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Meaningful Learning in the University Context

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Abstract---*The research presented here was conducted during the 2023-2024 academic year with students from the University of Guantánamo. Its objective is to propose teaching strategies that promote meaningful learning for students of the Bachelor of Education in Biology in the teaching-learning process of the General Didactics subject. Theoretical and empirical research methods were used, which allowed for its direction and analysis. The research demonstrated the need to promote this type of learning due to its usefulness and durability. As a result of the theoretical systematization and diagnosis, a proposal for teaching strategies was designed to promote meaningful learning in the General Didactics subject. The results were validated through methodological triangulation between the following methods: a socialization workshop, a survey, and pedagogical experience, which allowed us to demonstrate the relevance and feasibility of the proposal.*
Keywords---*learning, meaningful learning, teaching, teaching-learning process.*

Introduction

Learning to learn is one of the pillars declared by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as an institution that greatly facilitates the development of public policies regarding higher education. This approach is closely related to the work presented here; it involves not only providing students with tools that will facilitate their learning, but also making them aware that this learning will transform throughout their lives and that they must be able to assume a leading and critical stance to understand cognitive and abstract processes; that they must continually develop more sophisticated skills and make decisions independently. But none of this is achieved if the content presented is not truly meaningful to the student, thus demonstrating the great need for learning to be meaningful to the learner. To achieve this, it is necessary to have the necessary tools, achieve

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student motivation, and have the constant guidance of the teacher as a facilitator of the teaching-learning process, so that it develops, with the aim is truly making good use of the great meaning it contains (Angela, 2014).

In this regard, it is important to note that meaningful learning is a concept that has been addressed by several authors, as one of the greatest challenges facing teachers is ensuring that students feel truly engaged in their learning process, so that they develop a positive attitude toward learning. To achieve this, they must build on their existing knowledge to acquire new knowledge and truly see its usefulness, as only then will what they learn be truly meaningful (Nithyanandam, 2020).

These are some of the fundamental matrices of this much-heralded concept, which, according to David Ausubel, have an emotional implication. Therefore, students will learn only what they consider valuable; hence, the learner needs to notice the significance of what they are taught.

Many have contributed with their studies to meaningful learning at an international level, but in general, some of the most representative are named, namely: Ausubel (1963), precursor of this theory, Gowin (1986), and Hoffman & Novak (1998).

It is also necessary to highlight the research in the international context of Dávila (2000), Moreira (2005), Coll (1990), and Sacristán (2005), each developing from their specialization of knowledge, the basic concepts that meaningful learning entails, which have served as a starting point for this work.

In the Latin American context, Nieva & Martínez's (2019) research is recognized, where they develop the confluences and ruptures between Ausubel's meaningful learning and developmental learning from the perspective of Vygotsky's historical-cultural approach. This research arrives at a conceptual approximation of developmental meaningful learning from a historical-cultural perspective, which highlights the unity of the affective-cognitive, the potential for personal development, communication with others, joint action, and cultural meanings.

In the Guantanamo educational context, although no studies specifically dedicated to meaningful learning are identified, it is worth highlighting the implementation of other learning studies that are linked to the topic. In this regard, studies with research related to the topic of learning are recognized, such as: (Leonard, 1999), (Dominguez, 2003), (Matos et al., 2004), (Duran, 2015), (López, 2017), (Rojas López, 2022). These last two views are from the perspective of the postgraduate specialty in Psychopedagogical Teaching.

Materials and Methods

Various methods were employed in the research, both theoretical and empirical, as well as mathematical. Specifically, the inductive-deductive approach was employed throughout, from the elaboration and interpretation of the results arising from the application of the instruments to the conception of the proposed teaching actions. Furthermore, the empirical method was fundamental in processing the data obtained in the field, provided by the instruments used throughout the research process. Similarly, methodological triangulation allowed for the integration and comparison of all available information during the evaluation process of the proposed teaching actions for the development of meaningful learning.

Results and Discussion

Throughout the research, other studies were considered, which allowed us to identify both strengths and weaknesses in the teaching-learning process. These were the starting points for the search for solutions to promote meaningful learning among second-year students of the Bachelor of Education in Biology at the University of Guantánamo. To this end, a purposive sample of 15 students and 5 teachers was selected from a population of 27 students and 9 teachers. In addition, the head of discipline was interviewed, and several classrooms were observed. The research was informed by Participatory Action Research (PAR), which not only comprised the faculty but also investigated and influenced them. Ausubel considered the knowledge that the student already possessed to be relevant, and based on that, he developed his theory.

Meaningful learning and retention, based on reception, are important in education because they are the human mechanisms par excellence for acquiring and storing the immense amount of ideas and information that constitute any field of knowledge. Without a doubt, the acquisition and retention of large bodies of information is an impressive phenomenon if we keep in mind, first, that human beings, unlike computers, can only immediately grasp and recall a few discrete pieces of information presented only once and, second, that memory for lists learned by rote and presented multiple times is notoriously limited both in time and about the length of the list, unless they are subjected to intense overlearning and frequent reproduction. The enormous effectiveness of meaningful learning is

based on its two main characteristics: its non-arbitrary nature and its substantiality (non-literal). It was originally conceived as such by Ausubel et al. (1976), as cited in Palmero (2011).

In this definition, the author alludes to the importance of prior knowledge, as students don't arrive in the classroom with a blank slate; rather, they bring with them prior knowledge and experience, elements that teachers can take full advantage of, transform, and turn into meaningful learning (Mendoza-Rodríguez et al., 2024).

Meaningful learning involves questioning and requires the personal involvement of the learner; that is, a reflective attitude toward the learning process and the learning content, leading us to ask ourselves what we want to learn, why, and for what purpose. Thus, a new contribution emerges: its critical nature. "It is through critical meaningful learning that students can become part of their culture and, at the same time, not be subjugated by it, by its rituals, its myths, and its ideologies" (Moreira, 2005).

According to Moreira, the acquisition of new knowledge becomes meaningful when the student relates it to prior knowledge through interaction; this sentiment is present in other theories. However, he emphasizes the involvement that students must have in their learning process. Therefore, not everything taught will be meaningful to the student, but rather, they essentially shape what they consider most useful, and this action then becomes meaningful.

According to Niño Morante et al. (2022), Meaningful learning is the integration of new knowledge into the learner's cognitive structure. It presupposes certain conditions, namely, the presence of initial ideas to relate prior knowledge to the new and, above all, that these are taken into account by the teacher-mediator; the potential significance of the material, that is, logically structured material; and an active attitude, both on the part of the student to learn and the mediator to foster the construction of knowledge. Therefore, it can be said that it is essential to think about things to know them, since their representation implies new connections between them and the person, which make their presence felt to the extent that other relationships are established beyond immediate reality.

However, Castellanos et al. (2002) state that Meaningful learning is learning that, based on the student's knowledge, attitudes, motivations, interests, and prior experience, gives the new content a certain meaning. Meaningful learning fosters the establishment of relationships: relationships between learning processes, relationships between new content and the students' emotional and motivational world, relationships between concepts already acquired and new concepts being formed, relationships between knowledge and life, between theory and practice. Based on this meaningful relationship, the content of new learning acquires true value for the individual, and the likelihood of such learning being lasting, recoverable, generalizable, and transferable to new situations (essential characteristics of efficient learning) increases, as well as becoming part of the individual's system of beliefs (p. 30).

This definition is adopted in this research because it is considered more comprehensive, as it refers to and integrates the fundamental axes that comprise meaningful learning. It links cognitive, affective, volitional, and motivational aspects, as well as their previous experiences. Only then will students be able to relate acquired knowledge to what they already possess and make sense of what they learn, which will serve as a basis for further learning.

Another important concept, related to cognitive structure and necessary for a better understanding of meaningful learning in the university context, is cognitive development, which is characterized by the changes that occur in the subject based on their age and experience, also known as the Social Development Situation.

…the Social Situation of Development, which can be defined as the particular relationship between education and development that occurs in the subject at each period of their life. It is described as the special relationship or combination between external conditions and internal conditions, which gives rise to the new psychological formations specific to each evolutionary stage through which the subject passes (Cruz et al., 2019).

For educational practice, these changes define differences between the learning processes of students at different levels of education, and also in the teaching strategies followed by teachers. In this sense, Ausubel assumes the general stages of human evolutionary development proposed by Piaget.

- A preoperational stage characterized by the acquisition of primary concepts, formed by direct experiences, closely linked to perceptual processes.
- A stage that encompasses concrete operations, which refers to the acquisition of secondary concepts and the use of meaningful secondary abstractions. In this stage, transfer is used as a consequence of new learning.
- A logical-abstract stage, in which the subject bases his reasoning using inductive and deductive methods, occurs from adolescence onwards and is distinguished, according to Ausubel, by the ability to handle verbal relationships, regardless of concrete relationships. With this type of relationship, the subject can form concepts.

Elements that must be taken into account to provide appropriate attention to students according to their age, valuable information that contributes to the quality of the teaching-learning process.

From this emerges the role that motives play in conscious learning. It is not enough for the student to assimilate the significance of the given object (whether practically or theoretically); it is also necessary for them to establish an adequate relationship with what they are studying. This brings us to the education of motives, of the senses; otherwise, this assimilation is only formal and temporary. For example, in order to pass an exam, a student learns and even applies a certain law, theorem, etc. However, since the motive that guides their activity, that lies "behind" their actions, is not purely cognitive (passing a year, etc.), after a short time, the subject can neither apply nor practically remember said content (González, 1995).

Hence, the importance of motives in making learning meaningful to the learner. Thus, if the student isn't motivated by what they're learning, that learning isn't relevant to them; a fact that reflects the importance of motivation in learning.

In line with this, Leontiev 1983, as cited in Álvarez (2003), states that "what is decisive is the place that knowledge occupies in the life of the individual, whether it constitutes for him a part of his real life or only an external condition, imposed from outside." From this, derive the relationship between the cognitive and affective spheres of the individual, as indispensable elements that make up the personality of the individual.

On the other hand, it is necessary to conceptualize motivation towards learning: “Motivation is that internal and positive attitude towards new learning, it is what moves the subject to learn, it is therefore an endogenous process” (Carrillo et al., 2009). This motivation can be intrinsic or extrinsic.

Very relevant to the study of personality motivation are those carried out by A. N. Leontiev (1950-60). He posited that every activity has an object, which is its most important characteristic; this object is the motive for the activity. This links the study of activity to the study of human motivation.

The same author states that the motives of students in Higher Education are fundamentally driven by the need for social recognition and their cognitive interests.

Cognitive interests are defined as "an orientation toward the objects of reality that reflects a selective and emotional nature, an active search for knowledge related to its object, and a great display of personal effort in achieving the objectives of one's actions." (Montesino, 1988)

Students, at this stage of development, experience an increase in variety depending on the student's professional interests.

According to Domínguez (2003), “The social situation of development in these stages, to the systems of activity and communication, as well as the distinctive particularities of the development of the affective-motivational sphere, favor the main directions of intellectual development in them” (p. 216).

That is to say, their motivations are closely related to what they intend to do in the future. According to the author, the affective-motivational sphere exerts a great influence on the cognitive sphere, so both are closely related. This is why the author refers to some changes that occur in the individual, such as the fact that memory becomes more conscious and intentional, especially if it is an abstract content.

Therefore, it is a problem that must be addressed from the teaching perspective, for which didactic actions are proposed, in that sense the didactic action "Is any action that is carried out in the classroom through didactics. That is, the activity that is carried out at the time of teaching and learning" (Bermuez, 2020).

For his part, Roberto (2020) expressed

Teaching in the classroom plays a fundamental role in the pedagogical development of students, who, in their eagerness to learn, seek more convenient alternatives to acquire rewarding knowledge. The goal of applying dynamic learning is to make students feel free and more comfortable when completing their proposed activities, thus achieving better responses when assessed. The idea is that students learn by doing and building upon new ideas, which will depend on the pedagogy applied by the teacher.

The theoretical systematization carried out during the research has revealed insufficient treatment of the term "didactic actions," unlike other terms in the pedagogical order, such as educational actions or teaching tasks, to name just a few.

In this way, the author defines didactic action as: actions that focus on promoting effective learning in students, which foster successful communication environments, spaces for socialization, more accessible appropriation of the content covered, and adequate feedback on the content, all with a marked intentionality and dynamism within the teaching-learning process.

In this way, the structure of the proposed teaching actions is composed of: Title, Objective, Method, Methodological Instrumentation, Bibliography, and Evaluation.

Teaching action # 1
Title: Relating what has been learned.
Objective: To exchange experiences on interdisciplinary work in the subjects of Psychology, Pedagogy, and Didactics for their future implementation in the practice of the profession.
Method: Explanatory-demonstrative.
Methodological instrumentation: You should begin by explaining to the students what an integrative content workshop consists of.
The teacher will then guide the students through the topics to be covered, without taking their own focus away from them. That is, if a student suggests a topic, the teacher should consider including it with the consent of the rest of the group. The following topics are offered:

- Didactic principles: variability and evolution in response to changing times.
- Pedagogical leadership in the classroom context.
- Commitment to the quality of learning.
- Social situation of development according to its different stages.
- Challenges and perspectives of learning psychology.

This activity will allow students to creatively explore their cognitive interests. It will help connect theory with practice and will also enhance their communication skills, as they must correctly express their ideas, learn to listen to their peers, and respect the opinions of others. This will also develop their critical and self-critical thinking. It is recommended to divide the group into teams that are balanced in both the number of students and their cognitive characteristics, creating teams that are as heterogeneous as possible and fostering student-student, student-group, and student-teacher interactions. Basic bibliography:

- Basics of Sociology, Pedagogy, and Psychology. Pedagogy. Guillermina Labarrere and Gladys E. Valdivia.
- Psychology for Educators. Viviana González Maura and a group of authors.
- Towards developmental didactics. Margarita Silvestre and José Zilberstein.

Evaluation: Peer evaluation. The activity will be evaluated by the teams themselves. The best presentation and the reasons for its selection will be announced after discussion and approval by the group.
The evaluation indicators are: Subject-specific relevance, content mastery, correct use of scientific vocabulary, and in-depth knowledge of scientific literature.

Teaching action #2
Title: My favorite class.
Objective: To redesign the observed class based on the knowledge received as training for the practice of the profession.
Method: Independent Work.
Methodological Instrumentation: During the period of pre-professional practice (concentrated or systematic) students must visit classes in different educational institutions, as planned by their Principal Professor of the Year, as listeners.
This framework is used to guide them before the start of the practice. They must select, according to their criteria, the best class they observed, express what they liked most about it, and explain what they would do differently if they were the teacher of that class and why. In other words, they must explain the changes made to the observed class.
To do so, they must draw on the knowledge they have already acquired about the subject and their experiences in previous school years. They must pay special attention to the interactions between all components of the Developmental Teaching-Learning Process (DLTP), both personal and non-personal, as well as to the guiding nature of the objective and the systemic and procedural nature of the DLTP.
Future teachers must establish a connection between theory and practice, while motivating themselves to put their acquired knowledge into practice, developing a critical mindset, and fostering greater cognitive independence and creativity.
Bibliography:

- Didactics. Theory and Practice. Fátima Addine.
- Notions of Sociology, Pedagogy, and Psychology.
- Pedagogy. William Labarrere and Gladys E. Valdivia.

Evaluation: Heteroevaluation.

Teaching action #3
Title: Interview with your model teacher.
Objective: To interview with your model teacher to motivate them towards their future profession.
Method: Independent work
Methodological Instrumentation: It is important, among other things, to develop questions related to motivational interests toward the profession, whether the profession runs in the family, the experience the student had on their first day of class, what motivates them to continue being a teacher, and what advice they have for future teachers. Interview questions will be presented to the group, and it is suggested that the students bring their teacher to the classroom and interview them in front of everyone. This type of activity will serve to motivate students toward the profession, as they will learn firsthand about the experiences of an experienced teacher.
Bibliography:

- Psychology for Educators. Viviana Gonzáles Maura.

Evaluation: Co-evaluation.

Teaching action #4
Title: The map of my knowledge.
Objective: Design a conceptual map with all the components of the Teaching-Learning Process Developer for the establishment of cognitive nodes.
Method: Independent Work.
Methodological Implementation: Ask students to demonstrate their knowledge of the features that typify the Developmental Teaching-Learning Process (DLTP), emphasizing its systemic nature and the interactions within it. To do so, they must design a conceptual map that connects all of this knowledge.
It's important to have previously practiced with your teacher. This time, you should create it on your own and present it to your classmates, who can help you by giving your ideas for other possible connections. Using concept maps allows you to organize and understand ideas in a meaningful way based on the selected topic.
In another sense, students are encouraged to interact with both their peers and the concepts being discussed. This way, students absorb the content and don't just memorize it for the sake of it, but rather find meaning in each concept.
It is valid to clarify to the student that they must achieve a synthesis of the contents, although establishing a hierarchy between them, and that at the same time it is understandable.
This type of activity helps boost students' self-esteem if their achievements are recognized and mistakes are properly addressed to avoid frustration. It ensures motivation for something that should be meaningful to them.
The important thing to consider for its implementation is that the student must modify his or her work style and procedures, thus breaking with the mechanistic and rote nature of his or her learning.
Bibliography:

- Didactics: Theory and Practice. Fátima Addine.
- School in Life. Carlos Álvarez de Zayas.

Evaluation: Co-evaluation.
Indicators: Simplicity, hierarchy, visual impact, keywords.

Teaching action #5
Title: Learning to Teach
Objective: To develop teaching situations based on their classroom experiences to develop students' creativity and achieve a relationship between theory and practice.
Methodological instrumentation: In this activity, students must develop teaching situations based on classroom situations that reflect the interactions and the important relationship between the school-family-community triad. In this way, they would be establishing an interdisciplinary relationship between the subjects of Pedagogy and Didactics.
Upon completion, after a reasonable amount of time has been given, they should act out the lessons, switching roles between the teacher and the students. Through this activity, students will develop feelings of empathy and motivation, develop a critical mind, and put the knowledge they've acquired into practice, thus creatively communicating it to the rest of the group.
Method: Independent Work.
Bibliography: Pedagogy. Guillermina Labarrere.
Evaluation: Co-evaluation.

Conclusions

The systematization of the theoretical foundations allowed contextualizing the category of significant learning in the context of the teaching-learning process of higher education. It was found that some insufficiencies and potentialities allow perfecting of the work aimed at developing this learning. The didactic actions that are proposed constitute an alternative solution as they contribute to developing significant learning in students from the subject of General Didactics. It was found that they have a marked effectiveness for the development of significant learning

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