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## Epistemological foundations for competency-based assessment of pre-professional practice.

### Fundamentos epistemológicos para la evaluación por competencias de la práctica preprofesional

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#### Abstract

The Republic of Ecuador, and in particular the State Technical University of Quevedo (UTEQ), demands the formation of highly qualified professionals, according to the demands of society. In this context, the pre-professional practice is an essential means to achieve these expectations, considering the Pedagogical Model by Competences. Faced with these challenges, in Ecuador, the training of competent professionals committed to social development is today a necessity. Training graduates capable of facing the challenges of technological development in their jobs is a priority, both for Higher Education and for the entities that employ qualified human capital in the country. It is concluded by affirming that it is a challenge for the UTEQ, the conception and application of results that around Pedagogical Sciences arise, to favor an adequate development of the evaluation by competences of the pre-professional practices.

**Key words:** Epistemology, training, evaluation, competence, pre-professional practice.

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## Resumen

La República del Ecuador, y en particular la Universidad Técnica Estatal de Quevedo (UTEQ), reclama la formación de profesionales altamente calificados, acorde a las exigencias de la sociedad. En este contexto la práctica pre profesional constituye un medio esencial para lograr estas expectativas, a partir de tener en cuenta el Modelo Pedagógico por Competencias. Ante estos desafíos, en Ecuador, la formación de profesionales competentes y comprometidos con el desarrollo social constituye hoy día una necesidad. Formar licenciados capaces de enfrentar los retos del desarrollo tecnológico en sus puestos de trabajo, constituye una prioridad, tanto para la Educación Superior como para las entidades empleadoras del capital humano calificado del país. Se concluye afirmando que constituye un reto para la UTEQ, la concepción y aplicación de resultados que en el área de las Ciencias Pedagógicas se susciten, para favorecer un adecuado desarrollo de la evaluación por competencias de las prácticas pre profesionales.

**Palabras clave:** Epistemología, formación, evaluación, competencia, práctica preprofesional.

## Introduction

In the industrialized countries, discussions on industrial reorganization and competitiveness focus on the issue of human resource training. In 1989, a report by the Organization for Economic Co-operation and Development (OECD) stressed among its conclusions that it was not possible to take full advantage of the technical or economic potential of new technologies without introducing the necessary changes in the institutional and social spheres.

In the latter, education and training systems are particularly essential, as companies tend to develop more flexible modes of labor organization, with multi-skilled jobs and a strong emphasis on communication and problem-solving skills and entrepreneurial skills of the workforce (Echegaray-Bengoa & Soriano-Ferrer, 2016,p.64).

In this context, the United Nations Educational, Scientific and Cultural Organization (UNESCO) proposed a set of principles to underpin the process of change and development of higher education, including the criterion of relevance. According to this organization, the relevance of higher education has acquired new dimensions and greater urgency as the economic activities of society require graduates capable of constantly updating their knowledge and acquiring new knowledge that will enable them not only to find work, but also to create jobs in a constantly changing market (Ramírez Ramírez & Saucedo Ramos, 2016) .

The Republic of Ecuador is not exempt from this situation. In this sense, the State Technical University of Quevedo (UTEQ) is immersed in the training of highly qualified professionals, according to the demands of society. In this context, the theoretical-practical linkage constitutes a fundamental element of the educational process in which the student generates the first experiences and materializes in the pre-professional practice (Aparicio et al., 2005),

This constitutes an essential means to achieve a systematic confrontation between the ways of thinking and solving problems within academic theories, on the one hand, and the professional ways of thinking and solving problems, on the other hand, which dynamizes the pedagogical professionalization to promote educational change and the improvement of the quality of education. In this way, the pre-professional practice seeks that the student acquires work experience in a field according to the studies he/she is carrying out, and achieves the development of professional competencies through design, execution and evaluation.

Taking into consideration the above, a factual diagnosis was made, supported by the application of empirical methods in addition to the experiences of the researcher, the experience as a professional, the technical visits, inspections and joint methodological trainings carried out by the methodological team of the UTEQ; departmental meetings at national level and research directed by the university, which allowed the following insufficiencies related to the evaluation of the pre-professional practice of the Bachelor in Accounting and Auditing to be ascertained.

1. Predominance of evaluation, focused on theoretical content to the detriment of practical content.
2. Inadequacy in the orientation of the objectives for the assessment and verification of the learning results from the demands of the curricular conception by competencies, in the scenarios of pre-professional practice.
3. The orientation and assessment of learning are focused on the result without adequate attention to the processes that integrate it.
4. Standardized nature of the learning process, with limitations in the individualized attention to students in the verification and follow-up of the professional training process.
5. Insufficient orientation towards the stimulation of self-appraisal to promote professional self-development from the perspective of competent performance.

The manifestations stated above allow delimiting as Research Problem: Inadequacies in the verification of learning in situations of pre-professional practice that limits the competent professional performance in labor scenarios from the graduate profile of the bachelor's in accounting and Auditing.

This problem is the manifestation of an initial epistemic contradiction between the new curricular demands from the competency-based pedagogical model and the permanence of a traditional conception in the assessment of learning outcomes in pre-professional practice, decontextualized from the graduate's profile.

The factual diagnosis also identified the following as the main causes of the problem:

- The formative management of pre-professional practice scenarios is incongruent with the current curricular conception.
- Reductionist approach in the verification of learning in pre-professional practice, distanced from the requirements of the graduate's profile and inconsistent with the purposes of competent professional performance.
- Coordinating teachers and labor tutors present theoretical and methodological deficiencies in relation to the current curricular conception and its implementation in pre-professional practice.

The above considerations allow us to define as the object of this research: the process of pre-professional practice.

Reussi,(2018), worked in her improvement for the Early Childhood Education career, from the conception of a pedagogical model that focuses its attention on the organization and implementation of pre-professional practice from the relationship between teaching, research and linkage with society (extensionism). Although the author's proposals constitute an important reference for this research, their scope does not go beyond the limits of the design and execution of pre-professional practice, as they do not consider the evaluation of this process in their contributions.

Rocha & San Juan (2009) focus their studies on teaching practice, considering it as a process in which the student faces complex situations. In Spain, they attribute an important role to it within the initial teacher training since they initiate the process of approaching real teaching and learning situations from several purposes.

Also in Spain, Ramírez & Saucedo(2016), values the role of practice in teacher education from a perspective in which it weighs essential elements of the formative process such as knowledge, skills and values.

On the other hand Barros & Turpo(2017), in Venezuela, dwells on the place of reflection in pre-professional practice, thus denoting its importance. In this order, Sañudo (2005), from the permanent teacher training, also considers it important to sustain the pre-professional practice in the reflection of the subject as a way that guides his action. The results of the study of the latter include the existence of deficiencies in the organization of this process, the non-existence of inter-institutional agreements and inadequacies in the teaching-learning process.

While in Cuba, Brito-Orta & Espinosa-Tanguma (2015), dabbles in the evaluation of the labor-research component in the initial training of education professionals. From another perspective of analysis, it addresses in a general way the impact on the practice of the changes that have occurred in the teaching-learning process.

For their part Keck & Saldívar (2016), relate pre-professional practice with the traditions and values of the teaching profession of a country or region; a fact that specifies the importance of bringing to this type of practice the best of Ecuadorian educational

traditions, they assign it a function of constant learning that is projected towards lifelong learning.

Also in Cuba, Escanero (2019) makes his contribution. The first, conceives a model for the learning of professional skills as a basis for the formation of professional competencies, in the training process of the Bachelor in Education in the specialty of Electricity. Keck & Saldívar (2016), on the other hand, provide indicators for the evaluation of the labor component in the training of education professionals.

From the Technical Professional Education (ETP), a group of Cuban researchers have approached the pre-professional practice in the training of Technicians of the upper secondary level. In this order, Escanero (2019) makes his contributions in the evaluation of the learning of specific professional contents, during labor insertion, in the specialty Maintenance and Repair of Transport Equipment.

On the other hand, Hernández-Negrín et al., (2018), proposes a methodological alternative to improve the direction of the pre-professional practice, while investigating the pedagogical improvement of the tutor of the pre-professional practice of the intermediate technician in the specialty of Electricity. Similarly, for this specialty, it proposes the project as a way of organizing the pre-professional practice.

Turpo-Gebera(2013), provides a methodology to improve the level of training of professional skills required for a competent professional performance in the specialty of Civil Construction, analyzes the pre-professional practices in the training of middle technicians to improve the preparation of the future worker. The closest contributions to the research are found in Ecuador. Particularly in the Pontificia Universidad Católica with headquarters in Esmeraldas, it investigated to identify the level of satisfaction of the student of the Accounting and Auditing Career of the PUCESE in the pre-professional practices.

While Jiménez(2014), argues the relationship between the Universidad Laica Eloy Alfaro de Manabí, with the business sector of the region, in order to achieve the linkage of students of the Executive Secretarial Career with the socio-business sector through pre-professional internships.

While at the University of Guayaquil, Galindo et al.,(2015) conducted a research with the purpose of evaluating the system of pre-professional internships of fourth year students of Economics to optimize their job skills and reengineering proposal.

The analysis of pre-professional practice indicates that the greatest contributions have been made to the training of professionals in education and technicians at the upper secondary level. The evaluations carried out reveal that there is coincidence among all the authors in conceiving it as a process in which it is necessary to bring future professionals closer to the labor world through academic activities carried out inside or outside the university and polytechnic environment. However, although the contributions and theoretical conceptions analyzed are considered significant, the evaluation of pre-professional practice and its relationship with the social demands to

professional performance in the bachelor's degree in Accounting and Auditing is considered a little researched aspect.

Particularly, in the theoretical proposals on pre-professional practice, the systematization, from a didactic perspective, of an integral approach to the evaluation of pre-professional practice oriented to the verification and assessment of learning results, in correspondence with the curricular conception by competencies, is insufficient.

The theoretical systematization carried out around the process of pre-professional practice and its evaluation by competencies, is oriented from dialectical materialistic philosophical positions, which correspond to the approaches and trends of Philosophy and Sociology of Education, Pedagogy and General Didactics, as well as the Pedagogy of Higher Education, which support the referred process, and direct the pedagogical activity in the formation of the Bachelor in Accounting and Auditing in the Republic of Ecuador, specifically in the State Technical University of Quevedo (UTEQ).

The starting point is to assume Education as a unit of analysis, assumed from the Sociology of Education, as a factor of social practice and one of the most important functions of society. From this perspective, we share with Barros & Turpo Gebera the idea of understanding it as a complex phenomenon that manifests itself in multiple forms, as social praxis and as a diverse activity of all members of society, both in an organized way (the school system) and spontaneously, both directly (the action of teachers and educators) and indirectly, throughout life (2017 p.23).

Assuming education as a factor of social practice, conditions that the university and the labor entity are considered as socializing agencies or factors.

We agree with Mamani et al.(2017) in attributing an important social role to the labor entity as an educational institution. This, has an essential function in the formation of the worker, where practical activities constitute the socializing medium, from the educational influences exerted on the personality of the students by the

contents received by the teacher, specialists, relations with the group, the work group and the community as a social environment.

From these perspectives of analysis, the future professional is oriented for learning and mastery from the work of production and services in the economic sector, as well as its organizational forms propitiate the apprehension of technological work methods that allow competent professional performance. The above is materialized in the policy of Good Living of the Republic of Ecuador. In consonance with the referents assumed from the Sociology of Education, the theory of knowledge is assumed from Philosophy. This allows understanding, explaining and interpreting the construction of scientific knowledge in the process of pre-professional practice and its evaluation by competencies. This leads to the valuation of activity as a philosophical category.

In pre-professional practice, cognitive activity is manifested as dialectical interaction between the student and the object of the profession. It constitutes an essential aspect to achieve a professional training that guarantees the production of new knowledge and its generalization to apply it to new situations in the practice in which he/she will have to solve professional problems.

In relation to the cognitive activity, the valorative activity favors the student to face the object of the profession from the meaning and sense it has for him in his future profession. In this process, the pre-professional practice conditions all the valuational relationship that he/she makes around the object of work. This is the starting point, as well as the basis of knowledge and criterion of truthfulness of the values formed during their education.

In this sense, in the formation of the university professional, teaching must promote the dialectic unity theory-practice, which favors the appropriation in a conscious way of theoretical generalizations that allow operating with concepts, laws, establishing links and relationships, all of which will favor that learning acquires meaning and sense for the students. The above presupposes attending to pre-professional practice in professional training, since it constitutes the process through which the dialectic relationship between theory and practice is concretized.

It is assumed as a fundamental psychological reference the cultural-historical approach kamlot,(2017), which considers the individual as a result of the historical and social process. It is assumed from this theory the conception of the zone of proximal development that in the process of the evaluation by competences of the pre-professional practice it is necessary that the teacher and the labor tutor know the current situation of psychic development of the student, the skills, knowledge, attitudes and values that he/she already possesses to continue enhancing his/her self-development and continuously expand the limits of proximal development. On this basis, propitiate the levels of help necessary to achieve the cognitive independence of the same, and therefore contribute to the formation of a competent professional in the exercise of the profession.

Stimulating the zone of proximal development requires considering the particularities of the students' stage of development. For this research, the social situation of development of the youth stage is taken into account, since the ages in which the future graduates in Accounting and Auditing oscillate correspond to this stage of development; and the genetic law of development or law of the double formation that explains that psychic processes initially have an neuropsychological character, from the system of social relations of communication that the individual establishes with other people in the realization of a joint activity. Later these psychic functions become internalized, acquire an neuropsychological (internal) character and form part of man's individual activity. What in a first moment has an external character becomes something internal, ideal that the individual makes it his own, modifies it and enriches it.

During the process of pre-professional practice, through interaction with the teacher, the labor tutor and the group itself, the student appropriates technological procedures

that he then internalizes, makes his own and converts them into learning strategies, skills, which he develops as he exercises his knowledge and becomes more aware of his actions. With a smaller margin of error, he adapts the knowledge to new situations as he appropriates and processes the information received.

From the professional pedagogy is assumed from Tobón indicates that the principle "The formative character of the human being in its socio-cultural context" (2019, p.116). This principle allows the formation and development of the personality of students from the functional unity of the cognitive and affective. Considering the school-enterprise, theory-practice linkage in the teaching-learning process.

It emphasizes the formative character of the pre-professional practice that is basically developed in the university and labor entity, as socializing agencies where this process is articulated, in an environment where the material and spiritual conditions are created to develop this process. Under the guidance of this principle, the evaluation of the pre-professional practice is conditioned by the professional competencies approach, which implies the self-transformation and self-development of the students. Aspects that, up to now, have been insufficiently addressed in the training of Accounting and Auditing graduates at the Quevedo State Technical University (UTEQ).

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## Materials and Methods

The assessment of the epistemological assumptions underlying the referred process of competency-based evaluation of pre-professional practice led to the application of theoretical and empirical research methods, among which are the following:

Analysis-synthesis, to deepen in the bibliography related to the pre-professional practice and its evaluation in the bachelor's degree in Accounting and Auditing and to conform the referential theoretical framework, to delve into all the phases of the research process. Induction-deduction, in the establishment of generalizations from the analysis of elements of the pre-professional practice and its evaluation in the bachelor's degree in Accounting and Auditing. Document analysis, with the purpose of gathering information about the historical evolution of the pre-professional practice and its evaluation in the bachelor's degree in Accounting and Auditing; to specify the solutions it has received and the aspects that have not been satisfactorily solved, as well as the empirical foundations that support the research.



Interview with teachers, to obtain information about how the pre-professional practice has been and is developed and its evaluation in the bachelor's degree in Accounting and Auditing. Surveys to students, to confirm how the pre-professional practice is developed and its evaluation in the bachelor's degree in Accounting and Auditing. Observation allowed corroborating pre-professional practice and its evaluation in the bachelor's degree in Accounting and Auditing.

## Results and Discussion

The results of the research offer a concrete and practically applicable answer for the improvement of the evaluation of pre-professional practice, based on objectives 8 and 10 that have been established for the bachelor's degree in Accounting and Auditing based on the National Plan for Good Living (PNBV) of the Republic of Ecuador in its redesign. This contributes to the renewal of higher education and the training of professionals capable of transforming themselves and society. Therein lies its relevance and timeliness. Characterize the historical evolution of the pre-professional practice process and its evaluation.

- Systematize the epistemological references that support the pre-professional practice process and its evaluation.
- Characterize the status of competency-based assessment of pre-professional practice.
- Develop a competency-based evaluation model for pre-professional practice.
- Elaborate the methodology for the competency-based evaluation of pre-professional practice.
- Assess the relevance, pertinence and feasibility of the model and methodology.

The following are the results of new significant contributions to the subject matter

### 1. The educational nature of teaching.

It is based on the law of the teaching process that expresses the unity of instruction and education. This means that, whenever instruction is given, education is given at the same time, both processes constitute a dialectical unity in the formation of the personality of the students.

### 2. The scientific nature of teaching.

It expresses the need for the selection of teaching content to include the results of the development of science and technology in each of the professions.

It is considered important to reconceptualize the content of this principle, which should include not the need to impart more and more information to students, but rather that it should be essential, in such a way that it favors operating with theoretical generalizations. The scientific character of the teaching-learning process should lead

students to appropriate a theoretical thinking that allows them to master theories, laws, concepts, but also to act with knowledge of cause, to form values, to protect the environment and to creatively transform nature and society.

### 3. Affordability.

It is given in the recognition by the teacher of the particularities of the age of the students, of the level of development of their skills and abilities, of the accumulated experience, which guide him/her in the organization and conduction of the teaching-learning process, for the achievement of their competencies. In the current conditions, this principle should favor the attention of aspects related to the teacher's ability to relate the new knowledge with the students' thinking mechanisms.

### 4. Systematization of teaching.

The essence of this principle is given in the need for all activity of the teacher and students to be the consequence of a logical sequence and planning. The application of this principle by the teacher requires first to answer the following question: To what extent should the system of knowledge of the science that serves as the basis of my subject be taken into account in teaching? Another requirement of this principle is the necessary planning of the teaching process, which refers to all normative documents: study plan, subject syllabus, study guide and lesson plan, which allow the teacher to organize the teaching process by stages or steps in such a way as to promote the development of competencies in the students.

Fulfilling this principle consists of students not only appropriating a system of knowledge, but also developing a thinking integrated by the different logical operations: analysis, synthesis, generalization, abstraction, induction, deduction. An important aspect refers to the structural analysis of the teaching content. This analysis allows the teacher to determine which competencies are essential to work on this content. In summary, the principle of systematicity demands the articulation of all the links or stages of the teaching process.

### 5. The relationship between theory and practice.

Practice occupies an important place, this requires that the teacher not only gives students the opportunity to make certain theoretical elaborations, but also to face practical activity, exercises specific to their field of action.

Considering this principle constitutes one of the requirements of the principle of the scientific and educational character of teaching, since only when the student can use knowledge to solve the problems of life, the value of a scientific theory increases among them. Today, teaching should not lead students to practice for practice's sake but promote that in the dialectical unity theory-practice, they consciously appropriate theoretical generalizations that allow them to operate with concepts, laws, establish links and relationships, all of which will favor that learning acquires meaning and sense for them.

6. Of the conscious and active character of the students under the guidance of the teacher.

Two elements that constitute the essence of the principle are considered: the conscious assimilation of students in the classroom and the development of cognitive activity.

The first of these elements is a fundamental condition for learning. It is important for the teacher to keep in mind that students should not simply remember what he/she explains but should reflect on what they should do. An excellent way to produce this reflection is to expose students to situations that present contradictions. The conscious nature of learning presupposes, above all, the formation of cognitive interests in teaching, it implies that they consciously participate in class when the content of the subjects is interesting to them, and this depends to a great extent on the teacher and his or her style of work.

The second element, the development of cognitive activities in the teaching process covers different levels: the highest is where students work independently, at the lowest level attention is not stable, they cannot concentrate on the teacher's explanation or on reading a text, they do not have developed cognitive interests, as a rule assimilation is insufficient.

Between one level and the other there are intermediate levels through which students must pass until they reach the level considered the highest.

7. From the soundness of the assimilation of knowledge, skills and habits.

This principle is closely related to the principle discussed above, that of the conscious assimilation of the content by the students, under the teacher's direction, and to the principle of the audiovisual nature of teaching. The relationship with the former is explained by the fact that the more conscious and active the participation of students in the appropriation of knowledge, the firmer and lasting this knowledge will remain in the students. In explaining its relationship with the principle of the audiovisual nature of teaching, it should be noted that one of the essential elements of this principle is given in transmitting concrete ideas to students using different teaching media, including ICTs, which makes knowledge more durable.

In this principle, the consolidation of students' knowledge and skills constitutes an essential didactic function for the achievement of professional competencies, so every teacher must consider the following: Relate the new content with the previous ones and with which it has connection. Activate students' thinking through the formulation of questions. Highlight the essential ideas of the study material, as well as divide the content in such a way that it has a logically assimilable extension. Present in the classes of appropriation of new knowledge the essential aspects, so that, in the exercise and application of the knowledge, these can be extended and deepened. To guide independent work so that students can apply their knowledge and skills.

8. Attention to individual differences in the teaching-learning process.

It recognizes the need to instruct and educate students in the collective class group, for the collective, without losing sight of their individual differences. These individual differences play an important role in the teaching-learning work and are manifested when the teacher: Knows each of the students.

The teacher is aware of the students, their difficulties, possibilities and interests, because without this knowledge it is not possible to carry out any individual work. It foresees the different forms of attention to individual particularities: homework, consultations, formulation of questions in class. It can set group and individual goals and guide tasks according to the students' difficulties.

In summary, in order for student learning to be successful, the teacher must attend to individual differences and at the same time take advantage of all the possibilities of development that exist in the class group as a driving force of the zone of proximal development of each student, so that from the development achieved with the help of the other, student, teacher, tutor, among others, a potential development is achieved, which allows the development of other activities of greater complexity and at the same time, to manifest deeper forms of communication and socialization.

#### 9. The audiovisual nature of teaching.

It is only possible to interpret it in its relation to the unity of the concrete and the abstract, and as a logical consequence, this principle should not only include the visualization of the teaching content, but also point out those specific actions that are necessary to reveal the content of the concept to be formed and to represent this primary content in the form of known models of a material, graphic or verbal type.

The teaching-learning process should be structured in such a way that the student appropriates procedures for learning to learn, but with knowledge of the essence and relationships established between objects, phenomena and processes.

From the sociological point of view, we assume the ideas of Blanco (1997), which conditions the assumption of education as a factor of social practice, conditions that the university and the labor entity are considered as socializing agencies or essential extracurricular factors, in which the pre-professional practice and its evaluation by competencies are formalized and concretized. In both, skills, knowledge and professional values are formed, and modes of action are developed. They are bearers of the conditions and resources involved in a technological activity, which allows the mastery of technological work methods in dealing with various professional problems associated with Accounting and Auditing.

## Conclusions

The analysis of the theoretical references reveals that the existing theory does not go in depth in relation to the evaluation of pre-professional practice, which calls for the need to base a theoretical proposal to make up for this inconsistency.

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