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Google Classroom in the Teaching and Learning Process From Piaget's Perspective

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Summary: Faced with the new demands of education in the current scenario, we seek, in this article, to understand the following question: what is the importance of understanding Piaget's constructivism for the systematization of classes in Google Classroom? Our objective is to demonstrate the need to understand Piaget's theory of constructivism for education mediated by Digital Information and Communication Technologies. The methodology used is bibliographical research and we concluded that the constructivist theory brought a great contribution to the evolution of the use of informatics in education. Thus, Piaget's studies can support studies of the teaching and learning process in the context of information technology in education, and, in particular, can support a teaching practice specifically focused on the use of Google Classroom.

Keywords: Piaget; Google Classroom; teaching; learning.

I. Introduction

The use of Digital Information and Communication Technologies (TDIC) in an educational context can result in important solutions in the face of adversity, as currently occurs, in 2021, with the Covid-19 pandemic, which started in 2019. face-to-face modality as well as in the distance modality, must be guided by ethics, and must aim at excellence in the provision of educational services. About this, dos Anjos (2012) ponders:

> [the TDIC] provides not only the application of resources for content management and teaching-learning processes in distance education, but also the use of ICT, with a view to adding value to face-to-face education processes (p. 12).

In this work, we focus on Piaget's constructivist theory as a basis for verifying the possibilities of using Google Classroom in the teaching and learning process. Google Classroom is a technology launched in 2014 by Google. It's a free suite of productivity tools that includes email, document, and file storage, designed collaboratively with teachers to help them save time, keep classes organized, and improve communication with students. Classroom can be used on various technological devices with internet access.

In this study, through Piaget's perspective, we seek to base our reflections on this new way of conceiving education, in order to understand the online teaching model through Google Classroom, as a tool for, for example, the practice of active methodologies, such as the flipped classroom.

It is worth noting that it is considered here that "to know is to modify, transform the object, and understand the process of this transformation and, consequently, understand the way the object is constructed" (Piaget, 1973a, p. 85). In 1973, Piaget (1973a) thus concluded: "all knowledge is always becoming and consists in passing from a lesser knowledge to a more complete and more effective one" (p. 12).

In this way, the theme of our article starts from the following problem question: what is the importance of understanding Piaget's constructivism for systematizing classes in Google Classroom? This work is justified by the engagement of the Piagetian Theory with education mediated by digital technologies. It is hoped, therefore, that this research may be of relevance to the educational area, primarily for those who want to understand Piaget's contributions in relation to the use of new technologies in education.

For this work, a bibliographic research methodology was chosen, based on books, dissertations, theses and magazines that deal with the subject. After reading the materials, records were made and, subsequently, comparisons were made between different authors. As the theme is quite rich in information, those that most identified with the research line of the theme adopted for the work were prioritized.

II. Material and methods

The method used was bibliographic research, through the selection of works published on scientific research sites such as: Google Scholar and the Brazilian Digital Library of Theses and Dissertations of the Brazilian Institute of Science and Technology (BDTD/ IBICT).

The prerequisites for job selection were:

1 – Research that resulted from the constructivist theory to support the use of information technology in education;

2 – Use of Google Classroom in the teaching and learning process;

3 - Papers written in Portuguese, Spanish or English.

On the other hand, research on Google Classroom that was not focused on the teaching and learning process, and materials written in languages other than those mentioned, were excluded. Based on these criteria, the keywords for conducting the research were systematized. Therefore, the terms "Google Classroom", "Google Sala de Aula", "Piaget" and "Constructivist Theory" were used for the bibliographic survey.

III. Results and discussion

Graduated in Biology, Piaget specialized in the study of human knowledge, concluding that, just as living organisms can adapt genetically to a new environment, there is also an evolutionary relationship between the subject and his environment, that is, the child rebuilds their actions and ideas when relating to new environmental experiences. This reasoning was based on a theory called constructivism. But what is constructivism? Is it a theory or method? How to take it to the classroom?

For Becker (2009), constructivism is a process of building knowledge through interaction with the physical environment, and also with the social environment, in a continuous way, since, strictly speaking, nothing is ready, finished, but always under construction.

In this sense, learning and development, in Piaget's perspective, result from knowledge and learning, that is, through embryogenesis and the subject's action on the object. Thus, related to embryogenesis, the development of the body, mental functions and nervous system occurs. On the other hand, the knowledge acquired through

the subject's action on the object is related to physical and logical-mathematical experience, which consists of acting on objects, providing the construction of knowledge. However, when development and learning result from study, we understand that this happens in two ways: lato sensu and strictu sensu. The first is related to the construction of new spontaneous mental schemes, which transforms learning into knowledge. The second is provoked by the teacher, therefore, it generates learning about the subject.

According to Flavel (1975), development and learning for Piaget consist in understanding the elaboration, organization, formation of the subject and the functioning of structures. For him, the formation of the subject takes place through stages: pre-operational, sensorimotor, concrete operations and formal operations.

It is noted that, in Piaget's constructivist theory, the physical, social and psychological aspects of the subject are portrayed, which are associated with assimilation, which is the absorption of an event and experience in some scheme, accommodation, which is the change of schema as a consequence of the assimilated information, and the balance, which is obtained through successive assimilations and accommodations. It is highlighted that balancing is a process of self-regulation, and is one of the factors of development along with maturation, experience and social transmission.

Flavel (1975), based on Piaget, calls assimilation and accommodation functional invariants due to their invariable presence in every act of knowledge. Piaget, on knowledge explains: "knowledge does not come from the single experience of objects, nor from an innate pre-formed programming in the subject, but from successive constructions with constant elaborations of new structures (Piaget, 1976, p. 07)" .

Thus, assimilation and accommodation, which are inseparable and complementary processes, responsible for balancing cognitive structures, occur at all stages of development.

Equilibration is related to abstraction, a process where new knowledge is gained by the subject from previous experiences. Flavel (1975) understands that abstraction happens in two ways: reflective and empirical. It is empirical when it arises from observable characteristics. And about reflective abstraction, it derives from the coordination of subjects, since it stems from processes of reflection and reflection. Note that reflective abstraction is divided into pseudo-empirical and reflected, with the former occurring through predicates defined by an observer; in relation to the second, it is understood as generating conscious reflection, which results from indirect inference.

Piaget recognizes the importance of interactions in the development process. Thus, pertinent to the impacts of learning on development and, consequently, in the role of pedagogical intervention, his theory presents genetic epistemology, which postulates that learning follows development.

In this sense, Piaget understands that intelligence is the result of heredity, that is, of biological structures, originating from organisms that mature in contact with the environment. These are facts that provide the possibility of ever better adaptation to the environment. However, he understands that the acquisition of intelligence also comes from cognitive structures and will work in a similar way throughout the subject's life, so that he accommodates, assimilates, reorganizes and modifies.

Becker (2009) understands that, for Piaget, the student is an active cultural subject, whose action has a double dimension: assimilating and accommodating. Through the assimilating dimension, it produces transformations in the objective world, while through the accommodating dimension, it produces transformations in itself, in the subjective world. Therefore, assimilation and accommodation constitute two faces, complementary to each other, of all its actions, the development of the human being and the way in which the learning process occurs.

In this context, the teacher's work must break with conservative proposals, incorporating the cultures experienced by students, respecting their experiences and values, and continuously promoting criticism of reality. On the other hand, for Piaget, the schema complex of assimilation is the subject's cognitive structure. Regarding the relationship between the subject and the social environment, he ponders:

> [the] relations between the subject and his environment consist of a radical interaction, in such a way that consciousness does not begin with knowledge of objects or of the subject's activity, but with an undifferentiated state; and it is from this state that two complementary movements derive, one of incorporation of things to the subject, the other of accommodation to the things themselves (Piaget, [1936] 1978, p. 386).

According to Jean Piaget's Genetic Epistemology, human development is characterized by four major periods, such as: sensorimotor, preoperative thinking, concrete operations and formal or abstract operations.

Thus, it is understood, based on Becker (2009), that the teacher in the classroom must bring to the students the possibilities of building from the reality experienced by the school community, that is, the classroom must be embedded in history and social space.

It should be noted that Piagetian constructivism is a theory that allows reinterpreting ideas, theories, knowledge, science, philosophies, etc. Therefore, the theory of constructivism throws us into the movement of History – of Humanity and the Universe (Becker, 2009).

Finally, according to Piaget's Genetic Epistemology, the construction of knowledge takes place within a stage of development that has four gradual phases. For each stage of development, there is an interaction that will be most effective. Thus, it is concluded that it is not possible to guarantee the construction of knowledge in a unique way for all students.

Therefore, Google Classroom is a software that can meet such demand, due to the resources offered by it, as well as its nature as an online learning platform. It is necessary, according to Piaget's constructivist theory, that there be quality interaction between teacher, student, and, in the case of this work, virtual learning environment and educational objects. In this sense, Google Classroom enables this set of actions. About interaction,

> [the] essential point of our theory is that knowledge results from interactions between subject and object that are richer than what objects can provide for it. [...] The problem that needs to be solved to explain cognitive development is that of invention and not mere copying (Piaget, 1977, p.87).

Thus, it is understood that, through the interactive process, the teacher is like one more among the learners and, perhaps, this would be a position that every teacher should aim for, especially in online teaching, when dealing with the possibilities of access to knowledge.

IV. Conclusions

In view of the studies carried out for the construction of this research, it is noted that computational thinking is significantly connected to Piaget. It is noticed that Constructivist Theory can be relevant for the development of actions aimed at the quality of the teaching and learning process. Therefore, its study can bring good results to all teachers.

However, it is not enough just to know the Constructivist Learning Theory, as it is also of equal importance to have competence and efficiency to use the available digital resources, which can be used to practice different teaching methodologies. In this sense, in order to obtain positive results in the educational context, the use of DICT is essential, as they enable cooperative, collaborative and interactive work.

Through Google Classroom, the teacher will be able to propose a teaching practice in which the student is the protagonist of the search for knowledge. For this process to occur with excellence, it is necessary that the teacher is able to use new technologies, as well as to use appropriate didactic and pedagogical resources to mediate learning.

The virtual classroom of Google Classroom allows the student to take an active stance in the construction of knowledge. Thus, online teaching must be understood as a dimension of education, which can contribute to paradigmatic changes that overcome the traditional school. In this sense, according to Piaget (1973), the construction of learning and knowledge takes place from mental operations and reflections.

> In addition to the organic factors that condition the mechanisms of action from within, all conduct in fact presupposes two kinds of interactions that modify it from the outside and are inseparable from one another: the interaction between the subject and objects and the interaction between the subject and the other subjects (...) (Piaget, 1973, p. 35).

Therefore, one can see Piaget's contribution to education as a whole, but, in particular, his Constructivist Theory contributes significantly to the use of information technology in education, since it was the basis for the Constructionist Theory, created by Seymour Papert.

> In the footsteps of Piaget, Seymour Papert devoted himself to researching the use of technologies as tools to support learning processes. For Papert, the computer, as a "knowledge machine"10, was an important learning resource, as it had the ability to cause situations of imbalance desired by Piaget. Papert developed the theory of Constructionism which, based on Piaget's Constructivism, postulates that children are able to build their own knowledge through the use of computers (Borges et al., 2015, p. 26)

In summary, according to Becker (2009), Piagetian constructivism is a process of knowledge construction, which takes place through quality interactions with the physical and social environment. Currently, we are faced with a universe of TDIC, therefore, Google Classroom presents itself as a mechanism of possibilities for the teaching and learning process where the student is the protagonist of the acquisition of knowledge and the teacher is a mediator of the learning process. building skills and abilities.

References

[1.] BECKER, Fernando. What is constructivism? 2009. Available at: <https://edisciplinas.usp.br/pluginfile.php/301477/mod_resource/content/0/Texto_07.pdf>. Accessed on: 12 Nov. 2021.

[2.] BORGES, Karem et al. Possibilities and challenges of a Maker Space with educational objectives. Educational Technology, vol. 1, p. 22-32, 2015. Available at: <http://abt-br.org.br/wp-content/uploads/2017/03/210.pdf#page=23>. Accessed on: 26 Nov 2021.

[3.] DOS ANJOS, Alexandre Martins. Information and communication technologies, electronic learning and virtual learning environments. Distance education: virtual learning environments, p. 11-57, 2009. Available at: <http://abt-br.org.br/wp-content/uploads/2017/03/210.pdf#page=23>. Accessed on: 26 Nov 2021.

[4.] FLAVEL, John H. A. Piaget's Developmental Psychology. São Paulo: Pioneira, 1975. Available at: <file:///C:/Users/VIP/Downloads/Cap2%20Flavell%20(1).PDF>. Accessed on: 16 Nov 2021.

[5.] PIAGET, Jean. Genetic psychology problems. Rio de Janeiro: Forense, 1973.

[6.] PIAGET, Jean. Sociological Studies. São Paulo: Companhia Editora Florense, 1973.

[7.] PIAGET, Jean. Psychology and Epistemology: For a Theory of Knowledge. Rio de Janeiro: University Forensics, 1973.

[8.] PIAGET, Jean. The balancing of cognitive structures. Rio de Janeiro: Zahar, 1976.

[9.] PIAGET, Jean. Reflective Abstraction: logical-arithmetic relations and order of spatial relations. Porto Alegre: Medical Arts, 1977.

[10.] PIAGET, Jean. The birth of intelligence in the child. 3rd ed. Rio de Janeiro: Zahar, 1978.