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# METHODOLOGY FOR THE DEVELOPMENT OF PROJECTS INTEGRATING KNOWLEDGE AND CONTEXTS THROUGH THE PROCESS OF HARMONIZATION BETWEEN THE ITSCO PEDAGOGICAL MODEL AND THE PBL METHODOLOGY

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## ABSTRACT

The objective of this article is to analyze the development of integrative projects of knowledge and contexts, aimed at contributing to the graduate profile of the Human Talent Management program at the Instituto Tecnológico Superior Cordillera (ITSCO) during the 2021 academic period. The study followed a positivist approach and employed the deductive method, allowing for the establishment of inferences regarding potential solutions. A total of 40 graduates and 14 faculty members from the ITSCO academic community were surveyed. The results show that integrative projects are highly valued, indicating that project-based learning (PBL) is an effective alternative that enhances the application of the ITSCO and PBL models, making them appropriate strategies for student learning.

Faculty evaluations of the ITSCO educational model, particularly in terms of performance profiles and continuous improvement, as well as its complementarity with other pedagogical approaches and its perceived obsolescence, suggest the need for a comprehensive review. The model was rated low by instructors, revealing that, as both a strategy and a framework, it does not currently represent a didactic or institutional strength for ITSCO.

In conclusion, the perception of key stakeholders (faculty and graduates) regarding professional skills and the graduate profile is not negative. Certain strengths contribute to a moderately positive assessment of graduates' performance in the labor market. However, there is a clear need for the continuous improvement of methodologies, particularly in developing digital skills, financial mathematics competencies, and problem-solving abilities.

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## INTRODUCTION

This article emphasizes the methodologies of Integrative Projects of Knowledge and Contexts (PIS), Project-Based Learning (PBL), the PBL Methodology and its comparison with the current ITSCO pedagogical model. The topic to be addressed lies in the development of a Methodology for the development of projects integrating knowledge and contexts through the process of harmonization between the ITSCO pedagogical model and the PBL methodology, located in the city of Quito, province of Pichincha in Ecuador, during the 2021 school year. The limitations during the development of the field research are related to the measures to address the health crisis caused by the declaration of a pandemic by COVID19 agreed by the World Health Organization.

The problem studied arises from the need to adapt education and the teaching-learning process to the requirements of a society that changes continuously and vertiginously, generating a particularity of risks and uncertainties with complex problems that are difficult to address from a single theoretical perspective, which evidences the need to integrate knowledge from different areas of knowledge. In this sense, collaborative learning as a theory of current learning, proposes methodological alternatives such as PBL and PIS in the search for the participation of students and teachers, as well as academic institutions, to develop projects that relate the reality of the student and their community, with the integrated learning of the different subjects taken in their academic curriculum.

It is indisputable to specify the conception of higher education aimed at providing learning that encourages the student's potential and capacity for interpretation, which allows them to link with the world and their reality in a different way, involving them directly in research and knowledge in globalized contexts. Consequently, a higher education that responds to the demands of an increasingly changing world rather than the disturbing management of the use of the instruments for the acquisition of available knowledge; therefore, contemporary university education is

required to connect knowledge, develop new competencies, respond to the environment in a context of increasingly growing internationalization, creating consistent suitability for critical thinking (Sánchez L., 2013)

Therefore, it is necessary to acquire new tools for the definitive and continuous learning of students. This implies assuming changes to achieve these objectives, such as Project-Based Learning such as those of the Knowledge Integration Projects within the framework of collaborative learning, which are aimed at giving the corresponding value to the human aspect, giving priority to the potential of university students.

Consequently, according to the Ministry of Higher Education, Science, Technology and Innovation, SENECYT, (2013), the Knowledge Integration Project is "the axis of learning production, which expresses the educational progress and achievements of students in each of the units of analysis", in the same way in the Academic Regime Regulations in its Article 29 Practical-experimental learning.- Experimental practical learning is the set of activities (individual or group) of application of conceptual, procedural, technical contents, among others, to the resolution of practical problems, verification, experimentation, contrast, replication and others defined by Higher Education Institutions (HEIs); of cases, phenomena, methods and others, which may require the use of infrastructure (physical or virtual), equipment, instruments, and other material, which will be provided by the HEIs.

Thus, in order to respond to the constitutional requirements, the Academic Regime regulations and its own pedagogical model, the ITSCO has currently developed isolated academic activities that in the best of cases have had the cooperation of one or more chairs according to the initiatives of each academic offer, without strengthening the development of transversal skills. That is why it is important to develop a methodology integrated into the institution's pedagogical model and based on academic requirements that allows achieving the results of competencies and practical skills in students. In this order of ideas, the institutional pedagogical model (ITSCO Model) in its sphere of external projection (Teaching process oriented to learning results), requires defining a process of action and orientation to the personal and professional performance of its students that allows them to orient themselves towards know-how, through performance, that is, it must be possible to demonstrate and evaluate what the student knows how to do linked to their learning results.

The theoretical relevance of this research lies in the fact that since 2019 the Council for Evaluation, Accreditation and Quality Assurance of Higher Education (CEAACES) by constitutional and legal norm carried out the application of the qualification exams for professional practice in which they are reflected, that of 3888 graduated professionals who took the exam, 71.86% passed and 28.14% did not pass the latter corresponds to training technical, technological of the country. Professionals who did not pass do not meet the necessary competencies declared in their graduation profile for their professional practice, this means that their learning results were not acquired in a practical way.

In this sense, the central objective of the research will be: To evaluate the Methodology for the development of projects integrating knowledge and contexts through the process of harmonization between the ITSCO Pedagogical Model and the PBL Methodology.

## THEORETICAL FRAMEWORK

### Knowledge and Context Integration Projects (PIS)

The integration of projects that integrate knowledge and contexts focuses on project-based learning, a strategy that allows integrating what has been learned and resolving situations that are as close to reality as possible. Project-based instructional strategies have roots in the constructivist approach, which evolved from the work of psychologists and educators such as Lev Vygotsky, Jerome Bruner, Jean Piaget, and John Dewey. Constructivism looks at learning as the result of mental constructions; that is, students learn by constructing new ideas or concepts based on their current and previous knowledge (Maldonado, 2008, p.161). It is a significant learning and experience in the training of the future professional, it arises from relevant activities for students, the objectives and contents often go beyond those set out in the curriculum of each third-level subject, promoting a work in which the contribution and integration of knowledge from various disciplines intervene for its development, reinforcing learning, it fosters creativity, individual responsibility, collaborative work, critical capacity and incorporates good educational experiences, originates identity and improves self-esteem in students.

### Project-Based Learning (PBL)

PBL encourages learning by doing to achieve deep learning in students, which enables them to make decisions about content and methods, there is a correlation of experiences not only cognitive but also sensory and physical that are built in an organized way, being responsible learning a result of reasoning according to the progress of the project,

since topics of interest are formulated that connect the knowledge of various disciplines with the context where the project is developed, which does not necessarily have to be within the institution.

The implementation of PBL in educational settings is focused on the analysis of students and teachers, since it is logical to clarify what happens to teachers within the process of change, especially if it is considered that they are not indifferent to the innovations that are carried out in educational establishments, but that they are protagonists in all the alternatives and options aimed at reinforcing the changes in these establishments. therefore, they are considered as agents of change that generate a culture of change in search of improving the quality of teaching (Balsalobre & Herrada, 2018). The work of the teacher makes him or her an educational leader within the educational centers, for this it is necessary an appropriate leadership of the governing body, so that consensus is achieved and the entire organization is directed around common objectives.

### ITSCO PEDAGOGICAL MODEL

The Cordillera University Technological Institute in its educational innovation guide is configured as the practical application of the ITSCO Pedagogical Model Manual (Cordillera Higher Technological Institute, 2020), whose starting point is found in the work of Cristóbal Flores and Ernesto Flores (2016), Education Model by Performance Profiles (2016), of the ITSCO of Quito, in Ecuador. It is in this institution where this pedagogical model was born and developed, which, according to Flores and Flores (2016): Complies with the Ecuadorian constitutional mandate, serving the supreme purpose of education with the formation of citizens with the category of good and good as professionals, capable of inserting themselves and performing well in the social and production world. development and well-being

Thus, the ITSCO Pedagogical Model is configured as a complete system that provides answers to the concerns and challenges of the higher education teacher, however, the approaches of the model are applicable to all educational stages, so that every teacher can find in it a point of reference for the improvement of the teaching-learning processes. The model integrates three interconnected spheres that constantly feed and feed back. These spheres are represented in the figure of the ITSCO pedagogical model that adopts the graphic metaphor of a planet constituted by the nucleus of the pedagogy of love, the mesosphere of Knowing how to be and the sphere of external projection, which represents the Methodology of performance. This is the ITSCO pedagogical system whose graphic representation can be seen in the figure presented below:



**Figure 01. Graphic representation of the ITSCO Pedagogical Model: a comprehensive vision**

Prepared by: Flores y Flores 2016

The inner core represents the pedagogy of love, which is conceived as the educational relationship between teacher and students, based on pedagogical love, trust in students and the ethical responsibility of the teacher, who is committed to the integration of emotions and emotional education in the educational process with a solid ethical foundation. Inextricably connected to the nucleus is the mesosphere of Know-how, focused on the full importance of training in values and ethical learning in the development of any educational process and, specifically, in the field of

higher education. To complete the planet ITSCO and project it outwards, always from its connection with the core and the mesosphere, there is the sphere of external projection associated with the Performance Methodology. This is aimed at achieving training that integrates emotions and promotes values for full educational development and oriented to learning results.

Thus, the implementation of the theoretical construct of the ITSCO Pedagogical Model requires being able to have theoretical keys to support teaching practice, and in turn, a whole series of tools, strategies and practical resources are deployed to make the approaches of the ITSCO Pedagogical Model and its three spheres operational: The pedagogy of love, know-how and the methodology of performance.

At ITSCO, an institution in which technological careers are taught in five ordinary periods that are equivalent to five semesters, each career has a duration of 4500 hours with 30 subjects. The curricular structure of each subject divides its academic load into three types of learning components: for this reason, teachers must plan the different activities that make it up, bearing in mind that the activities of the teaching and collaborative practical work component are taught in person in direct interaction with students. While the autonomous work hours can be carried out outside the classroom.

At a general level, at ITSCO, all careers have, as has been pointed out, 30 subjects each. Of these, 23 are specific and are divided into the three units established by the Higher Education Council of Ecuador<sup>2</sup> (CES): Basic, Professional, and Degree Unit. The other 7 subjects of each career are transversal and have the same design and teaching in all the careers of the institution. These 7 transversal subjects are: - Office Automation - Projects - Ecuador in the World - Critical Thinking - Emotional Intelligence - Research Fundamentals - Entrepreneurship As has been pointed out, the ITSCO Pedagogical Model and its Guide of practical application are adjusted to the educational reality of Ecuador and are contextualized in the educational environments of higher education that are developed at ITSCO.

#### Comparative Framework ITSCO Model vs PBL Model

Below, a comparative summary of the pedagogical models studied in the search for consensus for the improvement of the quality of education and the cognitive and emotional development of the student from the effective participation of the teacher as an agent of change is presented.

ITSCO Model	PBL method
A model fully adapted to the 21st century, which provides the foundations for the achievement of educational excellence, with a focus on the best learning results and the maximum involvement of education professionals.	It promotes learning by doing to achieve deep learning in students, which enables them to make decisions about content and methods, there is a correlation of cognitive, sensory and physical experiences that are built in an associated way, it organizes learning responsibly as a result of reasoning according to the progress of the project
The model integrates three interconnected spheres that constantly feed and feed back. The core of the model is the pedagogy of love, followed by know-how and the methodology of performance	Intentional learning that allows you to connect with reality and seeks to create meaningful and authentic experiences. Working on projects implies going beyond the borders of a discipline, it implies investigating other knowledge other than the strictly disciplinary ones
Teachers must plan the different curricular activities, bearing in mind that the activities of the teaching component and collaborative practical work are taught in person in direct interaction with students. While the autonomous work hours can be carried out outside the classroom. The educational relationship between teacher and student is based on pedagogical love, trust in students and the ethical responsibility of the teacher, who is committed to the integration of emotions and emotional education in the educational process with a solid ethical foundation.	It gives way to teamwork with contribution to different disciplines that face the problem. It is a methodology that allows greater development of communication and collaborative work, perhaps one of the aspects that most characterizes this teaching method is collaborative work. It facilitates much more fluid communication between the work team as it is essential for the correct development of the project

<p>The model is structured in three fundamental parts that correspond to the three main areas of professional responsibility for teachers, where three major areas of teacher responsibility are analyzed, which are:</p> <ol style="list-style-type: none"> <li>1. Area of strategic, planning and evaluation functions oriented to learning outcomes;</li> </ol>	<p>The implementation of PBL in educational settings is focused on the analysis of students and teachers. Teachers are protagonists in all alternatives and options aimed at reinforcing changes in educational establishments, therefore they are considered as agents of change that generate a culture of change in search of improving the quality of teaching. In the framework of PBL, the role of the teacher as a teacher agent empowers students to achieve</p>
<ol style="list-style-type: none"> <li>2. Area of methodological functions, innovation and improvement of didactic methods and integration of new technologies to improve teaching-learning processes and achievement of learning results;</li> <li>3. Area of implementation functions, focused on the teaching, management of learning environments and the teaching leadership of the group of students, as well as the collaboration of the teaching staff and their involvement with the educational institution.</li> </ol>	<p>good academic objectives, and adequate emotional development. Therefore, students who are at risk of school failure want and value the support of teachers</p>

Own elaboration

## METHODOLOGICAL FRAMEWORK

The methodology of this research and proposal aims to establish the approach, paradigm, method used, tools and procedures both for the research carried out and for the development of the proposal, which will be the culminating phase of this work as a contribution to educational development.

The research paradigm is positivist, since knowledge derives from experience, using the instruments of the scientific method of research to obtain it, granting the social phenomena to be investigated the same status as the natural sciences. Likewise, the study is conceived under the deductive method, because it starts from a generalized knowledge to one with a lower degree of generality to apply it in the particular case.

The depth of the study will be explanatory, as it analyzes the relationships between events, finally establishing principles of action, in this case the integration of the PBL methodology with the ITSCO model. Finally, at the integrative level, everything researched from external sources and environments is integrated as part of the research itself, since what is researched is merged with the researcher's perspective, therefore, actions are assumed to achieve the objectives of the research itself.

## HYPOTHESIS

The hypotheses are as follows:

Hi. A methodology for the development of integrative projects, knowledge and contexts contributes to improving the results of practical learning and achieving the graduation profile of the students of the Instituto Tecnológico Superior Cordillera in the city of Quito, Ecuador.

Ho. A methodology for the development of integrative projects, knowledge and contexts does not contribute to improving the results of practical learning and reaching the graduation profile of students from the Instituto Tecnológico Superior Cordillera in the city of Quito, Ecuador.

## RESEARCH TECHNIQUES

Individual questionnaires will be used through the application of the relevant interview guides to students and teachers, which address the thematic axes. Therefore, the technique will be the questionnaire with open questions. In order to



understand the phenomenon globally, two guides have been proposed, one focused on students and the other focused on teachers, in this way it is possible to know the point of view of the graduated professionals, as well as the educators. The structure of the instrument is presented with a total of 7 questions for the interview with teachers and 7 for the interview with students. The interview questions based on the analysis categories will have the following content:

Teachers

- Know the fulfillment of the programmatic objectives in the career
- Perception of the applicability of knowledge and skills in practice in the labour market
- Possible improvements in knowledge and skills in practice in the labour market
- Shortcomings observed in the graduate's profile to meet the demands of the labor market
- Knowledge and use of the PBL project-based learning pedagogical model
- Knowledge of ITSCO's teaching methodology
- Criteria for the improvement of the ITSCO methodology for its applicability in the labor market.

Students

- To know the satisfactory fulfillment of the programmatic objectives of the subjects studied in the degree
- Perception of the applicability of knowledge and skills in practice in the labour market
- Shortcomings observed in the graduate's profile to meet the demands of the labor market
- Knowledge and use of the PBL project-based learning pedagogical model
- Critical analysis of ITSCO's teaching-learning
- Competencies and skills that should be developed to strengthen practical preparation in the labour market

The questions will respond to a Likert scale where three types of levels will be observed: Level 1: Level 2: Medium and Level 3: High, the scores are presented below:

High level		Medium level	Low level	
5	4	3	2	1
TOTALLY AGREE	I AGREE	UNDECIDED	DISAGREE	STRONGLY DISAGREE

### SAMPLE DETERMINATION

The following procedure was performed to select the sample.

- Research of the current student population that meets the inclusion parameters.
- Location of the students and request to carry out the survey.
- Survey Presentation and Data Collection

Consequently, the non-probabilistic sampling techniques used for the present study will be intentional sampling and for convenience, in the opinion of Otzen and Manterola (2017), intentional sampling "allows the selection of characteristic cases of a population by limiting the sample only to these cases. It is used in scenarios in which the population is very variable and consequently the sample is very small" (p. 230), which is why it allows choosing only the cases that are convenient to direct or guide the researcher in the proposed study. In the same way, a convenience sampling "allows us to select those accessible cases that accept to be Including. This, based on the convenient accessibility and proximity of the subjects for the researcher" (Otzen & Manterola, 2017, p. 230).

Therefore, the sample is limited to 40 graduate students and 14 professors from the ITSCO university community and who are currently actively working in the labor market (students who have already graduated) and teach subjects (teachers) in the Human Talent Management career. The inclusion criteria for selecting the intentional and convenience non-probabilistic sample will be as follows:

Students:

- Students who have graduated at least 2 years prior to ITSCO.
- Students who are working in the labor field for at least a period of 2 years.
- Students who wish to participate in the study

Teachers:

- Regular teachers from the ITSCO university community
- Regular professors of the ITSCO university community with three or more years of seniority in their positions.
- Teachers who have participated in the development of integrative knowledge and context projects through the process of harmonization between the ITSCO pedagogical model and the PBL methodology.
- Teachers who wish to participate in the study.

## RESULTS

The findings verify the verification of the initial research hypothesis **Hi**: A methodology for the development of projects integrating knowledge and contexts contributes to improving the results of practical learning and achieving the graduation profile of students of the Human Talent Management career, at the Instituto Tecnológico Superior Cordillera in the city of Quito, Ecuador. as shown below.

### Results Integration Matrix

QUANTITATIVE RESULTS	QUALITATIVE RESULTS
<b>Current situation of learning outcomes and graduation profile in the development of integrative projects at the Instituto Tecnológico Superior Cordillera</b>	
<u>Teaching perspective</u>	<u>Teaching Perspective</u>
By complying with the items evaluated, the learning of ITSCO graduates is adequate for successful work performance. High level of appreciation of the graduate's profile based on the capacity of the graduate in GTH ITSCO, since he applies theoretical foundations of the career in professional praxis in the organizational units where he or she provides his or her services, meeting the demands of the labor market, being preferred by private and public employers, with high remunerations in accordance with his or her level of preparation. The evaluation of teachers on the educational model performance profiles implemented in the ITSCO, in terms of continuous improvements of the model; its complementation with other pedagogical models of teaching and the	In terms of Personnel and Technology, it is necessary to strengthen students in digital skills, in areas such as recruitment 2.0 and 3.0, financial mathematics, HTM laboratories and management of platforms such as the Ecuadorian Institute of Social Security IESS must be implemented. Regarding the aspects of weaknesses related to the Environment, the weaknesses observed are the risk of previous work experience in GTH, due to the lack of pre-professional internship agreements between ITSCO and public and private companies or independent employers. With respect to Methods and Measures, aspects such as the issuance of

<p>obsolescence of this reveals that it must be reviewed, by virtue of its lower or low level appreciated by the teachers, which as a strategy and as a model does not constitute for the academic staff, the institutional and didactic strength of ITSCO.</p>	<p>workshops on technological tools for HTM and associated ICTs. To deepen the academic field, debates linked to the actors and managers of the labor market, as well as the inclusion of HTM projects where the social linkage function of the ITSCO is contemplated.</p>
<p><b><u>Comparison of PBL and ISTCO models Student Perspective</u></b>  The PBL method was not a significant pedagogical experience for the students during their academic stay at ITSCO, either because it does not contribute to the best practices of the PIS or the ITSCO model, or because they do not consider it as a pedagogical and educational element.</p> <p><b><u>Teaching perspective</u></b>  The greatest expectation of the 14 teachers is related to the combined application of the ITSCO and PBL models, for the training of graduates in Human Talent Management.</p> <p><b><u>Student Estimation of Teaching at ISTCO</u></b>  The students' appreciation of the quality of teaching at ITSCO is highly satisfactory, constituting a key element in their hiring, performance and labor remuneration in the labor market, revealing that the programmatic objectives were met in more than 85%, with sufficient and updated didactic resources and the teachers complying with the Schedule of activities to achieve the academic objectives.</p> <p><b><u>Student evaluation on the educational model Performance profiles</u></b>  The ITSCO Model must be continuously reviewed for improvements in the framework of the teaching methodology "performance profiles" and together it must be complemented with other pedagogical teaching models, to avoid pedagogical and educational obsolescence of the model and generate a better impression on the perception of students.</p> <p><b><u>Student assessment of the PBL educational model</u></b>  The PBL model is moderately valued by students, which may be due to pedagogical obsolescence and little updating of the activities carried out through this model, or that PBL is advantaged by other academic learning alternatives such as the ITSCO model.</p> <p><b><u>Student assessment of projects that integrate knowledge and contexts</u></b>  PBL in an eclectic way, combining the best practices of the ISTCO and PBL models, are considered satisfactory and appropriate by students, because in the PIS model an integrative strategy of what has been learned is applied with the solution of situations as close to reality as possible, in an effective and positivist way.</p>	

#### Analysis of quantitative results within the framework of the Theory of Collaborative Learning

The quantitative approach of this study was used to underpin the criteria and theoretical postulates of PBL and PIS in the framework of Collaborative Learning. Thus, it allowed establishing the different patterns of behavior of the sample studied. The PBL Theory and PIS are methodologies considered and contemplated in the wide portfolio of collaborative learning experiences that motivate students, previously guided by teachers, to carry out research to solve problems, managing to turn them into the protagonists of their own learning through the collection of information in the pursuit of the proposed objectives. This type of learning allows participating students to develop very high-order thinking experiences and skills such as analytical-synthetic capacity and assessment. PBL, as well as PIS, from the perspective of Learning Collaborative, they are based on a constructivist theoretical conception involving research and the generation of knowledge by the student himself when planning his particular learning objectives and striving to achieve them through inquiry and interaction with his peers working in a team.

#### QUALITATIVE APPROACH



The weaknesses of the teaching/learning process in the training of ITSCO human talent management graduates were determined, which entail as effects a Curriculum Vitae of the recently graduated Professional without any experience and Possible discards in hiring of graduates in GTH ITSCO, in the private sector, it can be observed that in terms of Personnel and Technology it is necessary to strengthen students in digital skills, in areas such as recruitment 2.0 and 3.0, financial mathematics, HTM laboratories and management of platforms such as that of the Ecuadorian Institute of Social Security IESS should be implemented. Regarding the aspects of weaknesses related to the Environment, the weaknesses observed are the risk of previous work experience in GTH, due to the lack of pre-professional internship agreements between ITSCO and public and private companies or independent employers. With respect to Methods and Measures, aspects such as the delivery of workshops on technological tools for HTM and associated ICTs should be reinforced. To deepen the academic field, debates linked to the actors and managers of the labor market, as well as Regarding the weaknesses observed in the Resources, they must be evaluated to make the corresponding adjustments in terms of the increase in personnel resource costs due to inefficiency.

### GENERAL CONCLUSIONS

Through the research carried out, it has been possible to determine that an important part of formal education at the university level still maintains a traditional teaching approach, which is why many of the transversal skills are not incorporated into the curricula, generating shortcomings in graduates who do not have the necessary competencies for the field of work. and only with experience and time do they develop, in some cases in a better way than in others. According to the analysis of the current situation of learning outcomes in the development of integrative projects in the ITSCO, and the exploration of the current situation of the graduate profile in the Institute, respectively, determining both from the point of view of the professors, as well as the graduate students, that there has been in a certain sense a pedagogical obsolescence and little activities have been used, through this type of appropriate methodologies for the development of competencies, as well as a low level of application of the PBL model, which does not allow achieving the best results in terms of the exit profile of the graduates, required for the professional field.

The study determined, based on the perception of the professors, that the graduate students have a moderately appropriate profile, that is, that there is a certain fulfillment of the objectives of the Institute in relation to achieving that its professional students can perform optimally in the labor field, but on the other hand they are not at the best level and according to the demands of the same. However, the graduate students themselves consider that they are in line with the needs of the market, as they apply their theoretical knowledge and have a certain level of development in relation to practical application. Therefore, it can be inferred that there is a certain level of achievement in relation to the profile required by the institution, but improvement actions should still be established to achieve the objectives of the students, as well as of the institution.

Regarding the comparative explanation of the two PBL (Project-Based Learning) models and the ITSCO model, both methodologies were compared, detecting that on the one hand the model ITSCO has several spheres that can favor the fulfillment of the objectives of professionalization of students, but several aspects of great value that the PBL model has are still omitted, including learning while applying knowledge, favoring decision-making, increasing experience, strengthening learning in a better way, which must be in accordance with reality and be supported by other knowledge that is not only related to disciplinary knowledge. Among other aspects, although there are axes that strengthen the ITSCO methodology, it is not established as part of the methodology, teamwork, communication development, aspects that would strengthen the student's profile for performance in the field of work to achieve higher-level professionals. Regarding the characterization of the elements of the methodology that were unique and genuine for this population, it was evidenced that the methodology of projects integrating knowledge and contexts for the ITSCO is a process that can improve the achievement of personal and institutional objectives aimed at improving the profile of graduate students, strengthening the competencies, as well as skills for the practical field of work.

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