

Research Article

Socratic Method in the Use of Web Tools

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Abstract

In the integral training of the student from the Being, to know, to know-how and to know-how to-be; the American University Corporation within its pedagogical model assumes a systemic model, self-regulating constructivist.; teaching and learning revolve around building knowledge from collaborative work, enabling student training. The constructivist model has its roots in philosophy, psychology, sociology and education. the verb build comes from the Latin *struere*, which means 'fix' or 'give structure'. Constructivism offers a new paradigm for this new era of information motivated by new technologies that have emerged in recent years. With the advent of these technologies (wikis, social networks, blogs...). In this model learning is active, not passive. people learn when they can control their learning, which generates a relatively permanent change in associations or mental representations as a result of the experience. Teaching addresses discrete learning strategies and models, Those addressed in this space are the Socratic Dialogue for the Development of Critical Thinking that seeks to develop skills in the students of Public Accounting that allow them to perform a reflective critical analysis and the methodology of Applied Projects in which the student is taken, individually or in a group to project something concrete and to execute it, giving you the opportunity to check ideas through your app and stimulate creative thinking.

Keywords

Learning, Applied Knowledge, Socratic Constructivism

1. Introduction

Constructivism enables the student to abandon his attitude as a passive recipient, to become an active protagonist of his own learning. However, as teachers the following questions arise for reflection:

How to train the new citizen? Will master classes, memorization, and summative evaluation be enough? What pedagogical tools and methodologies allow us to reach that desired point of comprehensive or holistic education?

The regional scientific committee for Latin America and the Caribbean of the UNESCO Forum [6] mentioned that one

of the characteristics of contemporary society is the central role of knowledge and part of the changes proposed were developed based on the results obtained. by the Turing Educational Structures in Europe project where knowledge facilitates the development of abilities and skills and therefore the concretion of knowledge (metacognitivity) in the improvement of the societies in which they live.

Now, as Teachers, the purpose of facilitating the acquisition, retention and use of information or knowledge of our students is established. We implement teaching techniques that allow

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us to develop our function in the educational scenario. One of these methodologies to facilitate learning is the Socratic Dialogue for the development of critical thinking. This method was called maieutics by Socrates, it helped human beings so that they could reflect and deduce their thoughts more clearly; In order to achieve "the truth", knowledge was inferred through dialogue, although to reach it, the disciple went through contradictory reasoning of a logical nature, becoming a necessary condition to achieve learning.

In addition to the above, we can determine that another methodological strategy that generates synergy with the Socratic Dialogue is the Applied Projects that allow the student, individually or collectively, to project something specific and execute it, creating a situation of experience and experience, stimulating creative thinking and Observation ability.

Consistent with the aforementioned, the American University Corporation, consecrates in the MISSION its work to educate and train "competent and integral human beings", under the four dimensions enshrined in the training of the individual such as "Knowing How to DO", putting into practice of the work activity what has been learned, the "Knowing to KNOW, the LEARN", refers to the knowledge, the management of theories, concepts and methods that today's professional must be equipped with, the "Knowing TO BE", which defines and establishes the axiological part of each person, the ethics, the morality, the belief system, the fundamental values for individual behavior and coexistence and the legitimacy of the "BEING", the ontological basis of the deep knowledge of human nature, of the identity of the person. PEI [3].

In conclusion, we can establish that, for the comprehensive training of its students from Being, knowing how to be, knowing how to know and knowing how to do; The institution within its pedagogical model assumes a systemic, constructivist model Self-regulatory; Teaching and learning revolve around the construction of knowledge through collaborative work, which allows for the training of students.

For its part, the constructivist model has its roots in philosophy, psychology, sociology and education. The verb build comes from the Latin *struere*, which means 'to arrange' or 'to give structure'. The basic principle of this theory comes from its meaning. The central idea is that human learning is constructed, that people's minds create new knowledge based on previous teachings. Students' learning must be active, they must participate in activities instead of remaining passively observing what is explained to them [7].

Constructivism is a theory that "proposes that the learning environment should support multiple perspectives or interpretations of reality, knowledge construction, activities based on context-rich experiences [7].

Constructivism differs from other points of view, in which learning is forged through the passing of information between people, such as (teacher-student), in this case the important thing is not to build but to receive, for this reason the constructivism is active and not passive. Therefore, people learn when they can control their way of learning, and in this way

we not only acquire skills and knowledge, but also values, attitudes and emotional reactions.

Based on the above, the present question arises, But what exactly does the term learning mean? This is where psychologists define and conceive learning differently:

Learning is a relatively permanent change in behavior as a result of experience.

2. Learning Is a Relatively Permanent Change in Mental Associations or Representations as a Result of Experience

The two previous definitions differ mainly with respect to what changes when learning takes place; The first definition refers to a change in behavior, an external change that we can observe and that reflects the perspective of a group of theories known as behaviorism. Behavioral theories focus on learning tangible, observable behaviors, called responses. The second definition focuses on a change in mental representations or associations, an internal change that we cannot see, reflecting the perspective of a group of theories known as cognitivism, where cognitive theories do not focus on behavior but on the thought processes (sometimes called mental events) involved in human learning [9].

Mental events allow the individual to "construct" his or her own knowledge through experience that leads to the creation of schemas. Schemas are mental models that we store in our minds. These schemes change, enlarge and become more sophisticated through two complementary processes: assimilation and accommodation [7].

Constructivism offers a new paradigm for this new era of information motivated by the new technologies that have emerged in recent years. With the arrival of these technologies (wikis, social networks, blogs...), students not only have access to a world of unlimited information instantly, but they are also offered the possibility of control themselves the direction of their own learning.

Technology has always had a great impact on education. These tools offer options to make the traditional classroom become a new space, where innovative activities of a collaborative nature and with creative aspects are available that allow them to consolidate what who learn Students have the opportunity to expand their learning experience by using new technologies as tools for constructivist learning and computer skills training (TIC), which focus on providing students with training to master these technologies, but Basically, there is very little methodology, which gives rise to the TAC concept (learning and knowledge technologies). The TACs try to guide information and communication technologies (TIC) towards more educational uses, with the aim of learning more and better, they go beyond merely learning to use ICT and are committed to exploring these technological tools at the service of the acquisition of knowledge [8].

The ICT model is excessively computer-based, the ICT model is instrumentalist with the society of the 20th century and the TAC model with that of the 21st century. What is proposed is to change learning “from” technology to learning “with” technology, an approach oriented entirely toward the development of fundamental competencies such as learning to learn. “TACs try to direct information and communication technologies (TIC) towards more educational uses” [8].

The result of people's contact with these new advances is to expand the ability to create, share and master knowledge. They are a major factor in the development of the current global economy and in producing rapid changes in society. The most important roles in education have been the transformation in three aspects that the teaching process has undergone: 1) its nature; 2) the place and the way in which it is carried out; 3) the role to be played by students and teachers in

such a process.

Regarding social constructivism, it is argued that social interaction is a fundamental part of learning [14], There are also two main theories that go hand in hand: the Zone of Proximal Development (ZPD), which refers to the knowledge that the student can achieve; and scaffolding, a concept created by Bruner, which describes the extra help that the student receives from the teacher or his classmates to achieve that area of knowledge [15].

He further adds that feedback is considered a means of guidance that facilitates scaffolding in technological environments. It also expresses the importance of collaborative work as an essential support of social constructivism, which is related to working in groups, helping each other, using various tools and information resources that allow solving a problem. [1].

Table 1. Constructivist Currents.

Current Constructivist	Cognitive	Social	Radical
Main Authors	Piaget/Ausubel	Vygotsky/Bruner	Von Glaserfeld
Characteristics and didactic implications	Accommodation and assimilation of schemes. Part of experience individual with the environment. Learning Significant Reflect to reach metacognition.	Emphasis on social interaction. ZDP and scaffolding part of the teacher or classmates. Importance of collaborative work Emphasis on language, symbols and tools (PCs and Internet) Significant experiences promoting reflection and feedback.	Knowledge is constructed to make sense of individual experiences The construction is individual. Student responsible for your entire process.

Source: Margarita Elizabeth Ortiz Rojas Constructivism and Web 2.0 Tools in Higher Education.

Knowledge Management through Web 2.0.



Figure 1. Social Networks.

Technologies (TIC) in its various areas in society (social, economic, educational, etc.) is “producing an authentic revolution in the entire life of the human being, that is framed in a whole wide range of changes in our society, and concrete in a name: the information society [13].

As cited by the information society “supposes the need for ongoing training and the prioritization of the objective of learning to learn.” It calls for an education that allows training throughout life; education must lay the foundations for knowledge and skills that allow us to move from the information society to the knowledge society [2].

Web 2.0 is part of new technologies. Tim O'Reilly, creator of this concept, defines it as: "the network as a platform, which encompasses all connection devices; Web 2.0 applications are those that make the most use of the intrinsic advantages of that platform: delivering software as a continually updated service, which improves the more people use it,

The incorporation of Information and Communication

consuming and reusing data from multiple sources, including individual users, while They provide their own data and services in a way that allows others to recombine it, establishing a network effect through a “participation architecture,” and moving beyond the web 1.0 metaphor page to provide users with a fruitful experience [7].

Web 2.0 evolves with the changes that have occurred in the knowledge society, even more so when this digital generation is associated with services that encourage collaboration and the exchange of information between users who are part of the different social networks that exist today. in day.

The efficient use of social networks starts from the members who make up these contemporary groups whose identities are a function of the common purposes they have, and where the tacit knowledge of its members can be transformed into something explicit, thus benefiting this society, among whose characteristics stands out being very dynamic, active

and participatory [5].

Among its main features it is worth mentioning that you can create content, exchange it with an external audience, rate and/or criticize the content of other users, which in turn has a friendly and interactive environment and is free to use. There are also two functionalities that are added to what Web 2.0 is, which is a tool used to promote reflection and help generate new knowledge.

However, Web 2.0 was not created for educational purposes, and this is evidenced by its characteristics and how it connects with Vygotsky's social constructivist current, since both have an emphasis on interaction and participation to create content [5].

Likewise, when these new technologies are used efficiently, they are linked to the way in which students learn better and maximize the use of the most important elements for the construction of their knowledge [8].

Table 2. Similarities between Social Constructivism and Web 2.0.

Emphasis on social	interaction Emphasis on creating content in a social way
Emphasis on social interaction	Exchange content to an external audience.
ZDP and scaffolding by the teacher or companions.	Rate and/or criticize the content produced by others users. It is a technological tool
Importance of collaborative work and feedback as scaffolding.	Promotes reflection, collaboration and connection with the prior knowledge (depending on the tool used).

Source: Margarita Elizabeth Ortiz Rojas Constructivism and Web 2.0 Tools in Higher Education.

New technologies have characteristics that make them powerful tools to use in the students' learning process: immateriality, interactivity, high image and sound quality parameters, instantaneity, digitalization, interconnection, diversity and innovation [7].

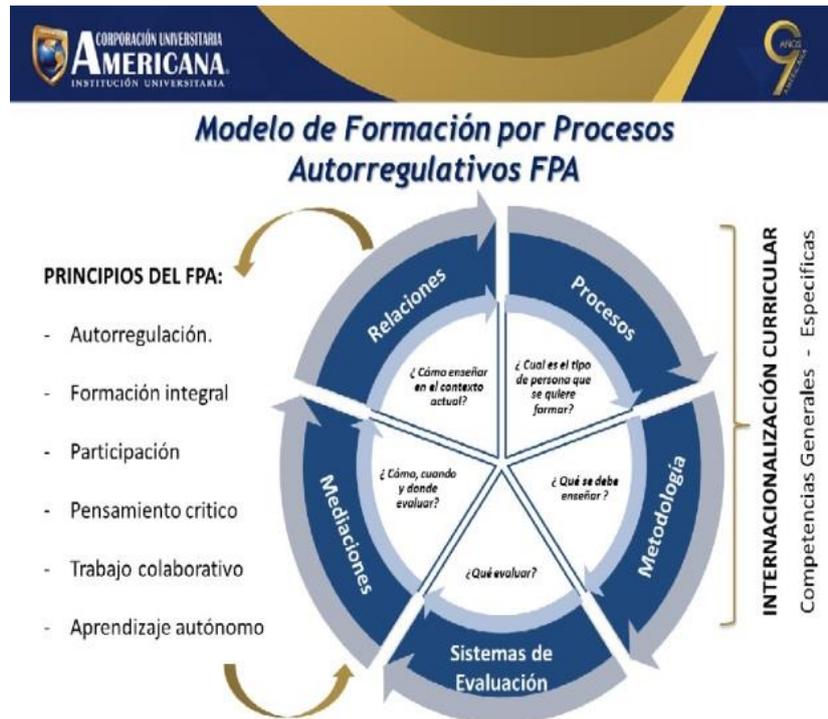
In the interaction of students with new technologies, the results that have been shown in many of the investigations that are related to cognitive development and constructivism can be applied, where the conclusion has been the demonstration that learning is more effective when four fundamental characteristics are present, which are: active commitment, group participation, frequent interaction, and feedback and connections with the real-world context [10].

Carrying out tasks among a group of students provides them with an opportunity where they not only begin to understand and adopt each other's ideas, but also begin to discuss their activities and make their thoughts visible. Learning is related to the meaning and correct use of ideas, symbols and representations.

Starting from the guidelines of the educational project of the American University Corporation, which privileges the inter and transdisciplinary in the training of our students through a systemic, constructivist axis, (FPA) Training by Self-Regulatory Processes that seeks comprehensive training taking into account social reality.

These processes motivate us as teachers in the search and application of teaching methods and models that provide students with the possibility of learning to learn. For this, it is important to keep in mind that people have different learning styles and can place themselves in a different role. passive, where its basic function is to receive information through classes and through texts.

Learning has to be as meaningful as possible; The person-collective that learns has to attribute a relevant sense, meaning or importance to the contents, and this occurs only when the contents and concepts of life and learning objects can be related (theory of meaningful learning, See Image.



Source: Taken from <https://sites.google.com/site/mateportafoliojosue/noviembre-2015/aprendizaje-significativo>

Figure 2. Meaningful Learning Model.

3. Mediations and Methodological and Didactic Strategies

Method development, Case developed in the subject Accounting Laboratory I of the technical level by Professor Enoc Barrientos Pérez. Public Accountant MBA in Administration and Innovation.

3.1. Aim



Figure 3. Meaningful Learning

Develop skills in Public Accounting students that allow

them to carry out a critical reflective analysis of the effects that commercial transactions entail in companies that in their systemic process affect from the accounting through registration and the financial in their different uses and sources.

3.2. Typology of the Case

The technical, technological and professional education of Accounting must ensure that students learn to: solve accounting problems, critically analyze the economic reality of companies and transform it, the above requires that as teachers we apply pedagogical strategies to encourage student participation by planning situations. motivating learning [11].

As a Public Accountant and Teacher of Subjects in the Accounting Area the strategy implemented in the classroom in the accounting subject with a population of 20 students was the Socratic Dialogue for the development of critical thinking.

The methodology of Socratic dialogue is a process by which the teacher, previously, asks a question to a particular student, in such a way that his or her response generates a new question, in a process that can be developed successively and indefinitely and in which that all students participate, ensuring that they keep their attention focused on the topic at hand. treating. “Socratic dialogue is a heuristic and confrontational sequence of questions and answers aimed at promoting or enriching critical thinking-Mayeutics”.

3.3. Characteristics of the Method

Style. The style of the method was that of conversation or

dialogue.

Affair. The issue under discussion is progressive.

Taking into account the above, the characteristics of the Method are presented as follows:

1. It does not start with definitions and theorems to deduce from them.
2. Starting with particular facts, asking questions and obtaining answers, he rose to ideas and convictions of a higher order.
3. The students were placed in their point of view, inducing them to express their ideas. If they are correct, they are confirmed with new explanations and developments; If they were incorrect, the error is demonstrated, to guide the student.

He verifies all this by asking questions, loading the questioner with the weight of his ideas, drawing new strength from each error he discovers in his reasoning.

3.4. Presentation of the Case

The case derived from a transaction for the purchase of goods is taken as a case; the majority of students know the accounting procedure for economic operations as well as the documentation required for each of the transactions.



Authors' own source (2024)

Figure 4. Accounting Cycle.

The application of this method is validated based on the fact that some students determined the characteristics of the case taken, were asked to describe, and did not know how to find their essential and distinctive features. When they had to do an analysis of this type, they tried to memorize, without being motivated to know why they proceeded in that way and not another, it was difficult for them to construct accounting information and prepare reports.

3.5. Results

After analyzing this situation, the Socratic Dialogue is considered to be widely applicable for the development of critical thinking, which encourages sharing of knowledge since in their interaction the students provided feedback from

the beginning of the operation when measuring the accounting effects, the incidence that they had in each of the affected areas and the administrative processes that are derived to reduce negative impacts on the Financial Statements.



Figure 5. Creative Thoughts.

Source: Compilation made by the authors (2020) manuelgross.blogspot.com%2F2019%2F03%2Fgestion-del-knowledge-recuperado July 2020 from: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fo->

4. Case Developed in the Computer Subject by Teacher Pablo José Mendoza Balcázar Systems Engineer

4.1. Aim

The applied case aims to provide knowledge to accounting students in the use of office tools that give them added value in the development of their profession.

4.2. Typology of the Case

The developed case is applied to the Applied Projects methodology in which the student is taken, individually or in a group, to project something specific and execute it, giving them the opportunity to test ideas through their application and stimulate creative thinking, as well as develop the ability of observation in the use of information and instruments, stimulating their initiative.

4.3. Presentation of the Case

The methodological strategy used is the applied projects supported by ICT as a tool for the appropriation of knowledge of the ICT subject in the students of the technological cycle of accounting management of the American University Corporation.

To develop the methodology, workshops were applied so that the university student mastered the technology of the time and learned to work as a team, so collaborative activities

based on Google Drive and Google Calendar were chosen, in such a way that the student Learn the basic use of the tools, identifying the possibilities offered by the tools, exploring their most important functions to enhance collaborative work between them and so that the knowledge acquired can be applied on a personal and professional level.

4.3.1. Google Drive



Figure 6. Google Driver.

It is a Google application that allows you to perform a wide variety of tasks such as producing and modifying online documents in different formats such as word processor, spreadsheets, pdf, slide editor, as well as creating forms for surveys, exams, editing and insert drawings and images, create folders to store and host files of any type for free in the cloud and at the same time allow them to be available anywhere with an Internet connection.

The Google platform contains a set of Web 2.0 Tools whose use is free, which is very useful for students, researchers, administrators, etc. because it allows us to create documents in different formats, work on the same file online from any device simply by accessing the cloud through our email. In addition, you can share it with other users and invite them to edit, comment or download the documents. “[4]”

4.3.2. Google Calendar



Figure 7. Google Calendar.

Google Calendar is a web 2.0 tool that allows you to have a virtual agenda that can be accessed from anywhere, for free. The most interesting feature is its possibility of generat-

ing agendas shared by a group of people. [7] In this way it is very simple to organize meetings, or keep certain institutional events or any type of event in mind. It can also resolve the form of access to the resources available in an institution.

Google calendar encourages collaborative work within educational, work and other teams, allowing you to manage and plan the calendar of a specific group. It also allows a complementary system of communication and alerts in real time via SMS and email, if necessary.

4.4. Results

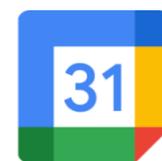
This type of learning is characterized by the size and composition of the group, its objectives and roles, its functioning, its norms and the social skills that create, maintain and improve it." During the development of the activities developed, 70 % of the 58 students in the course who attended through the virtual platform actively participated and were satisfied with what they learned.



Source: Google, Gmail. (2024).

Figure 8. Interacting with Students and Creating Activity.

Activity with Google Calendar – American Calendar Sharing.



Google Calendar

Figure 9. Creating Activity or Events in Google Calendar.

4.5. Activity with Google Calendar – Creating Events

In strengthening the skills of Public Accounting students at a technological level, ICT tools are essential in the development of the Accountant profession, which today is not only a person who counts figures, today it plays a very important role within the organization, information technology has had a lot of influence on the changes within the companies. This has been

due to the advances that have been achieved, the implementation of new systems and technologies, and the hard work of many people who have dedicated themselves to innovating new computer products and services.



Source: Own author (2024).

Figure 10. Work Progress.

Before, accounting was done by hand, with pencil and paper, while now you cannot think without using computer packages. This has made it possible to be more efficient in accounting work and the role of this position has gained importance in companies, becoming part of the group of people who make decisions based on the financial information they have, and provided by computers and specific programs. [12].

5. Conclusions

In good teaching practice, the importance of cooperative work between the different academic areas is highlighted and this stimulates the integrality of our students who strengthen their knowledge through various methodological strategies applied according to the guidelines of the American University Corporation that in its mission, is committed to the formation of integral, competent and enterprising human beings, through teaching processes” and the guidelines of its Pedagogical Model that seeks to develop actions aimed at identifying the learning styles of students, as well as teaching styles of the teachers. Taking into account the above we can conclude that.

1. Students of the American University corporation use Web tools massively.
2. within the PEI of the American university corporation, the use of web tools in classrooms is contemplated
3. The professors of the American university corporation are committed and trained in the use of web tools.
4. Finally, within the curricular guidelines of the American university corporation, the massive use of web tools and technological development is made mandatory by teachers and students.

Abbreviations

FPA	Formation of Self-Regulatory Processes
PEI	Institutional Educational Plan
TAC	Learning and Knowledge Technologies

TIC Information and Communication Technologies

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Calzadilla, M. E. (2002). Collaborative learning and information and communication technologies. *ResearchGate*, 1-10. <https://doi.org/10.35362/rie2912868>
- [2] Camargo, Y. O. (2004). Teacher's ongoing training needs. *ReserchGate*, 1- 10. Obtained from https://www.researchgate.net/publication/28121400_Las_necesidades_de_formacion_permanente_del_docente
- [3] American University Corporation. (2018). PEI Institutional Educational Plan. Barranquilla: American.
- [4] Dom ínguez, F. G., & Llorente Cejudo, M. d. (2009). SOCIAL EDUCATION AND WEB 2.0: NEW SPACES OF INNOVATION AND INTERACTION. *Pixel-Bit. Media and Education Magazine*, 105 - 114. Obtained from <https://www.redalyc.org/pdf/368/36812381009.pdf>
- [5] Gallego, G. D. (2013). Training and knowledge management through web 2. 0. *Dialnet*, 1- 10. Obtained from <https://dialnet.unirioja.es/servlet/libro?codigo=522908>
- [6] Gazzola, A. L. (2008). Regional Conference on Higher Education, Cartagena de Indias, Colombia, 2008. *Unesco*. Obtained from <https://unesdoc.unesco.org/ark:/48223/pf000016199>
- [7] Hernández, R. S. (2008). The constructivist model with new technologies, applied in the learning process. *Rusc Universities & Knowledge Society Journal*, 26 - 35. <http://dx.doi.org/10.7238/rusc.v5i2.335>
- [8] Lozano, R. (2011). B. 3. From TIC to TAC:.. *Dialnet*, 45 - 47. Obtained from <https://thinkpi.scimagoepi.com/index.php/ThinkEPI/article/view/30465>
- [9] Ormrod, J. E. (2005). *Human Learning*. Madrid: Peaerson Prentice Hall. Obtained from <https://saberrespsi.wordpress.com/wp-content/uploads/2016/09/ellis-aprendizaje-humano.pdf>
- [10] Ortiz, G. D. (2015). Constructivism as a theory and teaching method. *Sophia*, 93 - 110. Obtained from <https://www.redalyc.org/pdf/4418/441846096005.pdf>
- [11] Ortiz, O. A. (2015). METHODOLOGY FOR PROBLEM TEACHING OF THE. *MÉTODOS*, 17 - 32. Obtained from <https://repository.ucc.edu.co/server/api/core/bitstreams/186258f1-e9a6-4744-bf70-fa5b1085b596/content>
- [12] Sandoval, R. R. (2023). Mixed presentation of pedagogical strategy and the importance of the discursive process for the teaching-learning process. *Cies Research Center Escolme*, 70 -88. Obtained from <http://revista.escolme.edu.co/index.php/cies/article/view/465>

- [13] Tejedor, T. F. (2010). New Information and Communication Technologies and Educational Research. *ReserchGate*, 1- 10. Obtained from https://www.researchgate.net/publication/28072042_Las_Nuevas_Tecnologias_de_la_Informacion_y_la_Comunicacion_y_la_Investigacion_Educativa
- [14] Vielma Vielma, E., & Salas, L. M. (2000). CONTRIBUTIONS OF THE THEORIES OF VYGOTSKY, PIAGET, BANDURA AND BRUNER PARALLELISM IN THEIR POSITIONS IN RELATION TO DEVELOPMENT. *Educere*, 30 - 33. Obtenido de <https://www.redalyc.org/pdf/356/35630907.pdf>
- [15] Wololfolk, A. (2020). The zone of proximal development and its application in the classroom. *UNIR*, 1- 5. Obtained from <https://www.unir.net/educacion/revista/zona-desarrollo-proximo/>