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Technologies to promote entrepreneurship in the academic trajectory: A quantitative study of entrepreneurial university students

Tecnologías para potenciar el emprendimiento en la trayectoria escolar: Un estudio cuantitativo en estudiantes universitarios emprendedores

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TECHNOLOGIES TO PROMOTE ENTREPRENEURSHIP IN THE ACADEMIC TRAJECTORY: A QUANTITATIVE STUDY OF ENTREPRENEURIAL UNIVERSITY STUDENTS

TECNOLOGÍAS PARA POTENCIAR EL EMPRENDIMIENTO EN LA TRAYECTORIA ESCOLAR: UN ESTUDIO CUANTITATIVO EN ESTUDIANTES UNIVERSITARIOS EMPRENDEDORES

ABSTRACT

This study analyzed the role of digital technologies as drivers of entrepreneurship in the academic trajectory of university students, with an emphasis on the evolution of their technological adoption throughout their academic semesters. Using a quantitative, descriptive, and implicitly longitudinal approach, 42 students enrolled in the Bachelor of Marketing and Administration program who simultaneously manage an entrepreneurial business were surveyed. The results showed a differentiated and progressive technological adoption. It was found that 100% used social media and online payment platforms from early stages, and the use of analytical, automation, and specialized e-commerce tools increased significantly as they progressed in their studies. Three critical gaps were identified: analytical, financial-digital, and disruptive innovation. Satisfaction with the technological training received averaged 3.9/5, indicating a curricular opportunity. The study concluded that school trajectory acts as a catalyst for entrepreneurial technological maturity, but requires intentional educational interventions that integrate soft skills with advanced digital competencies to close the identified gaps and promote scalable ventures in the digital age.

Keywords: educational technologies, student entrepreneurship, educational trajectory, digital competencies, higher education

RESUMEN

Este estudio analizó el papel de las tecnologías digitales como potenciadoras del emprendimiento en la trayectoria escolar de estudiantes universitarios, con énfasis en la evolución de su adopción tecnológica a lo largo de los semestres académicos. Mediante un enfoque cuantitativo, descriptivo y longitudinal implícito, se encuestó a 42 estudiantes de la Licenciatura en Mercadotecnia y Administración que simultáneamente gestionan un negocio emprendedor. Los resultados mostraron una adopción tecnológica diferenciada y progresiva. Se detectó que el 100% utilizó redes sociales y plataformas de pago en línea desde etapas tempranas, el uso de herramientas analíticas, de automatización y de e-*commerce* especializado aumentó significativamente conforme avanzan en su formación. Se identificaron tres brechas críticas: analítica, financiero-digital y de innovación disruptiva. La satisfacción con la formación tecnológica recibida promedió 3.9/5, señalando una oportunidad curricular. El estudio concluyó que la trayectoria escolar opera como un catalizador de madurez tecnológica emprendedora, pero requiere intervenciones educativas intencionadas que integren habilidades blandas con competencias digitales avanzadas para cerrar las brechas identificadas y potenciar emprendimientos escalables en la era digital.

Palabras clave: tecnologías educativas, emprendimiento estudiantil, trayectoria escolar, competencias digitales, educación superior

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1. Introduction

Currently, entrepreneurship is no longer seen as a marginal economic alternative but has become established as a cross-cutting skill in university education. This paradigm shift positions the academic career as a strategic space for the progressive acquisition of entrepreneurial skills mediated by digital technologies. Therefore, they are articulated through formal learning, practical experiences, and identity-building processes linked to the student's life project (Romero Castro et al., 2024).

However, assuming that the mere presence of digital technologies in the educational environment automatically leads to the development of solid ventures is an analytical simplification. Technologies, by themselves, do not generate innovation or economic value. Their potential depends on the pedagogical frameworks, the skills acquired, and the institutional conditions that guide their strategic use (Valencia Mora & Delgado Fernández, 2024). In this sense, the university academic career operates as a cumulative process, in which access, appropriation, and sophistication in the use of technology develop unevenly over the course of the academic career.

Various studies have pointed out that academic trajectories not only reflect processes of permanence, lagging behind, or dropping out, but also constitute spaces for academic socialization where cognitive, digital, and socio-emotional skills are developed, with a direct impact on students' entry into the labor market and entrepreneurial capacity (Alejo López, 2024; Torres Udeo, 2025). From this perspective, digital entrepreneurship cannot be analyzed in isolation, but rather as a phenomenon closely linked to the educational, curricular, and cultural dynamics that permeate the university experience.

The incorporation of digital technologies in higher education has profoundly changed the ways in which learning is organized, academic management is carried out, and institutional support mechanisms are implemented. Monitoring systems, such as the Trayectorias model, show that the strategic use of digital tools can strengthen educational decision-making and student performance monitoring (Castellanos et al., 2024). However, a structural gap persists between the use of basic technologies, mainly social networks and office automation tools, and the adoption of advanced technologies geared toward data analysis, process automation, and disruptive innovation, particularly among students who are entrepreneurs during their university education.

Within this framework, this study started from the premise that entrepreneurial technological maturity is not a spontaneous process, but rather the result of a formative trajectory that can be strengthened or limited by curricular decisions, teacher training, and the availability of institutional infrastructure. Analyzing the progressive adoption of digital technologies throughout the school career therefore allows us to identify patterns of use, educational gaps, and opportunities for educational intervention aimed at consolidating more sustainable and scalable ventures.

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1.1. Academic background and digital entrepreneurship

The academic background has been approached from multiple analytical perspectives, including as an academic journey, biographical experience, and process of accumulating cultural and social capital (Alejo López, 2024; Torres Udeo, 2025). In the field of digital entrepreneurship, this notion takes on a project-based dimension, in that the educational trajectory represents the period in which students not only acquire formal knowledge, but also experiment with business ideas, face risks, and develop resource management skills in real or simulated contexts. (Madriz-Bermúdez et al., 2024).

From a critical perspective, it is insufficient to conceive of the educational trajectory solely as a linear academic path. On the contrary, it is a dynamic process marked by tensions between institutional demands, the socioeconomic conditions of the student body, and opportunities for professional development. In the case of entrepreneurial students, these tensions are intensified by the combination of academic demands and business management, which can lead to both meaningful learning and risks of overload and falling behind if there are no adequate support mechanisms in place (Flores Pérez, 2024).

Educational experiences such as the *Baccalaureate for Employability* and *Entrepreneurship in Costa Rica* demonstrated that the curricular integration of entrepreneurial and digital skills is possible when flexible and innovative approaches are adopted that recognize the diversity of student trajectories (Madriz-Bermúdez et al., 2024). Similarly, micro-credential programs demonstrated the potential of modular training models to respond to the changing demands of digital entrepreneurship (Villarruel Reynoso & Aceves Márquez, 2025). However, these experiences remain exceptional in many Latin American contexts, where entrepreneurial training continues to be subordinated to traditional approaches focused on content transmission.

1.2. Digital technologies as enablers of entrepreneurship

Digital technologies have significantly expanded access to resources that were previously reserved for established companies, such as e-commerce platforms, digital marketing tools, online payment systems, and virtual collaboration environments (Romero Castro et al., 2024). In the university context, these technologies act as enablers of entrepreneurship by reducing barriers to entry and facilitating early experimentation with business models..

However, various studies have pointed out that technological access does not automatically translate into a solid entrepreneurial intention or sustainable ventures. The effective use of digital technologies depends on the development of complementary skills, such as creativity, internal locus of control, analytical ability, and risk tolerance, as well as training processes that guide their strategic use in real business contexts (Valencia Mora & Delgado Fernández, 2024).

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In particular, social media has established itself as a key tool for validating ideas, building brands, and generating direct sales among student entrepreneurs. However, over-reliance on these platforms can limit technological diversification and reinforce low-scalability business models if not complemented by the use of analytical tools, automation systems, and specialized e-commerce platforms (Valdivia-Velasco et al., 2024)

1.3. Technological gaps in student entrepreneurship

Recent literature identifies at least three critical technological gaps in Latin American student entrepreneurship. First, the analytical gap, characterized by the limited use of data analysis tools for business decision-making. Second, the automation gap, reflected in the scarce implementation of technological solutions aimed at optimizing operational processes. Finally, there is the disruptive innovation gap, evidenced by the almost zero adoption of emerging technologies such as artificial intelligence (AI), blockchain, augmented reality (AR), and virtual reality (VR) (Valencia Mora & Delgado Fernández, 2024).

These gaps should not be interpreted solely as technical deficits, but rather as expressions of structural limitations in university education, access to resources, and the culture of innovation. Tarrillo Saldaña et al. (2025) warned that a low-risk culture and a predominant focus on economic survival restrict the exploration of technologies with high transformative potential. In this sense, closing the technological gaps involves not only expanding the range of training available, but also rethinking pedagogical approaches and institutional expectations with regard to university entrepreneurship.

In the Latin American context, the analysis of university entrepreneurship takes on particular relevance due to the structural conditions affecting higher education systems, characterized by inequalities in access to technological resources, budgetary constraints, and significant heterogeneity in the quality of training programs. These conditions directly affect the way students build their academic trajectories and the real opportunities they have to develop sustainable ventures during their academic training (Alejo López, 2024; Torres Udeo, 2025). In this sense, the university acts not only as a space for the transmission of knowledge, but also as an environment for social mediation where existing technological and entrepreneurial gaps are reproduced or reduced.

From this perspective, it is pertinent to analyze student entrepreneurship not only as an individual initiative, but also as a phenomenon deeply conditioned by institutional, curricular, and pedagogical dynamics. Evidence suggests that when institutions lack clear strategies for integrating digital technologies in a progressive and coordinated manner, students tend to develop ventures based on low-level technological solutions, which limits their capacity for growth and scalability (Romero Castro et al., 2024; Valdivia-Velasco et al., 2024). Thus, the academic trajectory can become both a catalyst and a limiting factor for entrepreneurial development.

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Likewise, the literature emphasized that technological appropriation does not occur uniformly among students, but is mediated by factors such as prior cultural capital, work experience, access to support networks, and the pedagogical guidance received throughout their studies (Alejo López, 2024). These differences are reflected in divergent academic trajectories, where some students manage to advance toward a strategic use of digital technologies, while others remain at basic levels of adoption focused on the instrumental use of social networks and office automation tools.

In this scenario, teachers and curriculum design take on a central role. The lack of teacher training in emerging technologies and digital entrepreneurship can lead to a disconnect between the content taught and the real needs of the productive environment, reproducing traditional approaches that prioritize theory over practical application (Valencia Mora & Delgado Fernández, 2024). On the contrary, flexible training experiences, such as those documented by Madriz-Bermúdez et al. (2024) and Villarruel Reynoso and Aceves Márquez (2025), showed that it is possible to design more adaptive training paths capable of responding to the challenges of contemporary digital entrepreneurship.

Consequently, addressing the relationship between digital technologies, entrepreneurship, and academic performance involves recognizing that the development of entrepreneurial skills is a gradual, cumulative, and contextualized process. It is not just a matter of incorporating technological tools into the classroom, but of building educational ecosystems that promote experimentation, learning based on real problems, and the development of analytical and strategic skills from the early stages of university education (Castellanos et al., 2024).

Following this logic, this study was positioned as an empirical contribution to understanding how technology adoption evolves throughout the academic career of entrepreneurial university students, identifying not only levels of technology use, but also persistent gaps and opportunities for educational intervention. Analyzing these processes allows us to generate relevant evidence for the design of institutional policies aimed at strengthening entrepreneurial training and consolidating a higher education model that is more relevant, inclusive, and aligned with the demands of the digital economy (Tarrillo Saldaña et al., 2025).

2. METHOD OF RESEARCH

A quantitative, descriptive, cross-sectional design was used, with an implicit longitudinal component through comparison between groups from different semesters. The sample consisted of 42 students from the Bachelor's Degree in Marketing and Administration at a Mexican public university, all of whom had an entrepreneurial business in operation. The selection was non-probabilistic for convenience, with clear inclusion criteria: being enrolled, having an active venture, and having used at least one digital tool in its management.

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A structured questionnaire with 40 questions was designed, organized into three sections: *Sociodemographic and academic data* (gender, age, semester, type of business); *Technology adoption* (tools used, frequency, purpose); and *Perception and attitude* (Likert scale from one to five on technological impact, training satisfaction). The instrument was validated by expert judgment and a pilot test with 10 students. Overall reliability reached a Cronbach's alpha of 0.87. The data were processed using *SPSS v.27 software* (Table 1). Descriptive statistics (frequencies, percentages, and means) were used, as well as contingency tables to cross-tabulate semester *vs.* type of technology, correlational analysis between technology use and perception variables, and analysis of variance to compare means between semesters.

Table 1
Processes used

Process	Description
Descriptive statistics	Frequencies, percentages, means, and standard deviations.
Contingency tables	To cross categorical variables.
Correlational analysis	Pearson's coefficient for Likert variables.
Visualization	Bar charts and cumulative frequency tables.

This study was based on a quantitative approach, as it objectively measured and analyzed the relationship between the use of digital technologies and the development of entrepreneurship in the university academic career. This approach allows for the collection and analysis of numerical data, facilitating the identification of patterns and comparisons between academic groups such as:

- Use of digital tools and perception of productivity.
- Technology training received and implementation capacity.
- Type of technology used and sector of the venture.

Initial contact was made through career coordinators and university networks. The instrument was administered online via Google Forms from May to December 2024. The response time was 15–20 minutes per participant, and informed consent was included at the beginning of the questionnaire so that participants were aware of the research objective. There were four limitations to the research. Non-probability sampling limited the generalizability of the results. Self-reporting could generate possible social desirability biases. The cross-sectional approach does not allow for establishing causality. Finally, the specific context limits the research results to one university and degree program. There were also two limitations, one temporal and one thematic. The first occurred

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when collecting data during the 2024 school year. The second focused on digital technologies, not on other facilitators of entrepreneurship.

3. Results

In total, 81% of participants were women and 19% were men. It was found that 29.3% were in their second semester; 14.6% in their fourth semester; 36.6% in their sixth semester; and 19.5% in their eighth semester. Likewise, three main types of businesses were observed: food (53.7%), beauty (31.7%), and clothing (14.6%).

3.1. Evolution of technology adoption by semester

A strong positive correlation (r = 0.82, p 0.01) was observed between semester progress and the adoption of advanced technologies (Table 2).).

Table 2

Percentage of technology use according to progress in school career

Technology	2.° semester	4.° semester	6.° semester	8.° semester
Social media	100%	100%	100%	100%
Analytical tools	8.3%	33.3%	46.7%	75%
E-commerce platform	33.3%	50%	73.3%	87.5%
Process automation	0%	16.7%	26.7%	50%
Own website	45%	58%	72%	85%

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In this regard, four technological gaps were identified:

- Analytics: 35.7% use data analysis tools.
- Digital finance: 61.9% use financial management apps.
- Disruptive innovation: 0% use AI, blockchain, AR/VR, or chatbots.
- Cybersecurity: 0% are familiar with specific tools.

3.2. Perception of technological impact (Likert scale)

Analysis of the data obtained revealed that the improvement in visibility was 4.33 (SD = 0.68), the optimization of study-work time was 3.89 (SD = 0.92), applied learning was 4.12 (SD = 0.74), and satisfaction with university technology training was 3.90 (SD = 0.81).

3.3. Curriculum integration *vs*. actual needs

Likewise, the gap between technological needs and training received was identified. It was observed that the largest gap was related to data analysis, while the smallest was advanced digital marketing (Table 3).

Table 3
Gap between technological needs and training received

Technological competence	Percentage that needs it	Percentage who receive it in class	Gap
Data analysis	92.9%	35.7%	57.2%
Advanced digital marketing	88.1%	59.5%	28.6%
Fintech and digital payments	73.8%	23.8%	50%
Automation	61.9%	9.5%	52.4%
Cybersecurity	54.8%	4.8%	50%

3.4. General use of digital technologies

It was found that all students use social media to promote their businesses, with Facebook being the predominant platform (78%). Ninety-five percent use digital tools to manage their businesses, although only 61.9% use specific applications for financial management. Likewise, the most widely used tools were identified, with online payment platforms being the most common (Table 4).

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Table 4
Most commonly used digital tools

Tool	Type	Frequency	Percentage
Canva	Graphic design	35	83.3
Meta Business Suite	Network management	25	59.5
Excel/Google Sheets	Finance	28	66.7
Mercado Libre	*E-commerce*	18	42.9
Online payment platforms		42	23.8

On the other hand, participants' perceptions of the impact of technology were identified. It was observed that the importance of integrating new technologies obtained a *very high* level, while training to implement advanced technologies obtained a *moderate* level (Table 5).

Table 5
Students' perception of the impact of technology on entrepreneurship (Likert scale)

Dimension	Average score	Level
Improved business visibility	4.33	High
Improved business visibility	4.76	Very high
Training to implement advanced technologies	3.33	Moderate
Satisfaction with university technology education	3.90	High

3.5. Technology education and training

It was found that 69% of participants had taken online courses on entrepreneurship (Udemy: 35.7%, and Coursera: 28.6%). In this regard, 100% considered it important to receive more technological training in their career. However, only 35.7% use data analysis tools for decision-making. In addition, it was found that none of the participants use AI, AR, VR, blockchain, chatbots for customer service, or crowdfunding platforms in their ventures.

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3.6. Relationship between technology and business management

It was found that businesses related to food all use social media and delivery apps, while businesses related to beauty products use Instagram and Canva. On the other hand, clothing-related ventures use Facebook and Mercado Libre (Table 6).

Table 6
Technology by business type

Type of business	Primary tool	Percentage of users
Food (53.7%)	Social media + delivery apps	100%
Beauty (31.7%)	*Instagram + Canva*	92%
Cloth (14.6%)	*Facebook + Mercado Libre*	85%

In addition, four barriers to technology adoption were identified. The first was a lack of specialized knowledge, as 64.3% of participants do not use data analysis tools. The second was financial constraints for premium software, followed by a lack of time for training, with 51.2% reporting lack of time as their main challenge. Finally, there was a lack of knowledge about advanced tools. In this case, all participants were unfamiliar with cybersecurity tools..

3.7. Significant correlations

Moderate positive correlations ($r > 0.5$, p 0.05) were found between: *the use of digital tools* and the *perception of improved productivity*; the *technological training received* and *the ability to implement digital solutions*; and the *use of social media* and the *increase in daily sales*. In the case of the distribution of technology use by semester, it was found that eighth-semester students use more advanced tools and their own websites in their ventures compared to the rest of the students (Table 7).

Table 7
Technology use according to academic progress

Semester	Percentage using advanced tools	Percentage with own websites
2°	25%	45%
4°	42%	58%
6°	68%	72%

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Table 7
Technology use according to academic progress

Semester	Percentage using advanced tools	Percentage with own websites
8°	75%	85%

Note. Advanced tools are considered to be specialized software beyond social networks and basic office automation.

3.8. Investment in technology

It was found that 48.8% invested between 5,000 and 10,000 Mexican pesos in initial technology. In addition, 87.8% recovered their technology investment in six months to a year. On the other hand, 17.1% have employees who use specific technological tools.

3.9. Technological outlook for the future

82.9% plan to diversify their products/services using technology. In addition, 78% plan to physically expand their current premises with technological support. 100% believe that technology will be key to the future of their venture. Finally, it was found that only 2.4% have their business formally registered with the Tax Administration Service, but 73.2% plan to do so. This shows a digitally active but technically basic university entrepreneurial ecosystem with high growth potential through the strategic incorporation of more advanced technologies and specialized training, which, whether on their own, but preferably should be provided during their training.

4. Discussion

The results confirmed that the academic trajectory operates as a cumulative process of technological literacy. The difference between the 8.3% use of analytical tools in the second semester and 75% in the eighth suggests that prolonged exposure to the university ecosystem, with its projects, networks, and discussions, progressively cultivates technological-entrepreneurial capital. This finding was in line with the proposal by Alonso et al. (2025) on the transformation of school as a space for experimentation and with the ideas of coordinates for networked innovation.

However, the 57.2% gap in data analysis training is alarming. In a data-driven economy, this deficiency limits students' ability to make evidence-based decisions, optimize resources, and design scalable strategies. As Parrales Poveda and Rodríguez Baque (2025) pointed out, innovation and technologies must be a cross-cutting axis in business growth, not an accessory complement.

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The total absence of disruptive technologies, such as AI, blockchain, AR, and VR, revealed a significant gap in the incorporation of advanced tools that enable intelligent automation, decentralized process security, and the creation of immersive digital experiences, limiting the innovative and scalable potential of student ventures. In the field of entrepreneurship, blockchain is used for the secure management of financial transactions, the implementation of smart contracts, product traceability, and data protection. Its disruptive nature lies in its ability to transform traditional business models, reduce operating costs, and generate new value schemes based on digital trust and decentralization. This is not explained solely by economic limitations; there is also a culture of low risk and a lack of inspiring models in the immediate environment.

Programs such as the one described by Madriz-Bermúdez et al. (2024) in Costa Rica showed that it is possible to integrate flexible and innovative curricula that encourage technological experimentation. In this regard, moderate satisfaction (3.9/5) with the technological training received suggested that, although the university is contributing, there is significant room for improvement. Micro-credentials (Villarruel Reynoso & Aceves Márquez, 2025) and mentoring systems (Flores Pérez, 2024) are emerging as promising strategies for closing the gaps identified.

5. Conclusions

This study showed that digital technologies are key enablers of entrepreneurship in the academic career, but their adoption is gradual, uneven, and strongly influenced by academic progress. The academic career functions as a technological ladder, where each semester represents an opportunity to incorporate more sophisticated and strategic tools.

Teachers must understand that putting students to work selling does not mean entrepreneurship if it is not done with a product design and sales technique for entrepreneurship. Making students spend money without verifying what was done and what was generated in income and expenses is not synonymous with entrepreneurship. Therefore, teachers must be trained before teaching entrepreneurship subjects or having students make sales just to pass a subject and make them spend money without making a profit, but with the sole purpose of appearing in a photo.

Three critical gaps (analytics, automation, and disruptive innovation) were identified that require targeted educational interventions. University education must evolve from a basic digital literacy approach to a model of advanced entrepreneurial technological competence, integrating soft skills (creativity, locus of control) with sector-specific digital tools.

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In this regard, future research should: delve deeper into the role of mentoring and support in technology adoption, design and implement micro-credential programs in emerging technologies, and explore the impact of support networks (family, academic, business) in overcoming technological gaps. Likewise, teacher training in entrepreneurship and emerging technologies should be promoted, and the pedagogical and practical implications should be investigated. The findings of this study not only provided empirical evidence on technological evolution among university entrepreneurs, but also pointed to specific directions for institutional, curricular, and teaching action.

5.1. Curriculum design

Progressive integration of digital skills: The progress in technology adoption correlated with the semester suggests that curricula should sequentially articulate digital skills: from basic literacy (social media, graphic design) in the early semesters to advanced skills (data analysis, automation, fintech) in the later semesters. Each entrepreneurial subject should include a specific technological layer, in accordance with the level of training.

Closing gaps through specialized modules: Given that the gap in data analysis reaches 57.2%, we recommend creating mandatory Data Literacy modules for entrepreneurs, focused on accessible tools (Google Analytics, Meta Insights, basic Power BI) and the interpretation of business metrics.

Cross-disciplinary microcredentials: Following the proposal by Villarruel Reynoso & Aceves Márquez (2025), certifiable microcredentials could be implemented in critical areas not covered in depth by the curriculum, with partial academic recognition and articulation with the main program. For example, Automation with Zapier/Make, Basic Cybersecurity for Small and Medium-sized Enterprises (SMEs), Introduction to Generative AI for Marketing.

5.2. Teaching practice

Mandatory teacher training in emerging technologies: 100% of students recognize the importance of technology, but satisfaction with university education (3.9/5) indicates a disconnect between expectations and what is offered. There is an urgent need to train teachers not only in the use of technology, but also in teaching with and for entrepreneurial technology, especially in sectors such as food or beauty, where student entrepreneurship predominates.

Evaluation based on actual results: The logic of *selling to prove oneself* must be overcome. Instead, entrepreneurial activities should be evaluated using management indicators (gross margin, acquisition costs, inventory turnover), digital tools (analysis captures, automated flows), and metacognitive reflection on mistakes and adjustments.

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Simulations with real tools: Instead of hypothetical cases, we recommend using educational accounts on platforms such as *Shopify*, *Meta Business Suite*, or *Canva Pro*, so that students can experiment with real environments, even if their business is in its early stages.

5.3. Institutional management

Creation of a digital entrepreneurship laboratory (LED): A physical-virtual space equipped with access to specialized software, technology tutorials (peer-to-peer and with experts), and sector-specific mentoring (food, beauty, fashion). The LED could operate with elective credits and serve as a bridge between academia and the local entrepreneurial ecosystem.

Partnerships with technology platforms: Negotiating agreements with companies (*Google*, *Meta*, *Mercado Libre*, *Conekta*) to offer educational accounts, certified training, and access to basic Application Programming Interfaces, a strategy already proven in universities in Chile and Colombia (Paredes-Chacín & Vargas-López, 2024).

Post-graduation longitudinal tracking system: Although the study design is cross-sectional, the institution could implement a panel of entrepreneurial graduates to measure the medium-term impact of training interventions, closing the disruptive gap, formalization, scalability, and feeding cycles of continuous improvement.

In an increasingly digitized world, promoting entrepreneurship in schools is not just an educational option; it is an institutional responsibility to train citizens capable of innovating, creating value, and contributing to economic and social development from the classroom.

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