








# The role of Educational Innovation in peruvian universities from the perspective of the doctoral student in education

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**Abstract**– *The objective of the present study is to determine the perception of the doctoral student in education on educational innovation. The research was developed under the quantitative approach, descriptive level. The sample consisted of 115 doctoral students in education from private universities with corporate legal status, the sampling was by convenience. The instrument applied was the questionnaire of evaluation of educational innovation from García-González & Ramírez-Montoya (2019). The instrument has 3 dimensions. The first one related to change or novelty with 8 items, the second dimension on Added Value with 8 items, finally the third dimension related to types of innovation, with 12 items, but divided into incremental innovation, systematic innovation, disruptive innovation, and open innovation, each with 3 items. The assessment was through the Likert Scale of Agreement. The results show that innovation is well received by doctoral students and with greater acceptance among women as it not only improves the quality of learning, but also fosters research and the development of critical thinking among students. Concluding that it is urgent to redefine educational policies in Peru in order to foster a more innovative and effective environment for the education of its students.*

**Keywords**-- Educational Innovation, university, students.

## I. INTRODUCTION

Learning new subjects is not only a cognitive proposal, but also an essential practice, where the “learning by doing” approach becomes relevant thanks to the inclusion of technologies that facilitate more effective learning. In an environment marked using digital competencies, it is essential that innovation acts as the engine that drives both learning and teaching. This approach makes it possible to create a dynamic, interactive educational environment adapted to the needs of the 21st century.

A literature review in Latin America highlights innovative and entrepreneurial universities in Colombia, Chile, Mexico, Uruguay, Argentina, and Brazil. In Colombia (ICESI, Universidad Nacional de Colombia and Pontificia Javeriana) universities stand out for their focus on business education and the promotion of entrepreneurial activities as a complement to

teaching, research, and extension. In Argentina, the Universidad de Negocios Siglo XXI promotes innovation and entrepreneurship through project-based experiences and prototyping. In Chile, universities (Adolfo Ibáñez and Pontificia Católica de Chile) provide incubation services and have innovation centers that implement technology transfer strategies.

In Mexico, the universities (Tecnológico de Monterrey and Anáhuac) promote business and entrepreneurial training in their curricula, work under the triple helix approach, offer incubation programs and access to contact networks. In Brazil, the universities (Campinas and Sao Paulo) have technology parks, coworking spaces, promote research, work on the creation of patents, offer incubation programs and training in entrepreneurial skills so that students can become owners of their own entrepreneurship. Finally, in Uruguay, the Technological University of Uruguay promotes technical creation, training, and entrepreneurship through the curriculum, as well as business incubators generating knowledge and innovation [1].

It is observed that Latin American realities differ from each other, because although it is observed that some countries develop models of innovative policies, it is not the same in Peru, since none of the Peruvian universities are within the innovation ranking. It is known that the economy is sustained by entrepreneurship, as 70% develop informal and illegal self-employment activities [2]. However, universities present limitations related to the curricular structure and their learning models, which hinder innovation and the ability to solve problems in the country [3], [4].

Current research on innovation indicates the need for the intervention of companies, not only as a strategy, but also as part of national policies since it is necessary to establish contact networks to generate entrepreneurial ideas [5]. In this sense, teachers rethink their teaching using virtual environments, seeking not only to measure learning, but also to accompany it and adapt to new digital and pedagogical challenges [6].

**Digital Object Identifier:** (only for full papers, inserted by LEIRD).  
**ISSN, ISBN:** (to be inserted by LEIRD).  
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Likewise, there is an urgent need to integrate technological tools in educational curricula so that the student becomes the main actor of learning in a university focused to accompany on solving problems of each country [7], [8].

The problem is not only of one country but is a common denominator in the region, where university higher education is in process, due to structural and economic changes in the various countries [9].

The implementation of transmedia narratives in higher education is closely linked to the type of educational institution and various quality factors, such as available infrastructure, technological equipment, academic curriculum and faculty knowledge [9]. However, digital transformation in higher education requires a comprehensive approach that goes beyond the mere incorporation of technology, focusing on the development of professional and digital competencies in faculty and administrative staff, through continuous training programs. This will allow institutions to effectively adapt to the challenges of a constantly evolving digital environment.

In countries such as Colombia, curricular and extracurricular entrepreneurial education, and especially complementary training after undergraduate, are positively related to intrapreneurial activity. Therefore, it is important to participate in comprehensive entrepreneurial education to promote intrapreneurship in universities [10].

The process of innovation in the educational field is becoming increasingly disruptive due to the presence of artificial intelligence, since from the students' point of view AI is valued positively, since it not only reduces study time but also facilitates personalized learning [11]. In addition, it is necessary to recognize that the structural axes in the field of higher education are the teacher and the institutional management [12]. Therefore, the pedagogical innovation that is intended to be developed in higher education requires not only state policies that promote these processes with a view to development, but also leaders and managers in each training center who are committed to it and who are prepared to take on the various processes or types of innovation to apply them in their institutions [13]. Likewise, it is suggested that the teacher must adapt and create new strategies and teaching methods to respond to the demands of the ever-changing society. But it is necessary to consider the advantages and limitations of the student to transform his context [14].

Educational innovation is based on the theory of Fabre Batista, Guadalupe, who proposes the integration of the substantive functions of the university, which include teaching, research and university extension [15]. The substantive functions help to develop the professional competencies required to perform in the work environment [16]. Likewise, to nominate as innovation it is necessary that the change

implemented suggests added value to the proposal made [17], [18].

Likewise, innovation implies a change in the way of thinking and teaching, as well as modifying programming to be more creative, participatory, open, and flexible, but for this to happen it is necessary to change the attitude of the person who is going to develop it so that it does not generate a barrier at the time of change. It also has to do with the incorporation of digital technologies, it involves a change in its products, services, and technology, moving away from the practices that exist in the institution to generate novelty, which is the result of innovation [19], [20], [21].

Innovation is understood as a process that encompasses the generation of novel concepts, technological progress and even intellectual synergy. This approach prioritizes cognitive potential and human capabilities over conventional material resources. The core of innovation lies in the strategic application of emerging technologies that revolutionize the learning experience, transforming educational processes until they generate added value. This perspective implies a constant adaptation and evaluation of the educational context, to implement significant changes that transcend traditional methods, incorporating new methodologies and pedagogical tactics aimed at optimizing academic achievement and the integral development of students [22], [23], [24].

Following the above, innovation is established in three dimensions: change or novelty, added value and types of innovation. For the types of innovation divided into incremental, systematic, and disruptive [18].

The change or novelty implies a transformation in the structure of the educational system; therefore, it is suggested to adapt the curriculum, improve educational practices and create an institutional culture that guarantees the changes [25]. Change is defined as the action of modifying the present order to generate development and knowledge in an open, semi-open, distance and virtual environment where novelty is a result process. In this sense, in change, novelty emerges as processes that are carried out simultaneously when they are attributed as the main characteristics of innovation to produce fundamental changes. For change to materialize and novelty to be generated, it is necessary to distinguish three processes that are not necessarily linear, such as “mobilization” to create a climate of consensus for innovation; “implementation” to introduce the elements of the proposal and “institutionalization” being the generalization of innovation [20].

At the organizational level, change is a fundamental element of the corporate culture, acting as a dynamizer to effectively face the challenges of the context while assuring quality. The importance of change lies in its essential role in innovation since it allows the development of knowledge. For this reason, when change processes are implemented favorably,

they achieve high standards of acceptance in the educational community by implementing their processes, generating a differentiated competitive added value for its sustainable approach, allowing the institution to stand out in an increasingly demanding and dynamic environment [26].

Value added is conceived as the result of the interrelationships between different actors within an innovation ecosystem, including organizations, institutions, entrepreneurs, and resources necessary for innovation and entrepreneurship, such as incubators that play a vital role in the different productive sectors of the country [27].

The types of research are incremental innovation, systematic innovation, disruptive innovation, and open innovation. Incremental innovation is based on the use of available resources to adapt products or services to solve problems [28]. Incremental innovation involves gradual improvements in existing products, services, and processes. This approach allows companies to adapt to the market and optimize their efficiency. In Peru, it has become a key strategy for achieving competitive advantages and fostering a culture of continuous improvement [28], [29], [30]. However, systematic innovation analyzes changes in an organized manner and manages the various opportunities that such changes could generate in the country's economy [31]. Likewise, disruptive innovation is conceived as a process that goes from less to more until it takes hold in each sector, displacing previously dominant technologies [32]. This concept introduces radical changes that transform markets, displacing established competitors. It originates novel products, processes or business models that significantly alter industry dynamics, starting in underserved niches and expanding to challenge the business status quo [28], [30]. This process of disruptive innovation forced educational institutions to adapt their curriculum with the support of technology [33]. Finally, open innovation is established as a new way of innovating that contemplates open and collaborative innovation to co-create democratic development models that establish justice and sustainability over time [34]. Open innovation involves several indicators: the collaboration of the company to develop new products or services [5], alliances between universities and various research centers to access emerging technologies and contribute especially in developing countries [16], [25] in addition to Crowdsourcing, as a model of problem solving and production to obtain ideas and solutions from a wide audience, which allows them to capture external innovations [35].

The gaps identified in higher education reveal the need for a clearer definition of the concept of "innovation". This ambiguity can lead to diverse interpretations that hinder the effective implementation of the various characteristics of innovation [36]. Likewise, the scarcity of research directly linking innovative teaching methodologies to concrete results in sustainable learning hinders evaluation and continuous

improvement [21], [37] also stated that it is essential to close the gaps by promoting the digital literacy of students and teachers through comprehensive humanistic training to address current social problems, requiring technological ecosystems, academic and learning analytics, personalization of learning, gamification, virtual practices and development of computational thinking.

Therefore, the objective of this research is to determine the level of educational innovation implemented by teachers in Peruvian universities, analyzing change, added value and the types of innovation comprising incremental, systematic and disruptive innovation.

## II. METHOD

The research was developed under the quantitative approach. The population of university students in Peru is 95 thousand graduate students [38]. To establish the sample size, it was developed under certain inclusion criteria.

The criteria were: university graduate students in Education, from private universities, with institutional licensing, who received virtual courses in the 2024-1 semester and who accepted the informed consent to provide transparency to the research. Thus, the sample was established at 115 participants by convenience.

To contact the students, the research team from different universities sent the links of the questionnaire to the career coordinators so that the instrument could be applied. Likewise, the application period was 3 weeks corresponding to July 2024.

The instrument that was applied was a questionnaire called Educational Innovation Assessment Instrument whose authors are Abel García Gonzales and María-Soledad Ramírez-Montoya [18], [39].

The instrument has 3 dimensions. The first one related to change or novelty with 8 items, the second dimension on Added Value with 8 items, finally the third dimension related to types of innovation, with 12 items, but divided into incremental innovation, systematic innovation, disruptive innovation, and open innovation, each with 3 items. The assessment was through the Likert Scale of Agreement.

In relation to validity and reliability this was developed by the authors of the instrument, and they establish that the validity was 0.58 for change or novelty, for added value 0.81 and for type of innovation it was 0.57 and globally it was 0.86.

Finally, the ethical criteria in research such as Autonomy, Beneficence, Maleficence and Justice were met [40].

### III. RESULTS

TABLE I  
CROSS-TABULATION OF PERCEPTION OF EDUCATIONAL INNOVATION AND GENDER

		Sex			Total
		Female	Male	Prefer not to say	
Educational innovation	Under	3	5	0	8
		2,6%	4,3%	0,0%	7%
	Medium	43	20	0	63
		37,4%	17,4%	0,0%	54,8%
	High	22	18	4	44
		19,1%	15,7%	3,5%	38,3%
Total		68	43	4	115
		59,1%	37,4%	3,5%	100%

Of the 115 participants, 59.1% are women. Of these, 37.4% have a medium level of educational innovation, while 19.1% reach a high level. On the other hand, men represent 37.4% of the respondents, of whom 17.4% have a medium level and 15.7% have a high level.

TABLE II  
CROSS-TABULATION OF THE DIMENSIONS OF THE PERCEPTION OF EDUCATIONAL INNOVATION AND GENDER

		Sex			Total	Cumulative total
		Female	Male	Prefer not to say		
Change or novelty	Under	5	3	0	8	115 100%
		4,3%	2,6%	0,0%	7,0%	
	Medium	49	28	0	77	
		42,6%	24,3%	0,0%	67,0%	
	High	14	12	4	30	
		12,2%	10,4%	3,5%	26,1%	
Value added	Under	2	5	0	7	115 100%
		1,7%	4,3%	0,0%	6,1%	
	Medium	32	16	0	48	
		27,8%	13,9%	0,0%	41,7%	
	High	34	22	4	60	
		29,6%	19,1%	3,5%	52,2%	
Types of innovation	Under	1	3	0	4	115 100%
		0,9%	2,6%	0,0%	3,5%	
	Medium	40	23	0	63	
		34,8%	20,0%	0,0%	54,8%	
	High	27	17	4	48	
		23,5%	14,8%	3,5%	41,7%	

Among those surveyed, the most outstanding values indicate that both men and women have an average level of perception with respect to change or novelty and types of innovation. Of the total of the female sex, 42.6% have a medium level of change or novelty, while among the male sex this percentage is 24.3%. As for the types of innovation, 34.8% of the female sex has a medium level, in contrast to 20% of the male sex. On the other hand, value added is at a high level, with 29.6% of the female sex and 19.1% of the male sex reaching this level.

TABLE III  
FREQUENCY AND PERCENTAGE OF INNOVATION TYPES

		Under	Medium	High	Total	
Dimension	Types of innovation	f	4	63	48	115
		%	3,5%	54,8%	41,7%	100%
Types of innovation	Incremental	f	2	61	52	115
		%	1,7%	53%	45,2%	100%
	Systematic	f	7	60	48	115
		%	6,1%	52,2%	41,7%	100%
	Disruptive	f	4	32	79	115
		%	3,5%	27,8%	68,7%	100%
	Open	f	4	33	78	115
		%	3,5%	28,7%	67,8%	100%

The dimension of types of innovation includes elements such as incremental, systematic, disruptive, and open innovation. For incremental innovation, 53% of the participants have a medium level. For systematic innovation, 52.2% are also at a medium level. In the case of disruptive innovation, 68.7% present a high level, and open innovation shows 67.8% at a high level. These findings are consistent with the general data for the dimension of types of innovation, where 54.8% were observed at a medium level, 41.7% at a high level and only 3.5% at a low level.

### IV. DISCUSSION AND CONCLUSION

Educational innovation is well perceived by doctoral students of both sexes, which means that teachers apply innovative technological resources in their learning sessions. This experience is contrasted with the work of (Mulero-Henríquez et al., 2024) where university students appreciate activities that the teacher uses for more effective learning, being corroborated in the overall results reached 54.8%.

In relation to the three dimensions, change or novelty, added value and types of innovation, the most outstanding result is 67% of Change or Novelty, considering both sexes, which means that graduate students recognize differences between traditional and innovative education in the use of resources coming from virtuality. This has led to research initiatives using these media taught by their teachers, as pointed out by Mero García, (2022) for whom educational innovation should promote changes in teaching and thus optimize learning so that it adjusts to a globalized society in constant transformation.

In relation to the added value dimension, 52.2% indicate that this is high, which is equivalent to saying that graduate students consider that from this value they can increase their critical thinking because it allows them to visualize other educational experiences and even feel motivated to increase their own learning by using the innovative object. As referred to by Lara-Navarra et al. (2024), for whom uniqueness through novelty is presented as an indicator that can improve the quality of teaching.

And in relation to the dimension of innovation types, 54.8% consider that the innovative object favored the teaching work because it allowed the graduate to work in a team using

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technology, shortening times and distances; therefore, the contribution of the innovative object was relevant in their learning. As pointed out by [34] for whom it is of utmost importance to relate new digital technologies with better communication processes that allow graduates to work with open science that uses more technological resources.

However, the results differ from the studies by Bonilla [3] [4] and Borda-Rivera & Ortega-Paredes (2021) regarding curricular limitations in Peruvian universities, suggesting possible recent advances or contextual differences. Furthermore, the high level of acceptance of disruptive and open innovation underlines the need for educational policies that encourage these practices, aligning with [34] [32].

Therefore, through this research it is evident that educational innovation is well received in postgraduate studies, with greater acceptance among women and a general recognition of its benefits in education. The incorporation of innovative technologies and methods not only improves the quality of learning, but also encourages research and the development of critical thinking among students. These findings highlight the need to continue promoting innovation in education to adapt to the demands of a society in constant change and evolution. To do so, it is necessary or a priority to redefine educational policies in Peru, to promote a more innovative and effective environment in the training of its students. It is recommended to continue investigating contextual differences and advance in the implementation of educational innovations, adjusting strategies to the specific needs of each institution. Finally, it is necessary to promote a culture of acceptance and adaptation to change to maximize the benefits of innovation.

Peru can improve its position in innovation rankings, so it is necessary to improve technological infrastructure and increase investment in R&D, train teachers and foster collaborations between the academic and private sectors.

Regarding limitations, it is indicated that the sample size is small, therefore it cannot be generalized to other educational contexts or other regions of the country. It was focused on a specific educational level such as postgraduate education, and this may differ in various programs. Likewise, it should be noted that only students who accepted may have higher perceptions in relation to educational innovation. Another important aspect may be the conceptualization of the term innovation, which may vary among students. After the above, it is suggested to increase the sample size, undergraduate and graduate levels, and to deepen the conceptualization of innovation, in-depth interviews can be applied.

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