language proficiency, Education First (2023).

It is imperative to find newfangled ways that help with the teaching-learning process in language acquisition. English as a second language has been proven to having bad results in Mexico, considered place 19 out of 20 in Latin American countries which participated in Education First (2023) testing. According to information provided by Mexicanos Primero (2023) education stepped back 60 years in the English school subject caused by the worldwide Covid-19

pandemic. Gamification proposes a useful practice to apply in English courses in a way to facilitate and contribute to the learning process.

On the other hand, UNESCO (2022) in its 2030 Agenda for Sustainable Development has set goals to reduce inequality including decent jobs that support economic growth, transforming education. Its data tells that by 2030 there will be a need of 69 million teachers to guarantee education in basic levels and 771 million young and adults will not have basic knowledge of reading and writing worldwide, UNESCO (2022).

English allows people to facilitate communication, get different kinds of relationships and link together communities. English has been part of the curricular map through the entire basic, upper middle and upper education for a century in Mexico, Domínguez et al (2022). Nueva Escuela Mexicana (NEM) is the last approach in education with a planning consisting in 23 years of mandatory education (Secretaría de Educación Pública, 2023).

English subject considers four elements for the language, reading, listening, speaking, and writing, in the last one, spelling is included as a subcategory and it comprehends vocabulary, Secretaría de Educación Pública (2023). Highschool students from fourth semester have been tested to prove if there is advantage by using unplugged gamification during English lessons in vocabulary ranking, specifically about nouns.

The graduation profile for high school students NEM agreed in its plan is reaching the A2 level according to the Common European Framework of References for Languages (CEFR), Secretaría de Educación Pública (2022). Escuela de Bachilleres (EBA) comprehends a B1 level for the degree. It is important to consider students' needs and find suitable strategies for each community, school, and every group based on its own context and circumstances adapting methodologies to the best practices for those societies.

The following question and hypothesis were conducted to find the answer:

RQ: What is the association between results of written vocabulary tests and the use of unplugged gamification?

H₀: There is no difference in results in written vocabulary tests about nouns using unplugged gamification.

Background

Constructivism

Having Jean Piaget and Lev Vygotsky as initial authors of the Constructivist Theory, this pedagogical current defines the teaching-learning process as one in which students create their own knowledge starting with tools to do it, it involves the knowing subject who builds their own apprenticeship, it is an internal work each subject practices (Benitez-Vargas, 2023). Knowledge is a personal regard, and it is the individual who achieves knowledge by facing new situations and interact with the environment, Carretero (2021). Constructivist authors have mentioned that knowledge is built in relation with the community, as well as concepts and methodology (Molina, 2023).

As a teaching strategy, Constructivist employs previous knowledge, students resume it and generate new more (Pimazzoni, 2023). In other words, it is a practice in which learners use their potential to solve problems in a way they could build their own conceptions; in a classroom teacher models the various activities to make them participants and the center of their apprenticeship. Previous knowledge is important in the way it helps to add new one (Vásquez et al, 2023). Considering such information, teachers estimate the idea that none of the students start from scratch, and they become part of the learning process by developing teaching strategies which can improve topics, considering various context and resources.

Acquisition and learning

Acquisition is a period when a process of incorporation occurs, it could be a behavior, an ability, an answer, a competency, and it is achieved through time (APA, 2022). Learning happens when there is acquisition of new information, consciously or unconsciously integration in the long-term memory and it is something that occurs after practice, observation or experienced (APA, 2022). According to Arranz López (2023), a mother tongue works with an innate ability, but a second language involves learning.

Learning Method

Methods are procedures that are related to solving a problem to reach a particular goal, their characteristics are having knowledge, sequence of steps to solve a problem, there could be sub-goals, methods can be associated with other methods, more than one might be used to solve one problematic (Chandrasekaran, 1989).

Collaborative learning method. It was first developed in Educational Psychology based on the Socio-Constructivist Approach (Roselli, 2011). It is a strategy which can be worked collaboratively, learning goes through collaborative activities in which the teacher is the manager and the experience of working with other people is for both, teachers, and students (Rutherford, 2014).

Gamification

Gamification allows individuals to use games for purposes other than entertainment (Pozo y Chicaiza, 2021). It works as a tool that motives individuals (Ritcher et al, 2015), among its characteristics, the environment where it is applied is not playful, the goal itself is not playing, it is possible to learn, activate knowledge, implement tasks, motivate participants (Basante y Moreno, 2020). Its use is through challenges, attractive rewards, and levels of complexity (Gartner, 2011). To work gamification in an optimum way, Pozo y Chicaiza (2021) find the next elements in the planification process: define goals, timing, places, participants, questions and answers, score (and the way to get the points), individual or team format, challenges, avatars, among others, not all of them have to be included in every game.

One of the most famous definitions of gamification is the one Deterding et al (2011) gave, it is the use of game elements in context which are different to games. For Hunicke et al (2004) gamification includes elements of games such as points, levels, classification and more. González-González (2023) explained the two different versions of gamification, plugged and unplugged, the first one requires connection and is supported with technology and takes place in

virtual environment, the second one does not use technology and its use is in the classroom. It is possible to combine both versions.

Vocabulary

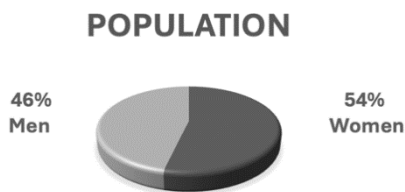
Vocabulary is considered as part of the productive or active abilities of a language such as speaking and writing, passive or receptive abilities are reading and listening (Sharma, 2021). There is a greater probability of being able to domain the four abilities, reading, writing, speaking, and listening whereas a person stands out in vocabulary. Language includes parts which are not divisible, they all work together and in Consejo de Europa (2023) the scale to set a level of domain of the language is not shown from 1 to 100, for vocabulary it includes elements like “generally understand”, “vocabulary control”, vocabulary length” and “fluency” among other categories which define active and passive abilities.

2. Methodology

Population and sample

Escuela de Bachilleres (EBA) is a public school located in Querétaro city in México, it offers options to study such as schooled, semi-schooled and virtual form. Plantel Norte is the largest campus EBA has, with morning and afternoon shifts. There are 115 teachers with 60 groups in 3 grades (Sistema de Información y Gestión Educativa, 2023). One of the groups from fourth semester was chosen to measured results including 41 students, 19 men and 22 women with a median of 16.4 years and a standard deviation of 0.731. (Fig. 1)

Fig. 1. Population sample.



Characteristics

Quantitative study, non- probabilistic, convenience sampling, correlational formula by contrasting before and after gamification was used. A written self-administrated test was applied to get the data as a pre and post-tests. The instrument was The Vocabulary Knowledge Scale (VKS) constructed by Wesche and Paribakht. The vocabulary chosen was taken from a B1 list from The Common European Framework of References for Languages (CEFRL), proposed target level for the school subject.

Research plan.

This study was conducted by the researcher in Plantel Norte, EBA. 41 students were participants of the unplugged gamification process by designing a board game which included vocabulary

provided by their teacher, they could use existing games and make the appropriate changes or create a new one. There were three weeks of preparation working in teams in which students were involved in the elaboration process as active participants. Games were tested before the implementation week to check rules, information, timing, and materials. Games were played during three sessions, all students had to play with all games, they had a checklist in which participations were marked. Instruments were administered before and after the implementation of the unplugged gamification. 30 different nouns were tested as dependent variable with a pre and post-test. Attributes chosen for the independent variable unplugged gamification were instructions, players, goal, and materials.

Picture 1. Example of boardgames made by students.



Handmade boardgame made by students.

Ethical considerations

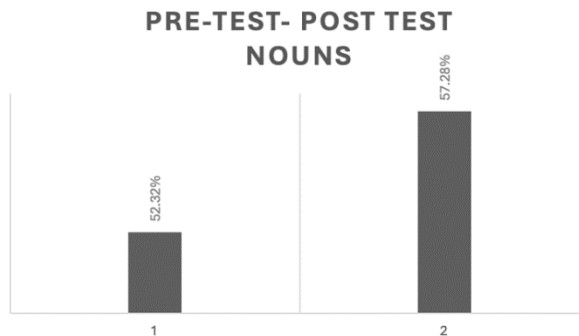
As participants were underaged students, it was essential to inform parents and legal tutors about the research and get the appropriate permission formats signed, previously endorsed by the institution. It was also important to inform that results were anonymous and voluntary and did not affect the school subject.

3. Results

Results were proven by using Excel and the Jamovi software as tools to present the data. Descriptive statics from the pre and post-test were used to show information about population; inferential statistics to help generalize and infer conclusions. The vocabulary instrument included 5 options, to measure results, 1 pt was assigned if the word is unfamiliar and do not know the meaning, 2 pts were assigned when the word has been seen before but do not know the meaning, 3 pts when the word is translated but the student is not sure about the meaning, 4 pts are marked when students are sure about the meaning and write the correct translation, and 5 pts when a sentences was written using the word appropriately and also translation was given.

To find an answer for the research question, it is necessary to compare results from the pre and post-test to know the differences between them. In a scale from 1 to 5 pts, the 30 nouns averaged 2.566 which represents 51.32% with an ED of 1.24 in the pre-test, in the post-test they averaged 2.864 with an ED of 1.23 which means 57.28%. The difference between the two is a 5.96% of advance. There was only one noun that presented more than a point of advance, the rest of the words do not show more than 20% of change, ranks were found between 0 and 1.07 of chance. The following image shows the difference presented in the two tests.

Fig. 2. Results from the pre-test and post-test, 30 nouns.



Null hypothesis is rejected, it is shown that unplugged gamification shows difference in the results of the two tests taken by the sample by 5.96%. Means were compared in the pre and post-tests in noun vocabulary null hypothesis states that both are equal $H_0: X_1 = X_2$

4. Discussion

As referred, make students involve themselves in their learning process, help them create own knowledge, being teachers guides and providers in the assignment development (Benitez-Vargas, 2023). By working with classmates, it is a job done in association with pairs, and it is part of Constructivist authors cite (Molina, 2023). Working with a L2 requires acquisition, being conscious or unconscious incorporation of new information in the long-term memory and it requires practice to make it happen (APA, 2022).

Working with mates, contribute to achieve a goal, following instructions, associate existing games to create new ones, is part of Constructivist states and it was included in the experiment method of gamification. Results are not outstanding, but it is important to consider that time was limited during the course, as other activities had to be included in the subject program, but despite that, it is shown some advance. Further experimentation is recommended to find better and more ways to take advantage of time and resources available.

5. Conclusion

Preliminary results as shown express a change by using unplugged gamification. These types of games are cheap to make, but there is work students must do to create the idea of how to play with vocabulary, it is also part of teacher activities to guide and give feedback. Further studies are needed to identify if there is a type of game which make students want to play in a way they get more vocabulary, it is also useful to find if there is an exact number of repetitions needed to make a difference in the results in vocabulary written tests. The present document is important for the purpose of finding different ways to present vocabulary in classrooms, especially in the foreign language subjects. More gamification experimentation in various forms is recommended to find further data teachers could use in their everyday activities.

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