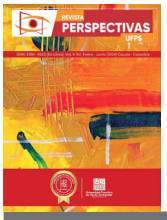

REVISTA PERSPECTIVAS UFPS

Original Article https://doi.org/ 10.22463/25909215.3933

The pedagogical model perceived in the educational practice in the area of Technology and Information Technology in an educational institution in Barranquilla

El modelo pedagógico percibido en la práctica educativa en el área de Tecnología e Informática en una institución educativa de Barranquilla

Jhan Carlos Herrera Pérez[1], Efraín Darío Ochoa Londoño[2], Jefferson Tello Zuluaga[3]

[1]Doctor of Education, jhan4445@hotmail.com, ORCID: https://orcid.org/0000-0003-1158-3494, Institución Educativa Distrital Reuven Feuerstein, Barranquilla, Colombia.*

[2]Doctor of Education, efrain.ochoa@iejva.edu.co, ORCID: https://orcid.org/0000-0001-5851-1880, Institución Educativa Joaquín Vallejo Arbeláez, Medellin, Colombia.

[3]Master in Literature, jefferson.tello@upb.edu.co, ORCID: https://orcid.org/0000-0002-3054-4290, Universidad Pontificia Bolivariana, Medellin, Colombia.

How to Cite: Herrera Pérez, J. C., Ochoa Londoño, E. D., y Tello Zuluaga, J. (2024). El modelo pedagógico percibido en la práctica educativa en el área de Tecnología e Informática en una institución educativa de Barranquilla. *Perspectivas,* vol. 9, no. 1, pp. 127-140, DOI: 10.22463/25909215.3933.

Received: Julio 17, 2023; Approved: Noviembre 17, 2023

Palabras clave:

Modelo pedagógico, Entornos Virtuales de Enseñanza y Aprendizaje,

RESUMEN

El modelo pedagógico dentro de una institución educativa permite orientar los procesos de enseñanza y aprendizaje, las relaciones entre docentes y estudiantes, los contenidos, las estrategias y metodologías utilizadas, la evaluación, etc. El objetivo de esta investigación es develar los procesos de enseñanza y aprendizaje desarrollados a través de Entornos Virtuales de Enseñanza y Aprendizaje -EVEA- en el área de tecnología e informática desde la percepción de los actores pedagógicos. Para realizar esta investigación, se utilizó una metodología bajo el paradigma interpretativo, enfoque cualitativo, el método de la teoría fundamentada, la técnica de la entrevista en profundidad y como instrumento un guion de entrevista. Los resultados muestran que se presenta una coexistencia de diversos modelos pedagógicos en la práctica educativa de los docentes. Se concluye que es necesario invertir en formación docente que coadyuve a proporcionar una educación de calidad representada en estudiantes competentes, holísticos, autónomos, capaces de afrontar retos y obstáculos que les ayuden a resolver las necesidades de las sociedades actuales.

Keywords:

Pedagogical model, Virtual Teaching and Learning Environments, Technology and Information Technology, Technological Infrastructure.

ABSTRACT

The pedagogical model within an educational institution allows guiding the teaching and learning processes, the relationships between teachers and students, the contents, the strategies and methodologies used, the evaluation, etc. The objective of this research is to reveal the teaching and learning processes developed through Virtual Teaching and Learning Environments -EVA- in the area of technology and computing from the perception of the pedagogical actors. To carry out this research, a methodology was used under the interpretive paradigm, qualitative approach, the method of grounded theory, the in-depth interview technique and an interview script as an instrument. The results show that there is a coexistence of various pedagogical models in the educational practice of teachers. It is concluded that it is necessary to invest in teacher training that helps to provide a quality education represented in competent, holistic, autonomous students, capable of facing challenges and obstacles that help them solve the needs of current societies.

***Corresponding author.**
E-mail address: jhan4445@hotmail.com (Jhan Carlos Herrera Pérez)

Introduction

It is no secret that the different areas of knowledge in educational institutions are leveraging on information and communication technologies for the development of their academic processes, since students are immersed in a digital era, they are digital natives, a term coined by Prensky and which can be defined according to Jara and Prieto (2018) as those "who have grown up hand in hand with technology with innate skills in the language of the digital environment" (p.93). Therefore, teachers must master them, since the contents are attractive and they can make use of different tools that make it possible to improve the teaching and learning process of any subject; but it is not enough, it is important to articulate these technologies with the pedagogical model of the institution to have differential advantages such as increased student motivation, teamwork and access to multiple sources of information, among others.

Nowadays, the new technologies are becoming vertiginously embedded in society in different areas of daily life, the school is called to leverage this new dynamic marked by society and that is why mechanisms must be implemented to connect the ways of teaching with ICT - Information and Communication Technologies. The problem arises when educational institutions are not clear about how to implement the pedagogical model reflected in the PEI -Institutional Educational Project-, which is the backbone of a school.

De Zubiría et al., (2008, p.2) in their research, "after applying a survey to more than 1000 teachers in the country, which allows identifying the predominant model in each of them, showed a partial predominance of the dialogic model in the educational practices of teachers in Colombia", the results show that in public institutions the practice of the constructivist pedagogical model predominates.

It is important to know if the classes are being developed according to the pedagogical model framed within the institutions in the area of technology and informatics and that it manages to leverage the other areas of knowledge in the transversality that should be given in the school. It should be determined which is the predominant pedagogical model according to the perception of students, teachers and academic coordinator; this in order to know if there is concordance with what is established in the PEI of the educational institution.

Now, in the case of the district educational institution Reuven Feuerstein, this study aims to unveil the underlying pedagogical model in the area of technology and computer science from the use of Virtual Teaching and Learning Environments -EVEA-. In the mentioned context, the problem is associated with the linkage of the pedagogical model implemented with respect to the PEI, and, in relation to the area of technology and computer science, since it promotes the use of educational technology, which implies that this area should be assumed by a professional teacher who has mastery of ICT and pedagogical skills.

Therefore, it is necessary to reflect some of the important characteristics of the pedagogical models; such as the traditional, constructivist and critical, as well as the consultation to the teacher of the technology and computer area, academic coordinator and students of the district educational institution Reuven Feuerstein of the city of Barranquilla, will allow to generate interpretations on the teaching and learning processes in terms of methodologies, strategies, resources that are used in the educational practice, to reach an understanding of the presented problematic and to raise some orientations that allow to help the performance of the teacher and this is reflected in the results that the students obtain in the national and international tests; As well as the strengthening of the competencies that will allow them to solve the problems of their environment and to have skills that will make it possible to efficiently face the working world.

The application of pedagogical models in educational institutions has been studied by various authors, among them we have Valenzuela (2017), in his thesis, focused on the analysis of the evaluative practices of teachers, the factors that affect them. The author ends up finding an eclectic pedagogical model, since some elements of these main pedagogical models are combined.

From the national context, the study of Bonza and Onatra (2018) in their thesis, sought to identify "key elements for the design of a pedagogical model that guide the teaching and learning processes; likewise, to analyze aspects of organizational order, teaching and learning processes and the necessary technological infrastructure" (p.26), which allows providing a comprehensive vision for the development of an effective pedagogical model adapted to current needs.

There are several pedagogical models that can guide the teacher's educational practice using ICTs and primarily Virtual Teaching and Learning Environments, taking into account the characteristics and particularities of the students. These could range from those that are student-centered to those in which the teacher is the main actor in the educational process. Some positive aspects of the traditional model are reflected in those courses of a technical nature where activities that make use of procedures that have to be executed sequentially and are reinforced with the repetitive practice of the same.

On the other hand, there are some aspects where the traditional model presents certain characteristics such as those mentioned above. Samper (2019, as cited in Buenaño et al., 2021) mentions the following:

The traditional teaching model of education does not allow for the development of many 21st century skills; conceived for another era, it is largely based on rote learning, active instruction by the teacher, and passive reception of knowledge by the student. In this model, students are unlikely to develop their own initiative, creativity and learn to collaborate with others (p.695).

This highlights the need to review and update pedagogical models to foster skills and competencies relevant in today's world, such as the ability to think critically, creativity, collaboration and autonomy.

Regarding the constructivist pedagogical model, several authors consider the use of ICT to be relevant. For example, Silva et al. (2016, as cited in Rodríguez et al., 2018), state that:

Specialists conceive this learning model as a viable alternative to potentiate students, every time that this type of environments mediated by technology provide not only knowledge but other ways of socializing it from the structuring of didactic sequences that consider skills, knowledge and understandings linked to creativity, critical thinking and collaboration. (p.44)

This highlights the capacity of technological learning environments to enrich the educational experience by promoting essential skills and competencies for the 21st century.

On the other hand, the critical pedagogical model promotes freedom, autonomy and respect for the different positions that the student can adopt and also that the student is the main and fundamental actor helping to solve the problems and needs of society. Likewise, they should observe the realities of their context, having the ability to analyze through observation the inequities and propose efficient solutions seeking social justice, then to promote this, according to Grijalba et al. (2020), it should aim for:

The formation of socio-critical thinking in the teaching-learning process can respond to scenarios in which students can formulate questions that lead to well thought out and reasoned answers. These reasonings allow being part of a process that involves reflection in a learning environment, as well as problem solving as an alternative for the

transformation of the student's own reality, as well as transformation for their social environment. (p.72).

The aforementioned highlights the importance of developing in students the ability to question, reflect and critically analyze the world around them. By fostering socio-critical thinking, students are empowered to become agents of change in their environment and contribute to transforming society.

Methodology

Considering the purpose of the research, this article was framed within the interpretative paradigm, which according to Miranda and Ortiz (2020) "is based on subjectivities and allows for the understanding of the world from the appropriation that individuals make of it" (p.9); that is, subjectivities are recognized in which emotions, thoughts, postures, ideas are expressed from various fields such as social, cultural, political and historical, which offers an overview of reality from different perspectives. In addition, a qualitative approach was used. According to Mejía (2007, as cited in M. Nizama and L. Nizama, 2020), this approach: "studies different objects to understand the social life of the subject through the meanings developed by the subject" (p.77). The method selected was grounded theory, in a process of identifying categories that emerged from the data provided by the key informants.

Participants or key informants

The participants were essentially a teacher in the area of technology and computer science, an academic coordinator and four students in the tenth and eleventh grades, i.e. belonging to the academic secondary education of the District Educational Institution Reuven Feuerstein. A teacher in the area of technology and computer science, who will be referred to hereinafter as D1; the academic coordinator, who will be assigned the name C1; the students, who will be assigned the codes E1 to E4. The sample was selected intentionally in order to understand the study phenomenon, the educational community in which this institution is framed belongs to low socioeconomic strata.

Collection of information

For the present research, the in-depth interview technique was considered by means of an interview script, oriented with some questions concerning the characteristics of the pedagogical model, the EVEA, the infrastructure of the computer room and the Institutional Educational Project -PEI- of the educational institution. This technique is valuable, since through a dialogue among several people it allows to obtain important, detailed information on a given topic. In this sense, Feria et al. (2020) state that the interview is a "way of inquiry of empirical level, of administered character, through the use of an interpersonal communication with one or a group of subjects, in order to know, from an objective" (p.72), undoubtedly very relevant to address this research.

Six interviews were conducted: one with the teacher, one with the coordinator and four with students; all of them lasted approximately thirty minutes each. The guiding questions were the following: How are the teaching and learning experiences in terms of team work, individual, autonomous, participative, what are the activities implemented in the area of technology and computer science, what are your impressions about the communication between teacher and students using a virtual learning platform, how is the learning process of the students in the area of technology and computer science evaluated?

Procedure

The respective contacts were established directly with the rector of the educational institution via WhatsApp and then personally, expressing the interest in developing the research, for which he generously granted permission to advance it. Then we proceeded to dialogue with the coordinator; on the one hand, because he would be part of the

interviewees and on the other hand, to establish the time to develop the interviews. The interviews were conducted personally in the coordinator's office and in the teachers' room; in the case of the coordinator and the technology and computer teacher respectively; and in the case of the students, the interviews were conducted in the computer room of the educational institution. At the beginning of each interview, emphasis was placed on the guarantees of confidentiality of both personal and institutional data.

They were also informed that the information provided would appear in an article that would be submitted to a scientific journal for subsequent publication.

Data analysis

The recordings made during the interviews with each key informant were transcribed; the data were then sorted and related. The codes were extracted, then those that expressed the same idea were grouped in a process called open coding where categories were established, and to determine these, a triangulation by researchers was used, which Jara et al. (2021) in which the transcripts are reviewed and their content discussed (p.8). Thus, the two researchers in this study independently carried out the open coding process, the results obtained by each one were presented, and the categories were adjusted according to the consensus reached by the members of the group.

From open coding, axial coding is performed. Here the relationships between the categories are established, and finally, selective coding where, according to Vives and Hamui (2021), the "highest level of abstraction generates the central category or categories that link the categories identified when making sense of the data and their relationships" (p.102), which allows the theory to be integrated, delimited and refined, thus establishing a central category.

Results and Discussion

Pedagogical models: traditional, constructivist, critical, among others, represent different approaches in education. Each model has its own characteristics, principles and pedagogical approaches that influence the way teaching and learning take place. Understanding these models can contribute to enriching educational practices, adapting them to specific needs and contexts, and promoting more meaningful and effective learning experiences for students. Table I below shows the open and axial codes derived from the interviews conducted.

Table I. Open-Ended, Axial Codes Generated Through the Interviews

Open source	Axial Codes
Teaching as knowledge transfer Mechanical learning -memory and repetition-. Master class Reference book contents Quantitative assessment	**Traditional Model**
Prior knowledge Collaborative learning Teacher facilitator Conceptual, procedural and attitudinal contents Significant topics for application	**Constructivist pedagogical model**
Teaching for dialogue and discourse Learning by formulation and problem solving Questioning teacher Comprehensive and flexible content Application of knowledge in context	**Critical pedagogical model**
Multimodal teaching Holistic teacher Multiple sources of information Diagnostic, summative and formative evaluation	**Eclectic pedagogical models** **Axial Codes** **Traditional Model**

Through the analysis of the data, the main category or selective code-named Characteristics of the pedagogical models emerges, which is developed by the need to establish clear criteria to determine where the pedagogical model leans towards in the educational institution essentially in the classes of the area of Technology and Computer Science. On the characteristics of pedagogical models, Ramirez (2010 as cited in Bustamante, 2017) enunciates the following components: "a planning, contents, teacher's role, methodology, evaluation" (p.14). Then, from this category, subcategories concerning the different models that were addressed in the

theoretical framework of this research are derived; these subcategories are: the traditional model, constructivist model, critical model and finally the eclectic models.

In each of the subcategories mentioned above, some codes were obtained, which is why a description of each of them is outlined in each of the subcategories.

The first subcategory that appears is the Traditional Model, which according to Cantor and Altavaz (2019) pursues the "formation of the individual's character and molding, through will, virtue and rigor of discipline, the ideal of humanism and ethics" (p.2); now, according to the above and in reference to the code Teaching as knowledge transfer, it is important to highlight that it is a process in which several educational actors interact, including students and teachers. It consists of the transmission of certain knowledge, knowledge, among others, on a given subject that, through the intervention of the teacher, ensures that students learn certain eminently theoretical concepts and can reproduce them faithfully as they were taught or as they are written in a book.

With respect to this type of teaching, many teachers opt to use it, either because they believe they have enough knowledge of the area of knowledge, according to Moreno (2020) which states that "... since they are experts in specific areas, but this ends up being insufficient to ensure that the teaching-learning process is adequate" (p.19), in this regard the informant comments as follows:

The hustle and bustle of life, do not leave time to plan classes and as one already knows everything or well most things, one gives a speech and talks and talks during the whole class, it is necessary to transfer the knowledge that one dominates, this is sometimes necessary since one repeat and the students are left with something. (D1).

In the same way, the opinion of the teacher and the coordinator about learning in traditional models is extracted, which is conceived as the transmission of knowledge by the educator and where the student is a passive being, hence the code: Mechanical learning -memory and repetition-, as evidenced in the following comments:

Something that I would not do in my classes would be for students to learn by heart, reproducing everything that one exposes in class, rather than repeating, knowledge must be transformed and put into practice, which is called innovation. (D1)

It is very important that the teacher helps to activate the memory of the students, many procedures are learned in all areas including Technology and Computer Science through repetition, the teacher must explain that this is how it is done and the student must reproduce, there is no other way, like when you learn to drive a mechanical car. (C1).

Next, the Master Class code is exposed, which according to Pinilla (2011) and Brown and Manogue (2001, as cited in Gatica and Rubí, 2021) state that its purpose is "to present a topic by means of the general review of different perspectives, update knowledge and describe the results including the experience to provoke in the student the motivation to [explore the content] in greater depth" (p.3), it is undoubtedly one of the most deeply rooted practices in education, although there are those who think that the student can become a mere receiver of knowledge. The following commentary by the coordinator highlights the code presented:

Here at school, no one gives a master class, because at the beginning of the year we insist on that, we have to use participatory pedagogies that generate discussion; in my time, it was a master class, but there were no technologies like now. (C1)

The following is the code Contents of the reference book. In this, the two teachers and a student intervened, regarding the importance of the book

for the teacher in his classes, Córdova (2012) who defines it as "a technical resource, which is legally recognized and offers the user a part of the scientific, social and cultural culture of his time" (p.200), so being a work product of a research, it can provide valuable elements as a guide for the teacher. The comments in this regard were the following:

I have never seen the teacher with a book, he is always with his laptop and sometimes with some papers. (E1)

Years ago, I used a book for the sixth grade, about the history of computers, the parts of the PC and those topics, for the rest none, now I have everything on the platform. (D1)

The last code that refers to the traditional model subcategory corresponds to Quantitative evaluation, which Ochoa and Moya (2019) define as that which "measures the results obtained in an academic program or in a given class, through tests or objective tests with mathematical and statistical procedures" (p.44), i.e., a numerical rating scale is taken into account and a grade is assigned to it, accounting for the achievements and progress in a given activity. In relation to this code, teachers, students and coordinator refer to the following:

You send the activities through the platform, then the teacher looks at them and, depending on how you have done, gives you a grade. Once I saw when I complained that he has a spreadsheet where he has all the grades (E4). (E4).

The institution has an evaluation system that has an evaluation scale equivalent to the national scale, that is, it is quantitative, it goes from 0 to 100, and for this there is a specific format where the teachers record the grades (C1). (C2).

Calculating the grades is simple, students submit the activities, they are graded on the platform, there I download an Excel spreadsheet and there I add up all the grades and average them. (D1)

On the other hand, we find the subcategory Constructivist pedagogical model in which the student constructs his own knowledge from the experiences of the context, his role is active, he incorporates the new concepts to his previous knowledge. In the context of the educational institution, the teacher has knowledge about constructivism, reflected in the first code that appears, which is Previous knowledge. In this regard, Pérez (2019) states that:

It is a principle of constructivist pedagogy that, based on cognitive theories, states that the subject is capable of constructing his own knowledge. When entering a school, level or grade, he already has knowledge, which allows him to start a new learning process and defines the teaching process that will be developed by the teacher; this process does not start from scratch (p.2). (p.2).

That is, the student possesses certain knowledge, product of his past experiences, these may be hindering or on the contrary may contribute to a better understanding of the new knowledge that is being presented; this concept comes from a broader one which is the significant learning theory postulated by David Ausubel, in this according to Ferreira et al. (2019) state that in this "the new information is integrated, relating to previous knowledge, in the general structure of knowledge" (p.3), which can be used for the personal benefit of each of the students and enrich the dynamics of the class with the diversity of opinions of the rest of the classmates. Some expressions by the teacher were the following:

One of the first things I do before starting a topic is to ask about aspects related to what is going to be explained, they always have some idea and I try to get them to share it. The pedagogical model that the institution manages has to do with constructivism, so we start with a problem question and activate previous knowledge, we resort to elements of the context. (D1)

Likewise, the Collaborative Learning code, where students are encouraged to work in teams, thus enabling them to interact with other classmates, define roles, improve oral communication, establish agreements, among others. According to Lizcano et al. (2019) state that in the field of ICT "individual contributions are presented collectively mediated by technological tools that allow the socialization of knowledge among students; thus, these practices are redefined for the fulfillment of common objectives" (p.6). This is how students express themselves in this regard:

The teacher puts us to work in groups, each one does a part, because there are not enough computers and each one takes turns (E4). (E4)

Now during the pandemic, it is almost impossible to work in groups because many do not have internet, cell phones or computers, it is difficult to work together. (E2)

We return to classes, but only 9 to 12 students per class come, they have to have distance, it is impossible to work in groups. (D1)

Likewise, with regard to the facilitator teacher code, whose characteristics stand out the most is to manage student learning, being able to bring out the knowledge they possess, must recognize the capabilities, skills of each of the members of the course, help them to empower themselves and acquire responsibilities, for this he urges students to be persevering, develop study habits, etc. In this regard, González and Lugo (2020) mention some important characteristics such as "empathy, which facilitates relationships, direction and achievement of objectives with their students; leadership, in the empowerment of the teaching-learning process; and time management, given the number of groups of students in their charge" (p.249), this is evidenced as expressed by the coordinator:

The teachers in the area of Technology and Computer Science and all teachers in general are facilitators of the process, they collaborate with the students so that they can build their own knowledge (C1) (C2).

As for the code Conceptual, procedural and attitudinal contents, it arises from several concepts expressed by students, coordinator and teacher, which are manifested in the following way:

The teacher places in the application where you must look for certain concepts from a reading that he places or on the internet, explains the topic, for example, binary numbers, what are they for and likewise, with the exercise with its procedure and everything. (E3)

The teachers of the institution are integral, in their classes they present the concepts of the class, if it is practical they explain the procedure and fundamentally in values as is the motto of the school "an education for the transformation of the person". (C1)

My class is practical and I go to the point, I explain an exercise how it should be done and I give them a similar one with a little degree of difficulty (D1).

In addition to presenting content, the evaluation aspect is important, with the purpose of observing progress and making the necessary adjustments so that the student reaches the proposed objectives in a given subject. From there arises the code Significant topics for application, which according to Tigse (2019) states that: "it focuses on the student's capacity for analysis-synthesis and is based on the following aspects: (...) Problem solving, acquired knowledge and ability to apply them in real situations" (p.27), so it should focus on topics according to the needs of the context and particularities of the students. The following excerpts illustrate this:

We do not do exams as such in computer science, neither written, nor on the platform, neither before,

nor now, nor ever; only activities, almost all in Word, although the topics if very good and current. (E2)

The way in which knowledge is evaluated is through activities; no exams are given, although the platform allows it. We try to make the topics meaningful for the students, although we would like it to be more practical, it is not possible, there is no desk and the video beam is damaged (D1).

On the other hand, the subcategory Critical pedagogical model appears, which refers to a model that seeks to empower the student in the social problems of his context. In this sense, Ramírez (2008) states that "it leads the subject to read reality, especially in terms of detecting cultural problems and social inconsistencies -repetitive education, political corruption, delinquency, etc.-" (p.109). Within this subcategory, the first code corresponds to Teaching for dialogue and discourse, in which teachers and coordinators express themselves as follows:

In the classes, an atmosphere of participation should be fostered, students should be taught to dialogue, since it is an important aspect in their development as citizens, they should be confident, respect the opinion of others, listen attentively, and speak in an appropriate tone. (D1).

It is established in the IEP that the student should be critical, the teacher asks guiding questions and encourages discussion, that is, the student will be able to be a leader and make speeches in different scenarios (C1). (C2).

The above reveals that there is a willingness on the part of teachers and school administrators to foster in students a spirit of leadership and participation in their context. On the other hand, learning by formulation and problem solving is observed, according to Bailin (2002, as cited in Zona and Giraldo, 2017), they state that "it is necessary to recognize that the space where critical thinking takes place is problem solving" (p.124). In relation to this code, students and teachers express themselves as follows:

Before, the classes were purely questions, but now when we go in again the teacher puts problems about the neighborhood store and Excel spreadsheets (E2).

The change of how it was in the classroom, then to virtuality and now in this last stage of alternation, this last one is the best, few of these students and everyone is here, we formulate and solve problems of daily life. (D1).

While the role to be played by the teacher in this subcategory of critical model is reflected, in the code Questioning teacher, which according to González (2014, as cited in Zambrano et al., 2018) state that "a teacher with critical thinking constantly doubts what he/she knows, does not seek to impose truths and weakens his/her own dogmas and paradigms..." (p.123). In this sense, teachers comment in this regard:

'You have to question students whether the possible solutions to a problem are the most appropriate, whether there are other ways to solve them in a better way.' (D1)

Now, the next code is that of Integral and Flexible Content, which in the critical model according to Toruño (2015) "the selection of content (...) is the scenario of confluence of curricular sources, foundations, social and subjective structures, all within a framework of power relations and extension-resistance of a hegemonic project" (p.4). From this frame of reference, the teachers and the coordinator express themselves as follows:

The content in the area of Technology and Computer Science is varied and changes depending on the results and needs of the students, there are times when peace is discussed and other times when nature is discussed, it is necessary to articulate them with the other subjects. (D1).

In the area and class plans there is a variety of content, organized by period, the institution does not

impose, each teacher is autonomous and in that clear freedom they take into account the transversality with other areas of knowledge, the needs of classmates on some topics that can be explained in common. (C1).

The last code of this subcategory corresponds to an evaluation by Application of knowledge in context, where according to Ossa et al. (2018) the ability to "know how to formulate problems and vital questions, have clarity and precision regarding information, accumulate and evaluate relevant information, use abstract ideas to interpret that information effectively, reach conclusions and solutions, testing them with relevant criteria and standards" (p.5) is evaluated. In this sense, students state the following:

These last classes have been very good, clear concepts that can be used in real life (E3).

Finally, there is the subcategory Eclectic models, in this one the teacher according to Salazar and Batista (2005) inquires about:

The different learning styles that characterize each of the participants. Based on the findings from the preliminary diagnosis, he/she reviews the inventory of available instructional strategies derived from different theoretical approaches, in order to determine which combination of strategies fits the particular situations detected. (p.5)

This is why it can take up postulates from various constructivist referents, the traditional model, the critical model, adapting it to the real needs of students. The first code that is shown is multimodal teaching, where it is taught in different ways, in this regard Guzmán and Escudero (2016) mention that it is necessary to "obtain new means, resources, technologies, methodologies, activities, strategies, didactic techniques, etc., more appropriate to meet each specific learning need" (p.13). In this regard, a teacher expresses the following:

I teach with different strategies depending on the course I have to teach, with the younger ones I have to be rigid, as a kind of dictator and always serious, and as the grades advance one can apply more the pedagogical model that the school says, but in reality one does it in different ways, sometimes it is necessary to be masterful, sometimes in line, round tables, sometimes one takes into account the attitude and others only the note, the sums and that's it (D1).

On the other hand, the code Collaborative learning and repetition refers to a combination of some learning techniques and strategies of the constructivist and traditional models. This can be seen in what is expressed by students and the teacher, as follows:

We work in different ways. Sometimes the teacher organizes us in groups, but sometimes he leaves us a guide where there are concepts that have to be studied for the next class and he asks about them and takes notes. (E2)

It is important from the area of Technology and Informatics that students mechanize certain procedures that have to be done sequentially to obtain an optimal result. (D1)

In addition to the above, there is the holistic teaching code, in which teachers express that their relationships with students depend on the characteristics of the group and, depending on this, they act in a certain way. In this sense, teachers refer to themselves as follows:

Sometimes, it is necessary to punish or reward to reinforce behavior at other times the pedagogy of love. The sixth grade is a serious matter, there they have to be disciplined and given enough activities to keep them busy all the time, but with eleven this is relaxed because they already know the consequences of misbehaving and they know how the methodology works, so one looks for other strategies such as

teamwork, debates, that is, holistic in that sense. (D1).

In the same way, the teacher's opinion on the contents is extracted, who conceives it as that which is derived from different types of documents, dealing with various topics. From there, the code, Contents multiple sources of information, emerges, which is evidenced in the following commentary:

The area plan is built from the curricular guidelines of technology and informatics, but the contents that are there one can consult internet documents, books, videos, audios and place them to the students, there is a lot of information available. (D1)

Finally, regarding the evaluation part, it is observed that a series of strategies are combined to look at the student's integral process. For this reason, the code Diagnostic, summative and formative evaluation appears, where coordinators, students and teachers express themselves as follows:

Teachers have a report card. There they must evaluate the student, it has a section where they take the students' notes, another where the student self-evaluates and another where the students evaluate each other; that is, it is formative (C1). (C2).

Now in turn the teacher asks us about math concepts that are useful to solve the binary system exercises, that is important because some of them do not know or forgot. (E2)

The evaluation takes into account the diagnostic aspect where it is observed what the student knows about the subject, each activity has its grade, but the process is also valued and also the attitudinal part. (D1)

Educational interventions today are based on technological means and the EVEA, these can work as a complement to constructivist, socio-critical models, promoting roles of autonomy, applicability of learning according to the interests and needs of each student and the context.

Conclusions

The objective of this study was to investigate the conceptions of different educational actors, teachers, coordinators, students, about the teaching and learning processes in the district educational institution Reuven Feuerstein, with the purpose of observing the presence of the predominant pedagogical model in it. The results indicate that from the point of view of the key informants interviewed, there is a heterogeneity of pedagogical models; that is, an eclectic model.

This is reflected in some comments describing practices that respond to a traditional model, where master classes, routine activities, resources used in a conventional way, the teacher assumes an authoritarian posture, privileging memorization and disciplinary mastery. Likewise, some characteristics of the constructivist model are shown: previous knowledge, collaborative learning, teacher facilitator of the processes, acquisition of conceptual, procedural and attitudinal contents, in addition to the fact that these can be applied in daily life to solve problems of the context.

Hence, the study reveals certain aspects that correspond to the critical model, based on dialogue within the classroom, learning through the formulation and resolution of problems, flexible content, which will allow students to have autonomy in making decisions regarding what they want to learn and how to achieve the objectives set, in addition to being able to problematize the realities; for this they must have the capabilities, skills and abilities to participate in the social changes required by their context.

Finally, it is important to highlight the importance of the correspondence of the pedagogical model proposed in the PEI with what is implemented in the educational practice in the classroom. In this case, we found that the educational establishment is oriented

to the critical-social model, which is consistent with the results. And since certain aspects of the critical and constructivist models are taken up again, it is then necessary to adjust some teaching processes and this is achieved to a great extent in the training of the educational community and essentially in teacher training, which will have a significant impact on substantial improvements in student learning.

Acknowledgements

We express our gratitude to the Reuven Feuerstein Educational Institution in the city of Barranquilla; to its teachers for their collaboration in terms of time and willingness to conduct the interviews, as well as to the teachers' directors for allowing us to carry out this research.

References

Bonza, E., & Onatra, E. (2018). Caracterización del modelo pedagógico para la modalidad virtual en la Corporación Tecnológica de Bogotá. https://repository.libertadores.edu.co/bitstream/handle/11371/1888/bonza_esthella_2018.pdf?sequence=1&isAllowed=y.

Buenaño, C., Perugachi, N., & Molias, L. (2021). Las TIC en el proceso de transformación educativa. De la educación presencial a la educación a distancia. *Polo del Conocimiento*, 6(9), 687-706. doi: http://dx.doi.org/10.23857/pc.v6i9.3073.

Bustamante, M. (2017). Modelos pedagógicos. Fundación Universitaria del Área Andina. https://digitk.areandina.edu.co/bitstream/handle/areandina/1304/Modelos%20pedag%C3%B3gicos.pdf?sequence=1&isAllowed=y.

Cantor, J., & Altavaz, A. (2019). Los modelos pedagógicos contemporáneos y su influencia en el modo de actuación profesional pedagógico. http://scielo.sld.cu/pdf/vrcm/n68/1992-8238-vrcm-68-e19.pdf.

Córdova, D. (2012). El texto escolar desde una perspectiva didáctico/pedagógica, aproximación a un análisis. *INVESTIGACIÓN Y POSTGRADO,* 27(1), 195-222. https://www.revistas-historico.upel.edu.ve/index.php/revinpost/article/view/1929.

De Zubiría, J., Ramírez, A., Ocampo, K., & Marín, J. (2008). El modelo pedagógico predominante en Colombia. https://piadproyectosformativos.files.wordpress.com/2012/03/el-modelo-pedagogico-predominante-en-colombia.pdf.

Feria, H., Matilla, M., & Mantecón, S. (2020). La entrevista y la encuesta: ¿métodos o técnicas de indagación empírica? *Didasc@lia: Didáctica Y educación,* 11(3), 62–79. https://revistas.ult.edu.cu/index.php/didascalia/article/view/992.

Ferreira, M., Olcina, G., & Reis, J. (2019). El profesorado como mediador cognitivo y promotor de un aprendizaje significativo. *Revista Educación*, 2019, 43(2). https://doi.org/10.15517/revedu.v43i2.37269.

Gatica, M., & Rubí, P. (2021). La clase magistral en el contexto del modelo educativo basado en competencias. *Revista Electrónica Educare*. Vol. 25(1) enero-abril, 2021: 1-12. https://www.scielo.sa.cr/pdf/ree/v25n1/1409-4258-ree-25-01-321.pdf.

González, L., & Lugo, C. (2020). Fortalecimiento de la práctica docente con Learning Analytics: estudio de caso. *Praxis & Saber*, 11(25), 227 - 254. https://doi.org/10.19053/22160159.v11.n25.2020.9075.

Grijalba, J., Mendoza, J., & Beltrán, H. (2020). La formación del pensamiento sociocrítico y sus características: necesidad educativa en Colombia. *Universidad y Sociedad*, 12(1), 64-72. http://scielo.sld.cu/pdf/rus/v12n1/2218-3620-rus-12-01-64.pdf.

Guzmán, T., & Escudero, A. (2016). Implementación del Sistema Multimodal de Educación de la Universidad Autónoma de Querétaro, México. *EDMETIC*, 5(2), 7-28. https://doi.org/10.21071/edmetic.v5i2.5774.

Jara, N., & Prieto, C. (2018). Impacto de las diferencias entre nativos e inmigrantes digitales en la enseñanza en las ciencias de la salud: revisión sistemática. *Revista Cubana de Información en Ciencias de la Salud* 2018; 29(1):92-105. http://scielo.sld.cu/pdf/ics/v29n1/a7_1158.pdf.

Jara, V., Malagueño, T., Maulen, M., Sulayman, E., & Wilke, T. (2021). Estudio cualitativo de la percepción de la experiencia y significado del aprendizaje por modalidad virtual en estudiantes de primer año de Medicina de la Universidad del Desarrollo durante el primer semestre del 2020. *Revista Confluencia,* 4(1), 7-12. https://revistas.udd.cl/index.php/confluencia/article/view/575.

Lizcano, A., Barbosa, J., & Villamizar, J. (2019). Aprendizaje colaborativo con apoyo en TIC: concepto, metodología y recursos. magis, *Revista Internacional de Investigación en Educación*, 12 (24), 5-24. https://doi.org/10.11144/Javeriana.m12-25.acat.

Miranda, S., & Ortiz, J. (2020). Los paradigmas de la investigación: un acercamiento teórico para reflexionar desde el campo de la investigación educativa. *RIDE Revista Iberoamericana Para La Investigación Y El Desarrollo Educativo,* 11(21). https://doi.org/10.23913/ride.v11i21.717.

Moreno, S. (2020). La innovación educativa en los tiempos del Coronavirus. *Salutem Scientia Spiritus 2020*; 6(1):14-26. https://revistas.javerianacali.edu.co/index.php/salutemscientiaspiritus/article/download/2290/2863/.

Nizama, M., & Nizama, L. (2020). El enfoque cualitativo en la investigación jurídica, proyecto de investigación cualitativa y seminario de tesis. *Revista VOX JURIS,* 38(2). https://doi.org/10.24265/voxjuris.2020.v38n2.05.

Ochoa, L., & Moya, C. (2019). La evaluación docente universitaria: retos y posibilidades. *Folios*, 49, 41-60. https://doi.org/10.17227/Folios.49-9390.

Ossa, C., Palma, M., Lagos, N., & Diaz, C. (2018). Evaluación del pensamiento crítico y científico en estudiantes de pedagogía de una universidad chilena. *Revista Electrónica Educare*. Vol. 22(2), mayo-agosto, 2018: 1-18. http://dx.doi.org/10.15359/ree.22-2.12.

Pérez, A. (2019). Conocimientos previos e intervención docente. *Revista Acta Educativa*. https://revista.universidadabierta.edu.mx/docs/Conocimientos%20previos%20e%20intervenci%C3%B3n%20docente.pdf.

Ramírez, R. (2008). La pedagogía crítica. Una manera ética de generar procesos educativos. *Revista Folios*. No 28, pp. 108-119. http://www.scielo.org.co/pdf/folios/n28/n28a09.pdf.

Rodríguez, N., Delgadillo, M., & Torres, S. (2018). Los ambientes de aprendizaje constructivistas como alternativa para generar innovación en la universidad. http://uajournals.com/ojs/index.php/ijisebc/article/view/397/293.

Salazar, L., & Batista, J. (2005). Hacia la consolidación de un enfoque ecléctico en la enseñanza de idiomas extranjeros. Paradigma, 26(1), 55-88. https://doi.org/10.37618/paradigma.1011-2251.2005.p55-88.id328.

Tigse, C. (2019). El constructivismo, según bases teóricas de César Coll. Revista Andina de Educación. 2(1) (2019) 25-28. https://doi.org/10.32719/26312816.2019.2.1.4.

Toruño, C. (2015). Lineamientos curriculares, desde una pedagogía crítica, para la selección y organización de los contenidos en los programas

de estudio del Ministerio de Educación Pública. Revista Actualidades Investigativas en Educación. Volumen 15, Número 2, pp. 1-23. https://www.scielo.sa.cr/pdf/aie/v15n2/a20v15n2.pdf.

Valenzuela, T. (2017). Análisis de un modelo de las prácticas evaluativas en relación con los modelos pedagógicos, las concepciones de evaluación del aprendizaje y las estrategias evaluativas utilizadas por las y los docentes en la Universidad Centroamericana de Nicaragua en 2016. https://repositorio.uned.ac.cr/reuned/bitstream/handle/120809/1789/Tesis%20Tanya%20Valenzuela%20Junio%202018.pdf?sequence=1&isAllowed=y.

Vives, T., & Hamui, L. (2021). La codificación y categorización en la teoría fundamentada, un método para el análisis de los datos cualitativos. *Investigación En Educación Médica*, 10(40), 97-104. https://doi.org/10.22201/fm.20075057e.2021.40.21367.

Zambrano, A., Correa, E., González, H., & Botero, J. (2018). ¿En qué consiste un docente con pensamiento crítico? Caso Politécnico Colombiano Jaime Isaza Cadavid - Colombia. *Revista Plumilla Educativa,* 21(1), 121-145. ISSN: 1657-4672; ISSNe: 2619-1733. https://doi.org/10.30554/plumidaedu.21.2981.2018.

Zona, J., & Giraldo, J. (2017). Resolución de problemas: escenario del pensamiento crítico en la didáctica de las ciencias. *Revista Latinoamericana de Estudios Educativos,* 13 (2), 122-150. http://latinoamericana.ucaldas.edu.co/downloads/Latinoamericana13(2)_8.pdf.