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Professional learning teaching process of Newton's laws

Yoan Pablo Rodríguez Monier[1], Miguel Alejandro Cruz Cabezas[2], Luís Aníbal Alonso Betancourt[3], Verónica Del Pilar Zambrano Burgos[4]
[1] Unidad Educativa "Capitán Giovanni Calles" El Coca, Orellana, Ecuador
[2] Universidad de Holguín, Holguín, Cuba
[3] Universidad de Holguín, Holguín, Cuba
[4]Instituto Superior Tecnológico Paulo Emilio Macías
[1]yoanpablo2283@gmail.com, [2]mcabeza@uho.edu.cu, [3]lalonsob@uho.edu.cu, [4]itspem.vzambrano@gmail.com

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Abstract
Currently there are difficulties in the teaching-learning processes to ensure that students acquire knowledge that will serve them in the future for their professional life. In the case of high school students, efforts are being made to ensure that students manage to prepare from the knowledge that they can acquire from Newton's laws for their future life, so the objective of the work is to investigate the process of teaching learning in physics, appreciating the scope and importance that previous knowledge can have in the first year of the unified general baccalaureate. From birth, the child begins a learning process that will last during the course of life through communication with the social entities that surround it, as the greater amount of knowledge is concentrated, the better the rational development of the students will be. Descriptive observation was used as a method, the inductive deductive method to characterize the teaching-learning process, in addition, desk research was used, analysis-synthesis and the historical-logical method were also used. The objective of the research was aimed at knowing different methodologies and techniques that have been implemented in the professional teaching-learning process and that are useful for the teaching of Newton's laws in high school. It was obtained as a result that teachers can use different methodology and technologies so that students know and can apply Newton's laws in their professional lives.

Introduction
The commitment in acquiring the knowledge used by students daily and obtaining it, originates from the moment the child is born, when he begins to crawl, reach for objects, as well as walk and speak (Villarroel, 2012), being one of the attributes elemental learning, useful for development, verbal

communication, skill development, as well as relative growth and personal training.

Normally learning is acquired during growth, being the result of the practice and experimentation of multiple positions, which is permissible to understand and learn during the growth of various activities, to name a few: reading and writing; These are conceived as acquired and interrelated with the well-known phonological representations (Ríos & Cardona, 2016). Being able to reach this position, it is outlined that the acquisition of knowledge of physics from philosophy and psychology, focuses and describes the action from the perspective of the individual who reasons and learns.

In the field of physics, the aforementioned is not distinguished from a mere exception, being a significant teaching-learning process, involving one of the topics to be constantly dealt with in the manifestations that harm education in its generality, observably in these moments you want to achieve that the teacher can expose and teach their instructions, skills, skills; but also the attitudes, the values provided by the competence in a broad and suitable environment, which greatly support the professionalization process in the future.

The basic sciences and fundamentally Physics, in today's society is increasingly relevant, this trend will continue to rise as an inevitable consequence of scientific-technical advance; in addition to the need for students to understand the need to know the universal laws, where Newton's laws are included, which are in force today and which can enhance the professionalization of students in the future, at present technologies information allow progress in these trends (Arrieta & Mercedes, 2006),

The modern educational system is challenged to train highly prepared people, with mental flexibility and reasoning capacity to understand social and natural phenomena from scientific points of view providing solutions to the problems of the environment in which they operate.

Many teachers are introducing different methodologies that enhance the significant learning of physics in secondary education (Castellanos & Martinez, 2003), in this process of building knowledge the student from problematic situations, can approximate their activities to a scientific work in the moment to tackle the problems and look for the appropriate solutions, thereby preparing for their professional future.

The students have previously and personally been able to build their knowledge before starting the teaching process directly with the teachers, so they must continue with what they have learned, in addition to the construction of a new meaning, so that in the educational environment the individual characteristics of the students and representations of previous thoughts.

Teachers should encourage students to promote motivations linked to learning, research activities that allow them to face challenges. The student plays a leading role in the educational process and not the educator; Therefore, the teacher must require a careful capacity for observation, exploration, so that the

varied reactions manifested in the students, so that the process of knowledge construction is not altered (Morales, 2009).

Since the beginning of the XXI century, in the world the education of the exact sciences has been marked by the constructivist paradigm. The key ideas of this paradigm come from or have their roots in the research of many authors, among which stand out: Piaget, Vygotsky, Bruner, Ausubel, among others (Constructivismo, 2020). All of them have agreed that learning any school content supposes, from the constructivist conception, attributing a meaning and constructing the meanings implied in said content, and this is not carried out from scratch.

Outstanding investigations present statistical data of the high rate of failures in physics, students do not feel motivated, in this sense authors such as (Solbes, Montserrat, & Furió, 2007), which is not specifically restricted to an institution; the situation is complex, resulting in a problem that generally hurts each and every one of the countries of the world, as well as students of all levels, causing mostly student delay and dropout of significant numbers of students. (Morales, 2009), this accompanied by the current difficulties of the pandemic, causes desertion to increase (Pachay & Rodríguez, 2021: Suryasa, 2019).

In Ecuador in the educational context, competences in physics have acquired an outstanding importance motivated by the increase in the level of demands towards students and citizens in general and the need to apply training throughout life, where it is decisive for professionals of these times the ability to apply knowledge in order to solve specific professional situations and problems that arise in the exercise of the profession and where Newton's laws are in force. (Beltrón, Hernández, & Carrasco, 2019: Suwija, 2020).

Considering what has been previously analyzed, the objective of the work consists of: investigating the professional teaching-learning process of physics, taking into account new methodologies and fundamentally previous knowledge.

Materials and methods

To carry out the research safely and provide conscious answers to the unknowns related to low performance and dropouts in the physics subject, a thorough observational-descriptive-cross-sectional study was developed to characterize the essential professional teaching-learning process where took into account some methodologies that motivate the student in this specialty and where Newton's laws play an essential role, taking into account the importance and scope and impact of previous knowledge and applied technologies

Desktop research was used (QuestionPro, 2020), is an empirical method that allows the search for information to enrich the research work, the analysis-synthesis method, the inductive-deductive method to carry out an evaluation of generalizations; also, the historical-logical, for the determination of the historical antecedents of the development of the professional teaching-learning process in the area of physics; also, for the logic of the investigative process

developed. The documentary analysis was used to achieve the fulfillment of the objectives and to know the goals to be fulfilled at the end of the study plan where the students can develop research-experimentation aspects that activate their motivation to take actions for their professional future. The observation allowed to know the reality through direct perception of the teaching-learning process of the subject in question.

Analysis and discussion of the results

Some studies related to the sciences of physics as an exact science universal idea that today have not been changed and remain in force for many years, some of these projections are observed in Figure 1, where those of projects by some philosophers such as Newton and Einstein, but they were not the only ones who have contributed to the process of teaching physics.

Making a detailed analysis of the historical background about the studies of physics, mentioning in them the most outstanding scholars and their contributions as a valuable recognition and at the same time the benefit of the same to the teaching-learning process that can serve students in future professions.

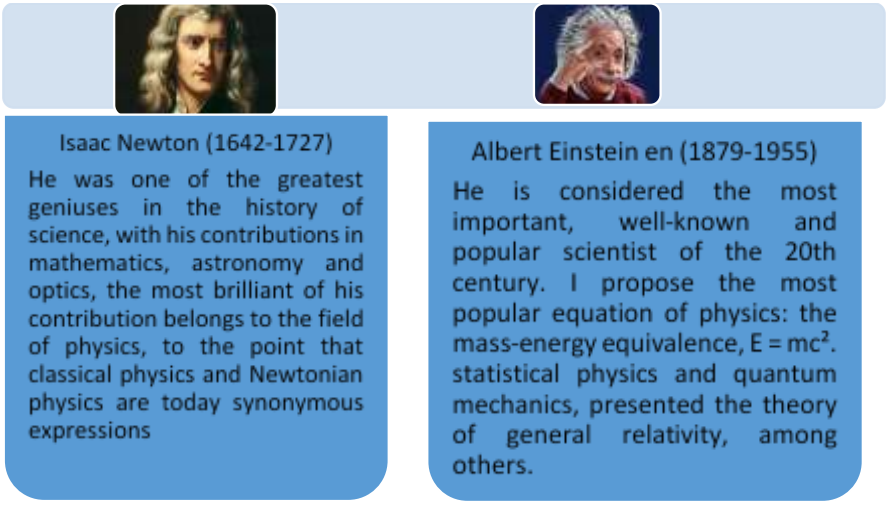

Figure 1. Newton and Einstein their most significant contributions to the teaching of physics
Source: (Philosophers / Physicists, Consulted 2020)

But they are not the only ones who contribute to the knowledge of unified high school students, there is also Kepler, Galileo, Aristotle, Copernicus, all of them together contribute to our society advancing with clear knowledge in the development of patterns that are still in force; But the case that will be deepened are the contributions of Newton that in one way or another should serve as a pattern for many high school students to insert themselves into the professional life of the future professional (Philosophers / Physicists, Consulted 2020).

Teaching-learning processes for professional training in Physics

Some authors propose that in the teaching-professional learning process the dimensions for an initial student or worker at a qualified worker, middle technician, technologist and higher level, are based on the training approach of job training, training around the activities that most affect professional improvement (Alonso, Cruz, & Olaya, 2020).

Individuals delimited in the XXI century transit present the need to learn to identify and solve problems (Arteaga, Armada, & Del Sol, 2016), in learning the thought processes of the highest hierarchical degree; as well as the adaptation to the incessant changes in science, the extensive development of cultures and societies; where the great and new space consigned to the accumulation of the peremptory knowledge and content, must be urgently replaced by critical, behavioral, evaluative thoughts, capacities and skills of planning execution, controlling the knowledge itself; In addition to this provoked urgency, it is necessary to learn and grasp valued ethical characters; how to manage affective and motivational states; ensuring the achievement of overcoming conflicts as well as to work under pressure, making use of the capacities and skills of leadership; the qualifying and creative spirit, acquiring interest in confronting solid principles; modification of human and ethical values, assuming clear, real and flexible criteria (Arteaga, Armada, & Del Sol, 2016).

According to Páramo (2019), it refers to the fact that it is highly essential that learning be planted and flourished in the school itself; prestigious institution that highlights and assumes the important social commission whose mission is to prepare men for professional life; It contributes to these individuals from their early ages and to ages where they can already think about their professional life, their positions and the estimated role that will be necessary for the imminent confrontation with the contemporary world that is increasingly sensitive to changes and the complexities for the future development of the professional, being of knowledge that all the subjects of the curriculum have a high claim and request of responsibility, for being the teaching of Sciences, like Newton's laws applied in this environment.

The use and progress of the knowledge of Newton's laws, becomes increasingly relevant, because it does not escape the general existence of some other human activity, in which the integration of these elements of knowledge is not observed in daily practice, as well as the application and implementation in interdisciplinary, multidisciplinary or transdisciplinary impacts, where these contribute to the development of the future professional. These elements make students capable of proposing innovative ideas in educational processes as a way for the training of professionals, being creative and entrepreneurial during their performance supported by teachers, through the contextualized integration of teaching with links and research (Corral, Moya, & Alonso, 2020).

It is relevant that one of the subjects for the student, which demands knowledge for their future professionalization, due to its meaning that the contributions and approaches have to the formation of a logical-creative thinking close to the students, has been physics with its laws and dogmas that in many cases govern activities, movements, interactions with the surrounding environment; for the evident importance highlighted and given in the ample solutions of the

problems in the modern world; manifesting itself in the practical world of other disciplines and the learning of the multiple competencies in the development of society.

Newton's laws have played a special role in the teaching-learning process in high school, here students acquire their knowledge as part of the university curriculum and are increasing their universal culture, highlighting their knowledge in a relevant way in the training and development of the personality; indicated above all, the means it has for the stimulation of cognitive and affective-motivational growth; providing the student with knowledge, skills, habits, skills and ethical modes of action for their actions and preparing conditions for their future preparation in tune with the current context of accelerated scientific-technical development (Páramo, 2019).

The experiences that the student can acquire can represent the fact of being able to conceive a practice, mount it, experiment, compare if the results are valid, improve it until it is ready; This undoubtedly contributes to their professional development and can be the starting point for innovation when they face similar experiences of assemblies in the industry or in experimentation for research (Alonso & Cruz, 2020).

It can be inferred that professional training is one that in a conscious, planned and organized way, is developed in educational institutions and labor entities in close connection, in a dynamic that integrates teaching with labor, research and extension from the unity between the instructive and education through socio-professional interaction between the subjects involved: students, teachers, tutors, workers, family members and community members, which aims to achieve the professional growth of the worker in initial or continuing training (Alonso, Cruz, & Olaya, 2020) (p. 18).

Many authors seek solutions that help reduce the difficulties in learning physics (Campelo, 2003), the new teaching method that he proposes is based on the Historical-Cultural approach, the Theory of Activity and Theoretical Generalization, and is developed through the structural-functional method for the organization of the content to be learned and the regularities of the study activity, which provides a more active position of the learners, from the performance of actions as important as modeling, experimentation and simulation in class for problem solving.

Some authors use for the teaching of Newton's laws in tenth grade, it is active learning methodology that helps students to predict, observe, discuss, observe and synthesize; in which it is sought with the design of the different planned activities that enhance professional learning (Moreno & Martínez, 2017).

Other authors such as (Franco, 2013), use innovative methodologies, here is study has an active role and gives them solutions to scientific problems by being the protagonist of their learning.
It is good to highlight that the knowledge that students acquire for their professional future not only applies to the exact sciences, they can also be applied to Sociology, Psychology, Pedagogy as they refer (Mulet, Cruz, & Garib, 2018), they argue that Professional training is developed in educational

institutions and labor entities in close connection, in a dynamic that integrates teaching with labor, research and extension from the unity between the instructive and the educational through socio-professional interaction between the subjects involved: students , teachers, tutors, workers, family members and community members, which aims to achieve the professional growth of the worker in initial or continuing training (p.18)

Active methodologies for the improvement of the teaching-learning process

Assessing the proposal of the 8 methodologies that each teacher must know for students to acquire the knowledge adequate foundations (Realinfluencers, 2018), it could be argued that all of them can be applied for the teaching-learning process of physics, fundamentally Newton's laws in a process for the future professional. Figure 2 shows some examples of the application of these methodologies.

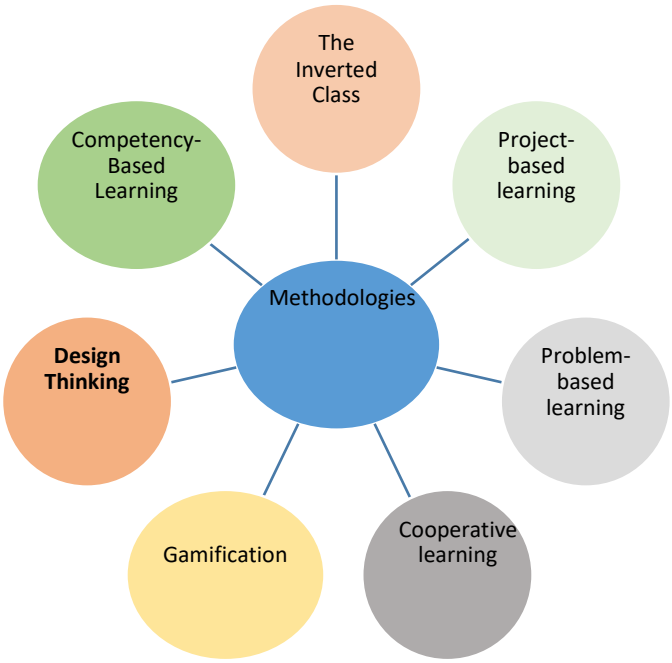

Figure 2. Active methodologies

Source: (Realinfluencers, 2018)

Each of them can be applied in the learning processes of Newton's laws, there are practical examples in high school that have used these methodologies.

The Inverted Class: this methodology has been used by many teachers and at the time we are living in a pandemic it has contributed to the development of students in different subjects, for example applied to natural sciences (Dávila & Rodríguez, 2020), it was also used in the physics teaching processes (Pérez, Jordán, & Salinas, 2018), the teaching process of Newton's Second Law was applied to achieve significant learning (Fernández & Kevin, 2019). The usefulness of this methodology has been universalized as a pedagogical research model (Cobeña & Rodríguez, 2019), until the beginning of 2019 it was considered an innovation, because it has had to be applied at high school

levels due to the need for students to be able to Prepare individually (Mero, Pazmiño, & Rodríguez, 2019).

Project-based learning: For students who are in high school and who also study Newton's laws that can be applied for professionalizing purposes, this methodology is very useful because from research they can develop their own research projecting new results, students base their research on project work, where they have concrete results that are useful in future life as professional experiences (Botella & Ramos, 2019). It has been innovated by applying project-based learning strategies (López, Vegas, & Rodríguez, 2020).

Each of these methodologies applied to the teaching process of Newton's laws could be assessed; But it is necessary to reflect on that related to current technological strategies that help to strengthen the mechanisms of human knowledge and that, in high school youth, this becomes more dynamic because students are able to use them to experience their ideas and develop them (López, Sánchez, Mero, & Rodríguez, 2019).

Considering that at the present time there are methodologies and technological tools that have been enhanced in new teaching processes with virtuality in times of pandemic, it has been shown that they can be applied in various professionalizing fields of teaching.

Conclusions

From the use of desktop research, a wide bibliographic review was made where it was known that there are different methodologies and techniques that have been implemented in the teaching-learning process and that are useful for the teaching of Newton's laws in the baccalaureate that also helps you in the future to develop your professional life.

Teachers of physics, natural sciences and mathematics can use different methodology and technologies so that students know and can apply Newton's laws in their professional lives, thereby acquiring experiences that can be introduced in different processes of technological development.

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