



Entornos virtuales y aprendizaje significativo del idioma inglés como segunda lengua L2 en estudiantes de secundaria: un caso de estudio

Virtual environments and meaningful english language learning as second language L2 in high school students: a case study

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Resumen

La investigación se centró en analizar los elementos de los entornos virtuales y su influencia en el aprendizaje significativo del idioma inglés en los estudiantes de 15-16 años de segundo año de bachillerato o quinto curso de una Institución Educativa de la ciudad de Ambato, Ecuador. Las actuales prácticas educativas imponen cambios y retos necesarios para el mejoramiento del proceso enseñanza - aprendizaje en el cual los ambientes virtuales se convierten en lugares de aprendizaje, así como “Edmodo”. Los componentes principales del ambiente virtual analizados son: gestión de contenido, planificación y mapeo del plan de estudios, participación y administración del alumno, comunicación y colaboración, comunicación en tiempo real. Por otro lado, las actividades para generar un aprendizaje significativo se deben involucrar y apoyar combinaciones de aprendizaje activo, constructivo, intencional, auténtico y cooperativo. Esta información se recopiló mediante la técnica de encuesta, planteado tanto hacia las autoridades, profesores y estudiantes. Posteriormente, se utilizó el análisis estadístico del Chi cuadrado, para detectar resultados significativos. Los resultados demostraron que la mayor parte de los estudiantes manifiestan que no conocen entornos virtuales y consideran que la utilización de esta forma pedagógica y tecnológica de educación ayudaría a mejorar el proceso de Aprendizaje Significativo, en los estudiantes.

Palabras claves: entornos virtuales; aprendizaje significativo; tecnología; pedagogía; educación estrategia.

Abstract

The research focused on analyzing the virtual environments' elements and their influence on the English language' significant learning in students aged 15 to 16 years of high school fifth year of an Educational Institution in the Ambato city, Ecuador. Current educational practices impose changes and challenges necessary for the improvement of the teaching-learning process, which networked applications become learning places such as: "Edmodo". The virtual environment' main

components analyzed are: content management, planning and mapping of the curriculum, participation and administration of students, communication and collaboration, communication in real time. On the other hand, the activities to generate meaningful learning must involve and support combinations of: active, constructive, intentional, authentic and cooperative learning. This information was collected through the survey technique, raised both towards the authorities, teachers and students. Subsequently, the statistical analysis of Chi square was used to detect significant results. Thus, these results showed that most of the students exhibit a lack of knowledge on virtual environments and consider that the use of this alternative educational pedagogical technology would help to improve the Meaningful Learning process in students.

Keywords: strategy; competitiveness; innovation; types of innovation; export companies.

Introduction

Information and Communication Technologies (ICT) are considered to be one of the most powerful tools for the support of the learning process (Natsis, 2011). The new millennium has blurred the conventional boundaries of English language instruction in that English lessons are no longer taught solely by means of printed books and chalk and blackboard, but via electronic learning management systems (e.g., Blackboard, Moodle) or digital tools (e.g., Skype, wikis), which extend learning beyond the classroom. The plurality and diversity of English teaching and learning in the digital age are, nevertheless, challenging both English language teachers and learners. (Chen, 2016)

In Ecuador there is a technological era in education, because it has increased access to the Internet with the aim of democratizing and universalizing the use of Information and Communication Technologies (ICT). According to a survey applied by Instituto Nacional de Estadística y Censos (INEC), in 2019, the percentage of people using a computer decreased by 9.1%, compared to 2018. (INEC, 2019). However, the use of internet increased 3.3% as opposed to the 2018 results. Thus, the internet access is using cellphones, tablets and so on.

Due to changes in the educational environment, multiple challenges have been evidenced, one of them is access to technology to obtain information, in this context it has been determined that virtual environments in the English language within the educational profile of the country are not used in an adequate form, and in other cases not with the technological instruments that encourage meaningful learning. (Nurul Farhana Jumaat, 2019)

Tungurahua is undertaking a positive change regarding to education; however, not all teachers use the virtual resources that currently exist for the English language teaching, reducing the student's interest to learn this foreign language.

According to data from (ENEMDU-INEC, 2017) 57.1% of citizens of Tungurahua Province use a computer. This percentage should be considered. At the same time, it is a commitment that through educational institutions this percentage should increase, giving greater accessibility to the use of computers.

The high school is located in a rural area called Atahualpa. Its mission is to be a public educational institution that trains technical, critical, reflective and competent people, socially

dedicated to combine various disciplines of knowledge, through scientific, pedagogical and cultural processes to respond to the society demands.

It should be noted that the institution has two laboratories used for certain subjects but not for the English language teaching at all. The computer lab is often used for three hours a week just for playing videos. In other words, this important resource is left aside to strengthen the learning of this foreign language. The computer lab is not used for virtual environments that can help didactically to the English learning.

As a result, the English language teaching is mostly done in the classroom with the help of a tape recorder. That is, teaching is limited to the use of the text book and printed material or photocopies.

For all this, a change is necessary that allows the use of the computer lab for the English language teaching and the development of all its skills with the accompaniment of technology, in this way to explore the use of tools and virtual environments that facilitate the meaningful learning of this foreign language.

In consequence, it is concluded that the activities generated in a virtual classroom (VLE) as a pedagogical support tool has similarity with the variable and therefore will serve as a bibliographic support for the proposed research topic, because virtual environments will allow strengthening the meaningful learning of the English language.

Therefore, a relationship can be made in terms of the virtual environment variable with the Edmodo platform, since it significantly influences the achievement of technical learning for students in the fifth grade of Secondary Education and according to the results, meaningful learning can be improved according to virtual spaces.

Meaningful Learning Types

Representation learning

It is when students acquire vocabulary. In this way, students learn words that represent real objects which have meaning for them; however, it does not identify categories. (Sami Balla Sanhori, 2019)

Concept learning

It is defined as objects, events, and situations that possess common attributes that are designated through some sign or symbol. (Bingjiao Fan, 2019)

Proposition learning

When students know the concept meaning, they can form structures that contain two or more concepts which affirm or deny something. Thus, a new concept is like a structure when it is integrated into new learning with prior ideas that the learner knows. (Rayhab Anwar, 2019)

Accordingly, Ausubel believes that knowledge is hierarchically organized; that new information is meaningful to the extent that it can be related (attached, anchored) to what is already known.

Advance Organizers

Ausubel advocates the use of advance organizers as a mechanism to help to link new learning material with existing related ideas. Ausubel's theory of advance organizers fall into two categories: comparative and expository. (Ausubel, 2020)

Comparative Organizers

Comparative organizers activate existing schemas and are used as reminders to bring into the working memory of what you may not realize are relevant. A comparative organizer is also used both to integrate as well as to discriminate. It “integrates[s] new ideas with basically similar concepts in cognitive structure, as well as increase[s] discriminability between new and existing ideas which are essentially different but confusable similar”. (Sonia J. Pinkney, 2019)

Expository Organizers

Expository organizers are often used when the new learning material is unfamiliar to the learner. They often relate what the learner already knows with the new and unfamiliar material—this in turn is aimed to make the unfamiliar material more plausible to the learner. (Varela, 2019)

Meaningful Learning in the Co-operative Classroom

Twenty children in the third-grade class sat in rows, two to a table, in a dusty immigrant village in Israel in 1954. Some came from Kurdistan, some from Iran, a few from the Karaite community in Egypt. Each child was one of many in a family. Their parents were preoccupied with the hardships of learning how to be farmers so they could make a living. (Emma Kostianen, 2018)

This was my first teaching post and as a novice teacher I was confident in what I knew: the traditional transmission approach to teaching. I dutifully set out to follow the routine that treats all students as one group, with me as teacher-leader who assigns texts related to the prescribed curriculum, instructs or demonstrates to the whole class, assigns some form of individual practice (homework), and organizes individual assessment (tests). (David Duran, 2020)

Very quickly I came to realize what I didn't know. The glazed looks on the students' faces, the frequent disruptions and the erratic attendance were unavoidable indications that I did not know how to capture the children's attention and interest. Then one day, when teaching (or rather talking) about the sun's distance from the earth, one girl called out: “I get it! The sun is as far from the earth as Iran is from Israel!” That was the turning point in my teaching. The girl's

remark made me realize that my job was not to continue the traditional one-way communication from teacher to students by being a 'banker' (to borrow Paolo Freire's term), who 'deposits' knowledge without taking time to explore the students' minds, but to bridge the gap between their worlds and the curriculum. (Dwi Sulisworo, 2016)

Theories with a capital T did not constrain my choice of teaching methods. I had no idea that this was a 'multicultural classroom,' and hadn't yet heard of small group teaching, (the term 'cooperative learning' had not been coined yet) or even of individualized learning. (Emma Kostianen, 2018)

One source of validation of these efforts in that dusty village came several years later from Sylvia Ashton-Warner's book "Teacher" (1963), a moving account of her efforts to teach reading to her young Maori and English students in New Zealand by using their inner worlds as bridges to learning. By being wholeheartedly attentive to the children's words she helped them create reading material that grew out of their worlds and replaced texts used to teach reading at the time like "Come John come. Come and look." (36), which were far removed from Maori children's volatile lives and even from the English children's more reserved lives. Ashton-Warner was a pioneer in creating meaningful teaching procedures; her deep-seated humanism paralleled the lessons emerging at the time from the human sciences. (Emma Kostianen, 2018)

The reality of our situation propelled me to teach in ways that were further validated by what I later learned from contemporary research and theories of teaching in general, and of teaching in the heterogeneous and multicultural classroom. This experience initiated my life-long quest for ways to make learning meaningful to all learners in the complex reality of a classroom. Many of the discoveries along the way were made through collaboration with colleagues in the fields of co-operative learning and multicultural education. What follows is an attempt to present the ideas, studies and methods of but a few of the more inspiring researchers and practitioners that I encountered over time (Ferguson, 2018).

Hypothesis

Virtual environments do influence on the English meaningful learning in high school fifth year students.

Pointing Variables

Independent Variable: Virtual environments

Dependent Variable: English meaningful learning

Research Questions

- What factors are leading to the English language's meaningful learning development?
- What sort of virtual environments use teachers to develop the English language teaching?

- How a virtual environment use will affect the meaningful learning of the English language?

Philosophical foundations

The present research work is based on the social approach, because it is generated through a basic structure that constitutes the necessary condition of the system of actions and behaviors that is proper to the human being, supported by the axiological, ontological, epistemological and psychological philosophy.

Methodology

The approach of this research was predominant qualitative and quantitative since systematic and empirical processes were used which generates information about the problem.

It was quantitative because, it was repeatable phenomenon and also numerical techniques are used to specify data according to the research problem, by using quantitative measurement tools and statistical analysis techniques such as Chi square.

It was qualitative because, its main purpose was to analyze the problem as perceived by the people involved in its context in the virtual environments and their influence on the English meaningful learning.

Population

The research was carried out for 80 students between 15 and 16 years old.

Materials

Both students and teachers' surveys where applied. The ten questions used were based according to the categories of virtual environments and meaningful learning as it can be seen in the table 1.

Table 1

Virtual environment categories, indicators and questions

Categories	Indicators	Items
<ul style="list-style-type: none"> • Content management • Curriculum mapping and planning 	<ul style="list-style-type: none"> • creation, storage, access to and use of learning resources • lesson planning, assessment and personalization of the learning experience 	<ol style="list-style-type: none"> 1. How often does the teacher use technology resources for teaching the English language? 2. How would you like to receive English classes? 3. Have you used a virtual environment?

Categories	Indicators	Items
<ul style="list-style-type: none"> • Learner engagement and administration • Communication and collaboration • Real time communication 	<ul style="list-style-type: none"> • managed access to learner information and resources and tracking of progress and achievement • Emails, notices, chat, wikis, blogs. • live video conferencing or audio conferencing 	<p>4. Does your teacher use a virtual environment to facilitate your meaningful learning in the English language?</p> <p>5. Do you think it is good to incorporate computer methods for meaningful learning in the English language?</p>

Source: Authors' elaboration

Table 2

English meaningful learning categories, indicators and questions

Categories	Indicators	Items
<ul style="list-style-type: none"> • Activities • Constructive • Intentional • Authentic • Cooperative learning 	<ul style="list-style-type: none"> • Develop sophisticated skills • Construct advanced knowledge • Learners integrate their new experiences with their prior knowledge • Intended to fulfill some goal. Relate the ideas to real-world contexts • Knowledge -building communities 	<p>1. Do you think that virtual environments could be used inside or outside the classroom to motivate meaningful learning?</p> <p>2. Will virtual environments optimize the meaningful learning of the English language in the students?</p> <p>3. Do you think that virtual environments will favor collaborative work in meaningful learning of the English language?</p> <p>4. Do you consider that the institution has technological means to apply virtual environments?</p> <p>5. Do you think that through a virtual environment you improve the meaningful learning of the English language?</p>

Source: author's elaboration. Information collection plan

The information was collected through a survey technique and the application of the questionnaire was categorized and tabulated in a computerized form to know the results and thus could detect erroneous data. The information collection instrument was designed and an authorization was requested to the authority in charge of the High School. Then, the number of students who were part of the study was established.

Consecutively, each student was notified about the process to be done. An observation was made and the research started. Therefore, with the results obtained from the tabulation, the analysis was done.

Statistical Model

Later on, for the calculation of the chi-square equation 1 will be used. It is based on the previous frequencies:

$$x^2 = \sum \frac{(O-E)^2}{E} \quad \text{eq. 1}$$

x^2 = Chi-square

Σ = Sum

O = Observed frequencies

E = Expected frequencies

Where O represents each observed frequency and E represents each expected frequency at the sum of all these frequencies it will be called calculated chi-squared (X_c^2)

X_c^2 = calculated chi-square

X_t^2 = tabulated chi-square

Then after obtaining the X_c^2 it should be compared with a value of the table of probabilities for chi-square (x^2). This table is very similar to student's table t, but has only positive values because chi-square only gives positive results; the value of this table is called chi-square by table (X_t^2).

Using a level of significance of $\alpha = 0,05$

Afterwards, to determine the degrees of freedom equation 2 was used, considering that the table has three rows and two columns.

$$DF = (r - 1) (k - 1) \quad \text{eq. 2}$$

Where:

DF = Degrees of freedom

r = number of rows

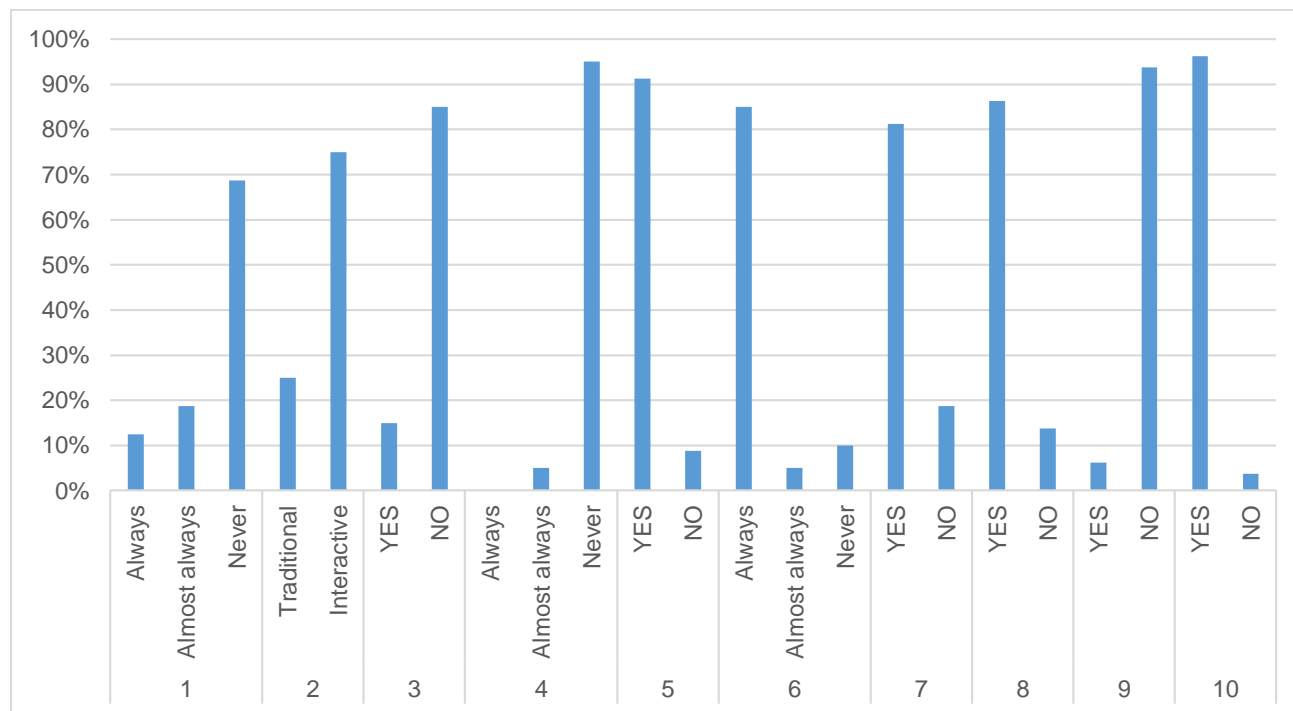
k = number of columns

Results y discussion

The figure 1 illustrates the students’ survey results for the 10 questions; five regarding to virtual environments and five corresponding to meaningful learning.

Figure 1

Students’ survey results



Source: Authors’ elaboration

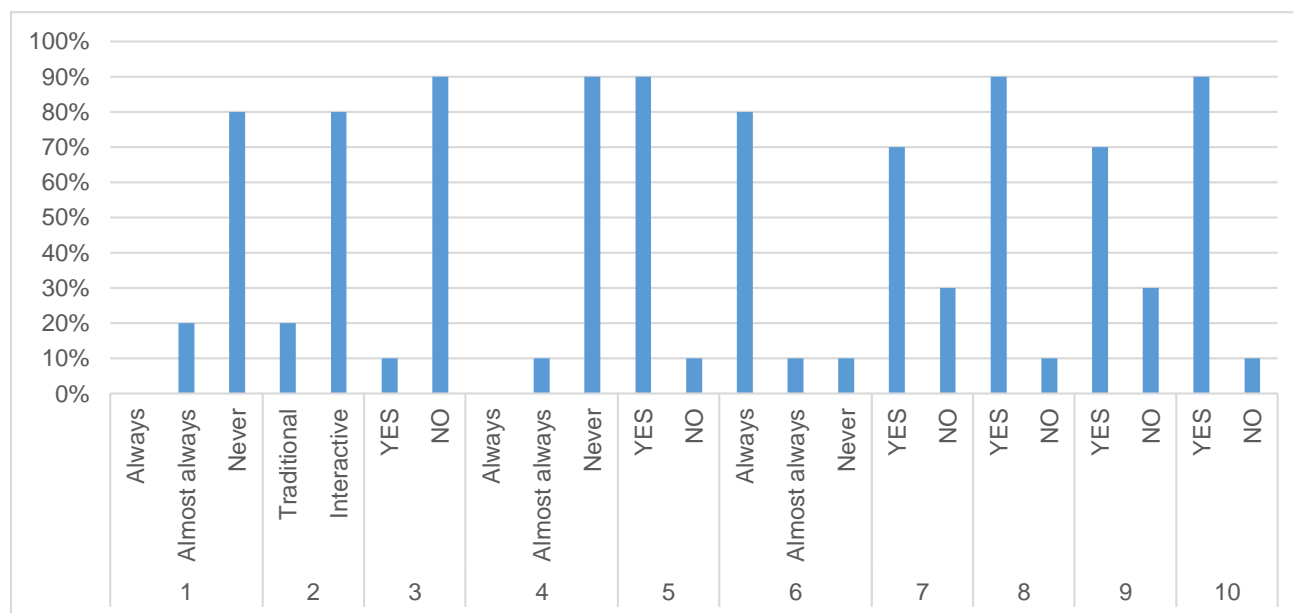
As can be seen, regarding to the virtual environment aspect, the professor never uses technological resources as a method of teaching the English language. In conclusion, the use of technological methods will facilitate the teacher and student interaction within and outside the classroom and at the same time learn the English language, encouraging students' own research. Besides, Education is immersed in technology; therefore, it is a positive thing to incorporate virtual environments for student learning, because students are interested in receiving English classes through interactive methods. The question results 3 shows the need to incorporate virtual education to teach the English language, in order to make known an alternative way of studying and facilitate the learning of this foreign language in an interactive way through technological use. Also, the result 4 displays the importance that teachers need to include in their teaching practice the use of virtual environments to improve the English language learning in their students. Furthermore, most students agree that computer methods should be incorporated to learn the English language, which can be adapted to virtual environments and mobile devices to facilitate students with the foreign language approach and interact with their teachers.

According to meaningful learning, most students agree that virtual environments could be used inside or outside the classroom. In this way, meaningful learning could be motivated and students can be familiar with technology for learning, which would facilitate interaction with the English language. Similarly, students trust that virtual environments will optimize meaningful learning in the English language, since they live a technological age that brings them closer to all information. This is an advantage to be more exposed to the language. Generally speaking, students are aware that the use of virtual environments will favor collaborative work in meaningful learning of the English language, because students know the benefits offered by technology and its advantages in education. Despite the technological limitations of the institution, there is a predisposition of teachers and students to make certain adjustments in the classroom in order to be immersed in technological education. As a matter of fact, Students believe that through a virtual environment can improve the meaningful learning of the English language, because they understand significantly that learning and pedagogy have changed, so technology will help students to become familiar with virtual platforms and thus be able to use them in any field. The fact encourages them to be more attentive to classes and the interaction with the teacher will be more dynamic.

The figure 2 illustrates the teachers’ survey results for the 10 questions; five regarding to virtual environments and five corresponding to meaningful learning.

Figure 2

Teachers’ survey results



Source: Authors’ elaboration

According to the virtual environments aspect, the results indicate that teachers do not use technological resources as an English teaching method, due to the lack of knowledge regarding the use of technological means that facilitate the English language teaching. Additionally, most teachers consider that interactive teaching is an effective method for learning the English language. This teaching can incorporate virtual environments, since they promote the collaborative interaction between the teacher and the student. What is more, most teachers do not use virtual environments due to ignorance of this technological tool. However, there is a predisposition to do so. Nonetheless, teachers agree that they have not used a virtual environment to facilitate the meaningful learning of the English language, because they are unaware of its application and procedure to use it. Surprisingly, one teacher believe that incorporating computer methods for meaningful learning in the English language will be negative, however, incorporating computer methods for meaningful learning in the English language according to most teachers will be positive, because the teaching of this language depends on the computer and the Internet also allows breaking the monotony, resulting an interactive and collaborative method.

Regarding to meaningful learning, virtual environments could be used inside or outside the classroom to motivate meaningful learning, because most teachers and students use smartphones which will facilitate the teaching and learning of the English language through interaction. Overall, teachers think that virtual environments will optimize the meaningful learning of the English language. They have the predisposition to apply them since teachers used to be in the routine of using traditional and outdated methods. Moreover, lecturers believe that virtual environments will favor collaborative work in English language teaching, because teachers and students could interact better in the learning activities of this language and optimize time and resources. Again, the institution has technological means to apply virtual environments; however, these resources are not well used in the teaching process. Finally, through a virtual environment they can improve the meaningful learning of the English language, because they think it is an effective method to evolve with technology. It will help teachers to be familiar with virtual platforms and thus be able to achieve the meaningful learning of the English language in the students.

Chi Square Tabulated

Therefore with 4 degrees of freedom and a level of significance of 0.05 you get a tabulated Chi square of $\chi^2_t = 9,49$, as is illustrated in table 3 and figure 3.

Table 3

Calculation of Chi²

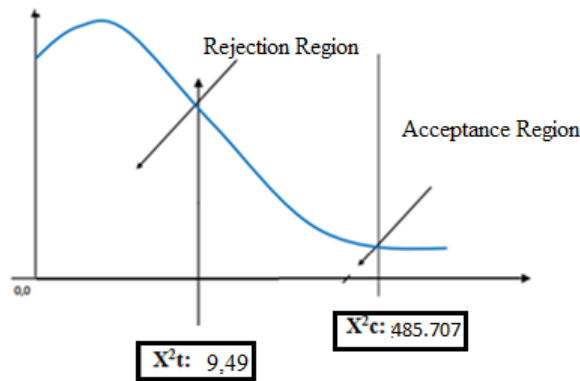
ALTERNATIVES	O	E	(O-E)	(O – E) ²	(O – E) ² /E
Always	10	26	-16	256	9,84615385
Almost always	15	7,67	7,33	53,7289	7,00507171
Never	55	46,33	8,67	75,1689	1,62246708

ALTERNATIVES	O	E	(O-E)	(O - E) ²	(O - E) ² /E
Always	0	26	-26	676	26
Almost always	4	7,67	-3,67	13,4689	1,75604954
Never	76	46,3	29,7	882,09	19,0516199
Always	68	26	42	1764	65,2813621
Almost always	4	7,67	-3,67	13,4689	120,71657
Never	8	46,33	-38,33	1469,1889	234,428069
					485.7073

Source: Authors' elaboration

Figure 3

Gauss Bell



Source: Authors' elaboration

Once the result of the Chi-square is obtained, the following is stated:

$$X^2c = 485.709 > X^2t = 9.49$$

For 4 degrees of freedom at a 0.05 significance Level, it is obtained in table $X^2t = 9.49$ and since the value of $X^2c = 485.70$ is outside the rejection region, then the null hypothesis H_0 is rejected so that accept the alternative hypothesis H_1 that says:

H1: Virtual environments influence on the English meaningful learning in fifth year high school students.

Conclusions

The surveys' results and the verification of the hypothesis have been considered, in order

to reach the following conclusions:

Comparing with results of (Ana Lopes L. S., 2018), the virtual learning spaces help to construct knowledge in a meaningful and conscious way. Therefore, Virtual environments influence on the English meaningful learning in students aged 15 to 16 years of high school fifth year.

Another important conclusion is that, it was determined that the English meaningful learning factors are part of the change of the traditional methodology by an interactive methodology, in which the technological resource, as the use of virtual environments are based on the motivation to explore new trends of the meaningful English language. As well as to transform the class into something more interactive and collaborative, because education is immersed in technology. For this reason, it is positive to incorporate virtual environments for student's learning since they are interested in receiving English classes through interactive methods.

It has been identified that in the institution, both students and teachers agree that there is no use of virtual environments. Teachers say they do not know a virtual environment, its use, application, procedure, but at the same time they show their predisposition and interest to explore these tools. Students believe that through a virtual environment can improve the meaningful learning of the English language. They are willing to learn hand in hand with technology and they understand that significantly learning and pedagogy evolve according to technology, so it will help students to become familiar with virtual platforms and thus be able to use them in any field. In addition, this encourages them to be more attentive to classes and the interaction with the teacher will be more dynamic. This is shown in the study of (Kabilan, Adlina, and Embi, 2011)

Finally, it was found that both students and professors show their interest in virtual environments and their influence on the meaningful learning of the English language, because people live in a technological era. Teachers and students have access to smart devices, which allows them to work in a virtual environment that permits interaction more directly and more exposure to meaningful learning, because their classes will be completely virtual and they will be able to develop the skills. It is concluded that most students agree that computer methods should be incorporated to learn the English language, which can be adapted to virtual environments and mobile devices to facilitate the approach of students with the foreign language in a personal way and interact with their teachers.

The benefits of using virtual spaces are countless. From economic society growth until motivation in learning which are aspects the society are looking to improve according to (Mystakidis, 2019) encouraging profound and important learning in online training to give high-quality, adaptable, customized and groundbreaking learning for huge crowds could open new instructive boondocks towards new achievements of monetary development, social advancement and prosperity.

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