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The Pedagogical Model and Its Contribution to University Academic Competencies in Ecuador

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Abstract

Universities need to develop sustainable pedagogical models to meet growing strategic demands. The progress of human development requires trained professionals who actively contribute to the well-being of their communities. This study aims to evaluate how the pedagogical model contributes to the university academic competencies of students at the Technical University of Babahoyo (UTB). It is a non-experimental research that combines qualitative and quantitative methodologies from a descriptive and correlational perspective. The design is exploratory and transversal in nature. A comparison was made between eight theoretical dimensions on the topic. The pedagogical model and university academic competencies are statistically related. The more comprehensive and better structured the pedagogical model is, including its foundation, its design, its substantive articulation and its monitoring and evaluation, the greater the effectiveness in the development of university academic competencies through knowledge, abilities, skills and attitudes.

Keywords: *Pedagogical model, academic competencies, students, university*

INTRODUCTION

Higher education institutions around the world are changing to become influential actors within the economic, political, productive and socio-cultural ecosystems of their societies, according to Andueza (2021) refers to the need for students to receive higher education in order to develop competencies for the world of work. The application of theory, the professional experience of teachers, and the effective organization of the classroom are crucial, according to most students. Blázquez (2022) also says that educating and training young people is important to achieve employment. Education systems, in particular, should equip students with the skills that employers need, although sometimes this is not the case. A very common problem that is evident today is that academic competencies are not aligned with the demands of the labor market, which has resulted in many graduates lacking the necessary skills to succeed in their professional activities. Likewise, some academic programs have only focused on theory and did not give space to practical experiences. Employers often come looking for professionals with practical skills that are applicable to the job.

Now, in the educational field we always hear this term Pedagogical Model, but it is necessary to conceptualize this word, because as stated (Badiou, 1968 cited by Correa & Pérez, 2022, p. 128) "a model has a theoretical and formal existence. It is organized on structures and simulates a reality and describes and explains it through concepts." In view of the above, it can be deduced that a model synthesizes pedagogical practices that directly or indirectly regulate subjectivity and behavior within specific socializing or pedagogical contexts (Díaz, 1[1]990, p.15, cited in Correa & Pérez, 2022), conceptualizes the pedagogical

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model as the set of pedagogical practices and defines them as "the procedures, strategies and practices that regulate interaction, communication, the exercise of thought, speech, vision, positions, oppositions and dispositions of subjects in school".
On the other hand, Bernstein (1998, cited in Correa and Pérez, 2022) argues that the pedagogical model embodies the educational values of a specific period by reviving essential elements of social reproduction, namely knowledge and culture. The knowledge acquired through education contains both certain and uncertain meanings, reflecting the past and the potential for change. In addition, culture is a crucial tool for social reproduction.
All this situation leads us to propose as an objective to propose a pedagogical model that contributes to improving the university academic competencies of Ecuadorian students.

PEDAGOGICAL MODEL

A pedagogical model guides educational practice with its principles, approaches, and methods. These models offer a theoretical framework for teaching and learning, although it is true that there are many models proposed, it is necessary to consider one from a holistic view. Pedagogical models vary in educational characteristics and philosophies, but seek to achieve meaningful, experiential and dynamic learning.
Meaningful learning is a type of learning in which new knowledge relates in a relevant and substantive way to the individual's previous cognitive structure. In other words, meaningful learning involves incorporating new information in ways that make sense and are connected to what is already known.
Roa (2021) argued that the transcendence of meaningful learning by David Ausubel, analyzing its value in higher education. Meaningful learning poses both a challenge and an opportunity to build new knowledge, which requires structural changes in higher education to prepare critical, determined, and reflective professionals. Moncini and Pirela (2021) highlight the importance of proposing teaching strategies for meaningful learning in Higher Education using a documentary methodology and purely bibliographic design. Teaching strategies and techniques enhance meaningful learning for higher education students, encouraging a shift from rote learning to the acquisition of practical and contextually relevant knowledge.
Likewise, Urday and Deroncele (2022) expressed the need to evaluate teaching and learning. It was appreciated that teachers face limitations in the use of digital platforms, use traditional practices that hinder learning, and have strengths and weaknesses in student participation. 5 areas were identified to improve teaching-learning: integration of pedagogy, discipline and technology; increased student involvement; online formative feedback; student motivation; and emphasis on experiential learning. On the other hand, Baque-Reyes and Portilla-Faican (2021) argued that our knowledge acquired throughout life is a vital part of the cultural capital we contribute to society. Enhancing learning is the purpose of presenting meaningful learning as a focus. The importance of meaningful learning for students is emphasized through a descriptive documentary bibliographic approach, which lasts and evolves over time. These innovative teaching strategies enable students to acquire knowledge and apply it effectively, both in their academic activities and in their daily lives. Based on the benefits, it is recommended to use meaningful learning as a teaching strategy to promote lasting knowledge.
Carrillo, Vásquez and Gaviria (2022) also argued for the need to conceptually identify currents and models for non-linear pedagogies in cooperation. This is a documentary research used in a descriptive-analytical study. It identifies results, theories and concepts of nonlinear pedagogy and recognizes similarities and differences with the constructivist

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approach. Nonlinear pedagogy emphasizes the limitations and needs of the learner, the environment, and the task to optimize tactical performance through comprehensive teaching. Nonlinear pedagogy is similar to constructivism in that it allows for the creation of various technical-tactical solutions in education. However, it stands out for its emphasis on the flexibility of in-game free exploration, making it more adaptable to specific behaviors.

Experiential learning is one of the educational processes that focuses on the student's active and practical participation in real-world situations. This approach goes beyond the simple transmission of information and seeks for students to acquire knowledge, skills, and attitudes through direct experience and reflection on those experiences.

According to Ortí, Vidal, and Mena (2022) argue for the importance of collecting future teachers' perspectives on their competencies when working with high-ability students using virtual reality and experiential learning. The results help to understand the various methods of categorizing high-ability students, which vary according to the countries where they are trained. The creation of a curriculum based on experiential learning theory for teacher education is a marked improvement in preparing future educators to teach. Martínez, Vázquez and Garza (2023) also argued that it is important to obtain and improve digital skills to succeed in an increasingly digitized workplace. Educational institutions strive to revamp curriculum, teaching methods, and educational models by integrating experiential learning and active methodologies to ensure the holistic development of students, including social skills. By implementing project-based learning and experiential learning, students gain real-world experience and take an active role in their learning process.

For his part, Campos (2022) argued that today's teachers must adapt to the flipped classroom model to actively involve students in the construction of knowledge. The flipped classroom is a model that adapts to the needs of teachers and students, using technology to facilitate learning and engage with different teaching strategies, predominantly through ubiquitous learning. Along the same lines, Amores and Ramos (2020) argued that it is necessary to evaluate the limitations of the use of the constructivist pedagogical model. The study analyzes how teachers use constructivist pedagogy in the classroom to improve the teaching-learning process. This significantly affects the execution of certain changes, as well as improves students' understanding through appropriate elements and techniques.

According to Hernández et al. (2021), the objective is to explain a teaching experience where a cooperative learning project was used to help university students develop psychometric research skills through the analysis of the reliability and validity of measurement and evaluation instruments. This strategy promotes scientific research skills, improves teamwork, and improves students' social interactions. Cooperative learning is effective for developing various research and work-related skills. Similarly, Rojas (2021) argued that university education has common shortcomings that hinder students' interests and growth. A new pedagogical model is needed to offer practical solutions to these problems. Success requires dedication, effort, passion, and an engaging education. The goal is not to diminish the importance of faculty or university staff, but rather to achieve balance through collaboration. The student must have control over decisions regarding the creation of knowledge as he or she is the central figure in the educational platform.

Dynamic Learning is an educational process that is fluid, adaptable, and constantly changing. In this sense, the importance of adjusting teaching to adapt to the changing needs of students and the educational environment would be highlighted, learning is not static, but can be adjusted according to circumstances, needs or new ones.

As explained by Alonso et al. (2021), dynamic learning is based on professional pedagogy, distance education, and the interaction between instruction, education, and professional development. It is applicable to all worker training centres and can be adapted to their specific characteristics. The flipped classroom redefines professional education by empowering students, fostering autonomy and creative growth, and utilizing virtual resources. Nieto and Cruz (2022) also stated that two types of educational strategies were

identified in the activities: pedagogical strategies focused on creativity and adaptability to enhance learning, and operational strategies aimed at ensuring the continuity of education. The latter refers to actions to improve ICT skills for communication, remote access, and virtual meetings of teachers and students.

For their part, Araya-Moya et al. (2022) stated that the flipped classroom maximizes face-to-face class time, empowers students, and improves the learning experience. The study aims to examine how the flipped classroom is applied and the advantages and challenges of its implementation. Perez et al. (2022) also argued that the flipped classroom method uses technology for students to review content before class and then collaborate on it during class. Many students struggle to grasp the basics when they start college. Students benefit greatly from the flipped classroom because they can learn and understand each subject by collaborating with others.

Likewise, Cuzcano (2022) argued the importance of proposing ICTs for the development of transversal skills in a virtual environment through the active participation of teachers and students in communication and feedback networks. Excessive use of video lessons, limited knowledge, difficulties in understanding concepts, lack of student autonomy, and possible loss of motivation, hinder learning in the previous phase of the flipped approach. Finally, Arancibia (2021) argued that the university and society establish a two-way connection through social interaction and university extension, enabling the transmission of teaching, research and culture. It is evident the importance of developing a new approach to social interaction and university extension, together with its pedagogical model to promote social growth, training and knowledge production.

UNIVERSITY ACADEMIC COMPETENCIES

University academic competencies encompass the expected acquisition of knowledge, skills, abilities, and attitudes of students throughout their higher education experience. These competencies extend beyond academic mastery and aim to fully prepare students for academic and professional challenges.

Knowledge

Guzmán et al. (2019) stated that society needs competent professionals to operate in the world of work through knowledge management. The importance of the knowledge management research process in the teaching and development of scientific skills based on learning processes should be highlighted. There is evidence of improvements in interpersonal skills, making a decision and solving problems, learning basic scientific skills and professional skills to develop critical thinking as a mechanism for employability. It is stated that the acquisition of necessary skills in the world of work to improve the performance of professionals is possible by focusing on knowledge.

Ferreiro et al. (2019) stated that professionals must have not only knowledge, but also skills, values, and attributes that allow them to perform not only in response but in all operational scenarios. Professional competence must be systematized, because it can be seen that professional competence is the result of being able to combine knowledge, skills, values, judgments, characteristics and personal attitudes that professionals must have in order to perform in their profession. The word professional skills has multiple meanings and sometimes has different names in the same context. A professional competence approach should be taken into account when intervening in the training process and the development of professional competences.

Skills

Muñoz, et al. (2021) argued that the suitability of strategies to improve leadership and management skills in higher education should be analyzed. It is necessary to rethink the ability to homogenize individual attitudes and teamwork, as well as the lack of a leader image, which manifests itself in ineffective leadership. Likewise, in order to strengthen the optimal development of the management process, it is urgent to differentiate the managerial

skills and strategies that those who perform managerial functions must have. The competencies of managers are based on their professional competencies and attitudes, which, due to their complexity, require intensive and continuous specialization. To improve management skills, a proposal should be prepared to strengthen management strategies.
Espinoza and Gallegos (2020) expressed that after systematically mapping and presenting the results, the distinction between soft skills and hard skills, which are competencies directly related to the tasks performed with the knowledge and skills of the subject, becomes clear. On the other hand, soft skills establish a direct relationship with human behavior, social performance, leadership, and emotional management. It is important to develop in students characteristics and skills such as: introspection, which corresponds to the emotional understanding of oneself, self-confidence; the interpersonal component of empathy; the adaptive component that corresponds to the solution of the problem; Stress and, in general, the emotional components that correspond to well-being.

Skills

Ugalde et al. (2021) stated that over the last decade, organizations have faced challenges related to the right people they employ, as people must be active and have the skills and capabilities to position themselves in the markets they are developing. Taking into account the above, the Business Soft Skills Program implements workshops where challenge-based learning is managed where students acquire new experiences that strengthen their technical and soft skills. It has been proven that games as a pedagogical dissemination tool can contribute to the development of various soft skills necessary in all environments where people develop, especially in the labor market.
Bueno (2022) expressed that the concept of competence applies to any discipline, method, tendency, or motivation, and its most important characteristic is its instrumental meaning. Therefore, it is imperative to explain the purpose of their practice in the context of education, bearing in mind that international organizations play an influential role in the various models discussed. It is speculated that a competency-based approach and quality realization is a natural response to increase productivity, with education geared towards these parameters; To this end, a model of quality is accepted as a transformation of the subject, in addition to quality as the goal of responsibility, which will lead to a change in the trend in the evaluation of the relationship between skills and quality.

Attitudes

Cabero et al. (2021) argued that the learning activity on new technologies allows for different ways of using augmented reality in training spaces and the growing possibility of learning, as well as promoting positive attitudes and educational use among students. Evidence shows that students in both grades saw augmented reality as a new technology that is easy to use, inspires motivating learning spaces and facilitates collaboration. However, it also points out that this comes at a high financial cost, widens the digital divide, and requires specialized teacher training.
Morales-Carrero (2020) argued that the role of the teacher is to be a facilitator of the educational cycle, which has flourished, especially because the educational scenario has become a space of controversial and problematic situations. This justifies the use of intervention strategies that promote appropriate relationships so that students and other educational actors can resolve personal, affective, educational, and social conflicts on their own or in collaboration with third parties. Therefore, the role of the counselor should be focused on promoting forms of survival (attitudes) in the environment of hardship, stress, frustration and hostile situations of conflict that affect humanity today due to their frequent recurrence.

METHODS

The research has a quantitative approach and a descriptive scope. The design of the study is cross-sectional in nature. The theoretical foundations are based on the dialectical method,

incorporating both theoretical and empirical approaches to systematize the key aspects of the pedagogical model and the academic competencies of university students.
The body of the article differs from the theoretical sections, making it easier to understand the results presented. These degrees classify skills and competencies including creativity, critical thinking, communication, and collaboration, which are derived from theory. The study shows the teachers' perceptions regarding the variables of the study: pedagogical model and university academic competencies
The analysis allowed the articulation of the dimensions of the Pedagogical Model and its influence on the dimensions of university academic competencies.
The population consisted of 444 tenured and contract professors from the Technical University of Babahoyo (UTB), corresponding to five faculties. Taking into account the knowledge of the size of the population, a Simple Random probability sampling was performed to estimate proportions, according to the following expression, (Cochran, 1977).

$$n = \frac{Z^2PQN}{E^2(N-1) + Z^2PQ}$$

Where:
Z = 1.96 Value at 95% confidence
PQ = 0.5 * 0.5 = 0.25 Maximum proportion that can affect the sample
E = 5.00% = 0.05 Maximum permissible error
N = 444 (data obtained from UTB)
n = 206

The Technique used was the Survey, which only addresses people and provides data on opinions, behaviors and perceptions. The survey can yield quantitative or qualitative results and focuses on predefined questions with a logical order and a set of graduated and numerical responses (Arias & Covinos, 2021).
The Instrument was the Questionnaire that is frequently used in scientific research to collect data. It is a set of questions with answer options in a table, which the respondent must complete (Arias & Covinos, 2021).

RESULTS AND DISCUSSION

The reliability analysis of the instrument was based on a Cronbach's alpha = 0.984 and corroborated with an additional test.

Table 1 Reliability Test Two-Half Test

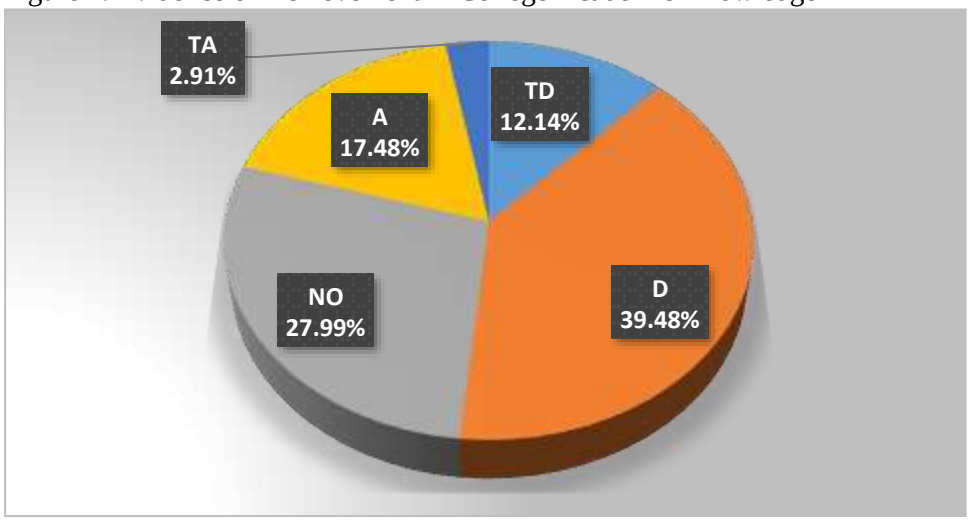
Reliability Statistics			
Cronbach's Alpha	Part 1	Value	0,972
		N of Elements	12a
	Part 2	Value	0,967
		N of Elements	12b
	Total Number of Items		24
Correlation Between Forms			0,960
Spearman-Brown coefficient	Equal Length		0,979
	Uneven length		0,979
Guttman's coefficient of two halves			0,979

Note: Result obtained from the SPSS program

Likewise, the analysis was carried out regarding the conditions in which **university academic competencies** are perceived by teachers.

In figure 1, regarding the evidence that teachers show about the achievement of university academic knowledge by students, they state that 12.14% strongly disagree, 39.48% disagree, 27.99% prefer not to give an opinion on this matter, while 17.48% say they agree and finally 2.91% express themselves to be in total agreement

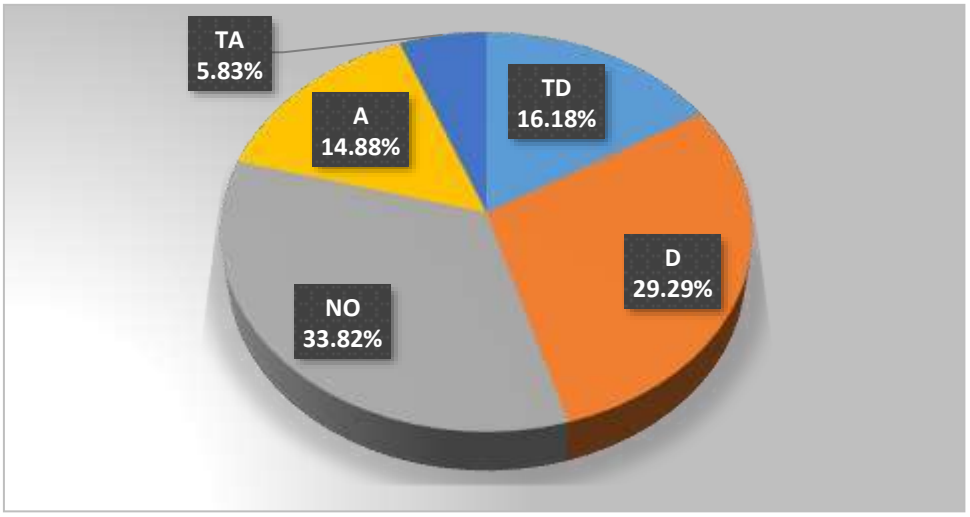
Figure 1. Evidence of Achievement in College Academic Knowledge



This is related to what is stated by Barragán et al. (2020) who argue that future professionals must be prepared to adapt and manage institutional changes, knowledge and their professional activity to meet the needs of production and employment, involving multiple individuals. Institutions require new professionals who are trained and endowed with the necessary knowledge that can efficiently meet organizational objectives through data-driven decision-making. Even Gómez et al. (2018) argued that organizations undergo changes to dismantle knowledge-centric culture, processes, and structures in order to facilitate social and human-centered transformation. Acquire the skills to lead change in the people they serve. Recognized foundational skills and training required.

In figure 2, regarding the evidence that teachers show about the achievement of university academic skills by students, they state that 16.18% strongly disagree, 29.29% disagree, 33.82% prefer not to give an opinion on this matter, while 14.88% say they agree and finally 5.83% express a total agreement.

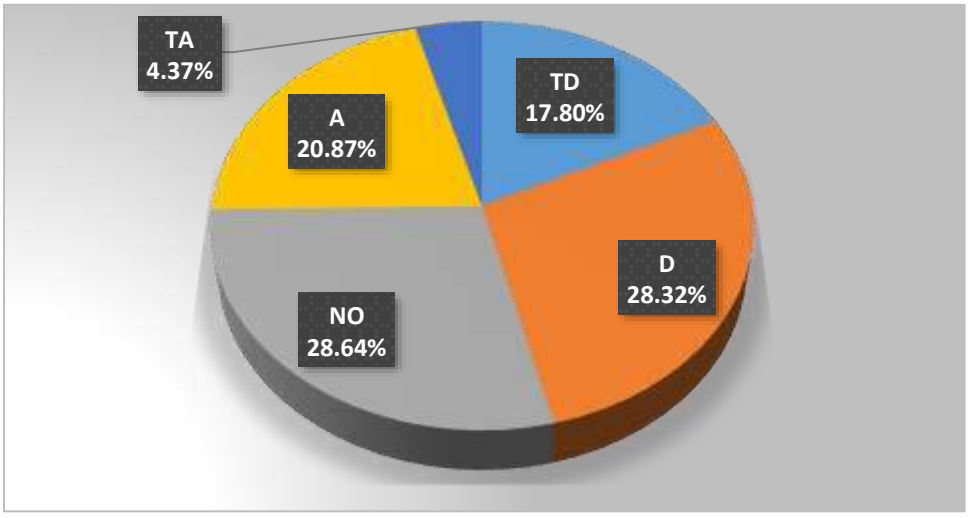
Figure 2. Evidence of Achievement in College Academic Skills



This is related to what is stated by Mendiburu et al. (2022) who point out the importance of having the communicative skill, it is necessary to understand that every idea or message that is emitted must be received in the same intentionality with which it came from the sender to the receiver, this allows that when instructions are given in a clear and concrete way, they are fulfilled efficiently and produce communicative complacency. While Asún et al. (2019) expressed that teamwork is crucial in the workplace. Formative and joint assessments increase participation in teamwork, develop skills, promote equity in the recognition of qualifications and create a climate conducive to learning, which is why skills must be strengthened in students in a comprehensive way.

In figure 3, regarding the evidence that teachers show about the achievement of university academic skills by students, they state that 17.80% Strongly Disagree, 28.32% Disagree, 28.64% prefer Not to Give an Opinion on this matter, while 20.87% report agreeing and finally 4.37% express Totally Agreeing.

Figure 3. Evidence of achievement in college academic skills

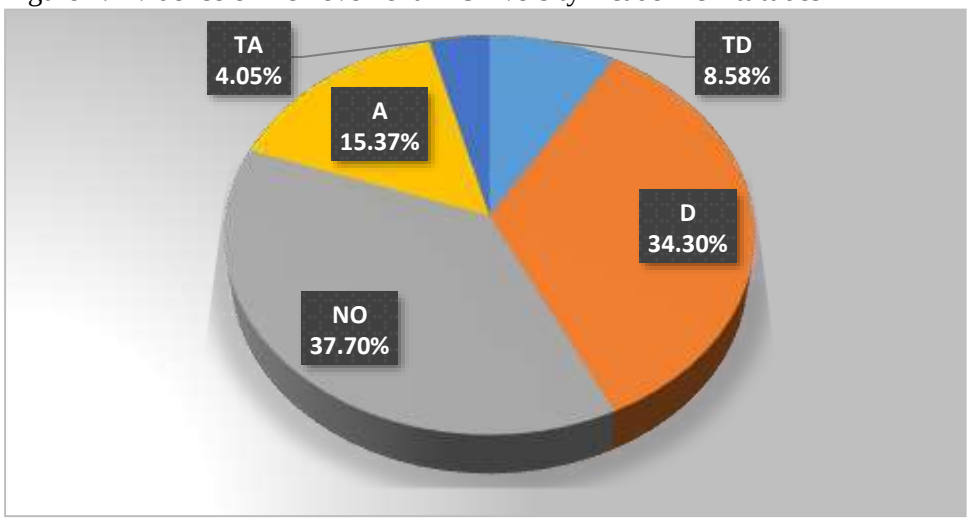


This is related to what was stated by Moreno et al. (2019) who stated that it is necessary to establish criteria to evaluate the pedagogical capacity of teachers in the implementation of courses. Teachers excelled at combining professional and pedagogical skills, identifying deficiencies through the analysis of activities, interviews, and literature. Integrate cognitive-affective and motivational skills for more effective training. In addition,

Mosquera (2021) stated that the digital skills of future teachers are improved by integrating digital tools into the training of online courses and putting them into constant practice of use. They assess students' mastery of digital tools before and after training, comparing results across various areas of digital skills and levels of specialization. Digital competencies improve as student engagement increases, except in content creation

In figure 4, regarding the evidence that teachers show on the achievement of university academic attitudes by students, they state that 8.58% Strongly Disagree, 34.30% Disagree, 37.70% prefer Not to Give an Opinion on this matter, while 15.37% report agreeing and finally 4.05% express Totally Agreeing.

Figure 4. Evidence of Achievement in University Academic Attitudes



This is in line with what was stated by Solís et al. (2019) who argued that improving the quality of service and developing the skills necessary for professionalism are key focus areas to drive success in the workplace. Competencies and their relationship to quality performance assess the foundations and prior preparation. This is based on a continuous integration of cognitive and motivational qualities that influence professional performance. These qualities are closely related to performance and are cultivated throughout the specialization to improve engagement, action, consistent decision-making, and ultimately improve the quality of service provided. Arza-Porras and Rodríguez-Camacho (2019) also stated that contrasting models (openness vs. blocking) combine discourses and practices of intercultural understanding, holistic perspectives, empathetic attitudes, humanization of care, alliance building or proactivity. The key to developing intercultural competence can be used in the planning of training events and the intercultural adaptation of resources.

Figure 5. Structure of the Pedagogical Model

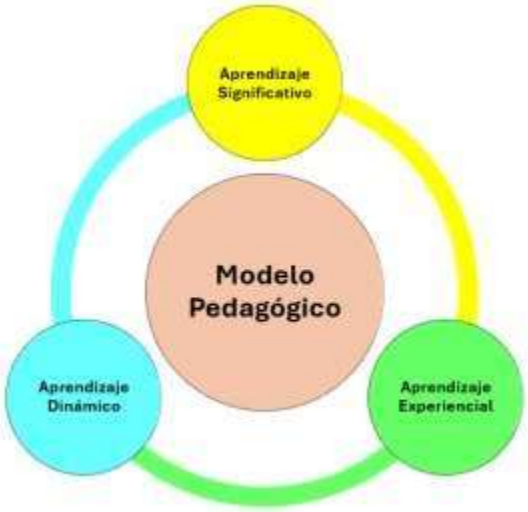


Figure 6. The Relationship of the Pedagogical Model with University Academic Competencies

Correlational Analysis between the Pedagogical Model and University Academic Competencies

For the development of this test, with the aim of statistically demonstrating the independence or relationship between the university educational model and professional competencies, the following hypotheses were defined for the Chí Cuadrado Independence Test.

H0: The Pedagogical Model is independent of the University Academic Competencies

H1: The Pedagogical Model is not independent of the University Academic Competencies

Table 1.

Chi-square test. Variables: Pedagogical Model vs. University Academic Competencies

	Value	Mexico	Sign. Asymptotic (bilateral)
Pearson's Chi-square	119, 470a	4	0.000
Reason for plausibility	126,182	4	0.000
Linear-by-Linear Association	94,375	1	0.000

N of valid cases	206

a. 3 polling stations (33.3%) have expected a count of less than 5. The minimum expected count is 1.74.

Source: SPSS Output

Given that the value of asymptotic significance or so-called p-value is 0.000 and that in turn it is less than 0.05, the null hypothesis about the independence between the variables is rejected and the alternative hypothesis is accepted, with which we affirm that the variable Pedagogical model is significantly related to the variable University academic competencies

CONCLUSIONS.

It was possible to establish that the variables Pedagogical Model and University Academic Competencies are significantly related, since the independence test was rejected in all its analyses and a Spearman's Rho correlation coefficient of 0.880 was obtained, with which we can affirm that the pedagogical model explains 77.44% of the development of university academic competencies in Ecuador.

It was possible to diagnose the current state of university academic competencies; Regarding the achievements evidenced in knowledge, 12.14% Strongly Disagree, 39.48% Disagree, 27.99% prefer Not to Give an Opinion on this matter, while 17.48% report agreeing and finally 2.91% express Strongly Agreeing; Regarding the achievements evidenced in skills, 16.18% strongly disagree, 29.29% disagree, 33.82% prefer not to give an opinion on this matter, while 14.88% report agreeing and finally 5.83% express being in total agreement; Regarding the achievements evidenced in skills, 17.80% strongly disagree, 28.32% disagree, 28.64% prefer not to give an opinion on this matter, while 20.87% report agreeing and finally 4.37% express being in total agreement and finally with respect to the achievements evidenced in attitudes, 8.58% strongly disagree. 34.30% disagreed, 37.70% preferred not to give an opinion on this matter, while 15.37% said they agreed and finally 4.05% said they strongly agreed.

Likewise, it was possible to identify the factors that are elements that affect the development of university academic competencies such as: low analytical, executive and problem-solving skills, also limited level of leadership, deficient assertive communication and very little teamwork, does not show expertise in addressing solutions to their correct work performance, almost no expertise and little adaptability, Also limited proactive and unsociable. In addition, the need to strengthen the areas of meaningful, experiential and dynamic learning was evidenced

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