

Work Package 4

Pilot implementation of the methodology of articulation with the business sector

Deliverable 4.1

Results of the pilot with its evaluation and adjustments.

Project ID	101082890
Project full title	Universities of Ibero-America Weaving Ties with the Business Sector
Project duration	1 March 2023 – 28 February 2026 (36 months)
Coordinator	Universidad de Caldas
Beneficiaries	UCALDAS, UVIGO, UTN, UAN, UAM, PPORTO, FunLuker, FunRonsel, CCMPC.
Funding scheme	Erasmus+, Capacity Building in Higher Education
Work package	4
Deliverable Nr.	D4.1
Due date	February 28, 2025
Actual submission date	February 28, 2025
Version	V.1
Author (name, beneficiary)	UAM, UCALDAS, UAN, UTN.
Leading beneficiary	Universidad Autónoma de Manizales
Contributing beneficiaries	UCALDAS, UTN, UAN, UVIGO, PPORTO, FunLuker, FunRonsel, CCMPC.
Dissemination Level	[SEN — Sensitive]

Table of Contents

Introduction.....	p-3
1. Chapter One. Results of the pilot programs.....	p.4
1.1. Work agenda for the productive sector.....	p.5
1.1.1 First phase. Methodological preparation of business cartography.....	p. 6
1.1.2 Second phase. Business cartography: stakeholder relations and selection of prioritized organizations.....	p.7
1.1.3 Third Phase. Business cartography: transfer and communication.....	p-8
1.2 Awareness and Communication Strategy.....	p.9
1. 3 Training Strategies for Teachers, Entrepreneurs, and Graduates.....	p.11
1.4 Student training.....	p.14
2. Chapter Two. Lessons learned.....	p.23
2.1 Characteristics of the pilot programs.....	p.24
2.2 Role of the Actors in the Implementation of the Pilot Programs.....	p.25
2.3 Analysis of lessons learned.....	p.25
2.3.1 Building strategies that generate shared value between the universities and the productive sector in training, research, development, and innovation	p.26
2.3.2 Experiential Learning Training.....	p.26
2.3.3 The Ibero4jobs methodology expects the ongoing evaluation of the learning process.....	p.27
2.3.4 Relationship between the university-productive Sector	p.27
2.3.5The Ibero4jobs methodology responds to the principles of flexibility, contextualization, and participation	p.28
2.3.6 The role of the stakeholders in the context of business practice.....	p.29
2.3.7 Strategic communication as a transversal axis in the methodology Ibero4Jobs	p.30
3 Chapter Three. The adjusted methodology of Ibero4Jobs.....	p.32
3.1 Context of the problem	
3.2 Objectives	

3.2.1 General Objectives.....	p.34
3.2.2 Specific Objectives.....	p.34
3.3 Theoretical framework.....	p.34
3.3.1 Approach Focused on Competency and Soft Skills Development.....	p.35
3.3.2 Experiential Learning Approach.....	p.36
3.3.3 STEAM approach.....	p.37
3.3.4 Mentoring.....	p.37
3.5 Strategies for Learning.....	p.38
3.6 Methodological Phases.....	p.39
3.6.1 Preparation Phase.....	p.40
3.6.2 Contextualization Phase.....	p.41
3.6.3 Awareness and Communication of the Methodology Phase	p.42
3.6.4 Training Strategy Phase for Teachers, Entrepreneurs, and Graduates.....	p.43
3.6.5 Student Training Phase	p.45
3.7 Evaluation Phase.....	p.48

Introduction

The work package four of the *Universities of Ibero-America project weaving ties with the business sector*. *Ibero4jobs* has the general objective of "Implementing a pilot program of practical-theoretical training that links the business sector, guilds, and institutions of higher education in order to improve the hard and soft skills of students". In this sense, it is essential to recognize the current conditions of the labor market, which is characterized by rapid technological evolution and a growing demand for specific skills. This situation has generated a gap between the skills acquired in traditional education and those currently required by companies. Bridging this gap between the demands of the productive sector and the graduates' graduation profile involves the construction of shared value dynamics between the university and the company, framed in comprehensive training.

In this context, the Ibero4jobs Methodology emerges from the experiences and lessons learned (LL) of the four pilot programs developed by Latin American universities during the second semester of 2024: UAM-Dual-Skills, implemented by the Universidad Autónoma de Manizales-Colombia; INTEGRA-UAN, created by the Universidad Autónoma de Nayarit-Mexico; Closing Gaps carried out by the Universidad de Caldas-Colombia; and UT4Jobs, implemented by the Universidad Tecnológica de Nayarit-Mexico. It should be noted that the pilot programs were created based on the diagnostic, training, and immersion processes previously led (PW3) by the University of Vigo, the Instituto Politécnico de Porto, and the Ronsel Foundation. Likewise, the Luker Foundation and the Manizales Chamber of Commerce for Caldas, partners of the Ibero4jobs consortium, contributed to the development of the pilot programs.

The Universidad Autónoma de Manizales led the process of the pilot programs through the elaboration of a route of directed guidelines, which allowed each university, according to its particularities, to design its proposal. To this end, activities were structured in the following phases: enlistment, contextualization, awareness and communication, implementation, and evaluation.

This report is divided in three chapters. First, the results of the execution of the four pilot programs. Second, the summary of the lessons learned, as a result of the identification of good practices and opportunities for improvement that came out during the implementation. Finally, the adjusted methodology of Ibero4Jobs based on the results and the LL. Additionally, a toolbox that contains the guidelines for its implementation was designed to contribute to the scalability and transfer of the Ibero4jobs Methodology.



Cofinanciado por el
programa Erasmus+
de la Unión Europea

Chapter One

Results of the Pilot Programs

The pilot programs were divided in six phases: (1) enlistment; (2) contextualization; (3) awareness and communication of the methodology; (4) implementation of the training strategy for teachers, entrepreneurs or graduates; (5) implementation of the student training strategy and (6) lessons learned (LL). Chapter one, presents the results of the first five phases, and Chapter two develops the analysis of lessons learned (LL).

The results describe three out of five activities established in work package 4. First, the process of building cooperative work agendas between universities and companies. Second, the awareness-raising and alignment strategy with the new methodology of working with the university community and the business sector. Third, the results of the implementation of training strategies for teachers, entrepreneurs, graduates, and student.

Figure 1

Overall results of pilot experiences in Latin American universities



Global Results: 58 Companies Involved; Training of 485 students; Training of 412 professors, graduates, and entrepreneurs; 796 participants in awareness and communication events.

1.1 Work Agenda with the Productive Sector

Productive development is a crucial for economic growth and social well-being. Collaboration among the productive sector, the government and the academia, and other actors is essential to foster innovation, to improve productivity, and to strengthen employability; therefore, universities play a key role as generators of knowledge by articulating training, research and university outreach with the needs of the productive sector. This synergy not only contributes to solving social problems but also enables the training of highly qualified professionals to face the challenges of the globalized economy and Industry 4.0. As stated by the National Association of Entrepreneurs of Colombia ANDI (2015), this relationship is crucial to boosting competitiveness and people's well-being.

To strengthen the link between academia and the productive sector, a work agenda was built with the business sector within the contextualization phase of the pilot program. This agenda was important to identify the companies by sector, in coherence with the academic program selected in each Latin American university of the consortium, considering the particularities of productive development in each territory. As a result of this process, a business mapping was proposed, focusing on the key actors (*stakeholders*) and their roles in the productive development of each region, as well as in the opportunities for collaboration between academia and business.

By addressing the specific characteristics of each context, business mapping facilitated the customization of linkage strategies to meet the different needs of each institution. The applied model was an adaptation of the *Methodological Guidelines for the Application of Social Mapping as a Tool for Identifying Entrepreneurial Opportunities for Rural Youth*. Table 1 presents the academic programs prioritized by Latin American universities for the implementation of pilot programs."

Table 1
Prioritized academic programs for pilot program

UAN	UTN	UCaldas	UAM
<ul style="list-style-type: none"> • Computer Science • Tourism Management and Innovation 	<ul style="list-style-type: none"> • Gastronomy • Marketing 	<ul style="list-style-type: none"> • Food Engineering • Technology in Logistics • Technology in Occupational Health and Safety Management 	<ul style="list-style-type: none"> • Fashion Design • Industrial Design • Industrial Engineering

From this perspective, a structured roadmap for the development of business cartography was established through the design of 'directed guidelines,' which facilitated the systematic implementation of activities by consortium members. To achieve this, three stages were

defined, each comprising various processes that generate a deliverable aligned with the corresponding phase. These three phases include methodological preparation, identification of stakeholder relationships and selection prioritized companies, as well as visualization and communication.

1.1.1 First Phase. Methodological Preparation of Business Cartography

In the initial phase of the development of the business cartography, the objectives were defined, stakeholders were selected, and the key elements shaping the process were established. Additionally, the necessary information was designed and collected. The following section outlines the dynamics implemented by each university:

- The **Universidad Autónoma de Nayarit (UAN)** conducted an analysis of companies that had a linkage with the institution through signed agreements, verifying their current status. Additionally, databases of companies serving as host entities for professional internships and social service programs were examined. In the second stage, businesses within the sector that, despite lacking a direct affiliation with UAN, could contribute to student training and institutional collaboration were identified. These potential partnerships were assessed in areas such as training programs, continuing education opportunities, professional development, social service, and research initiatives. As a result, 25 companies aligned with the prioritized academic programs were identified
- The **Universidad Tecnológica de Nayarit (UTN)** focused its process on companies from various sectors, including food, services, tourism, education, government, and foundations. These companies, ranging from small to large enterprises, were selected based on their alignment with the professional profiles of the chosen academic programs. Additionally, the geographical context of UTN was considered, with the business cartography initiative considering the municipalities of Tepic, Xalisco, and Compostela. As a result, 85 active companies related to the prioritized academic programs were identified.
- The **Universidad de Caldas (UCaldas)** implemented a structured selection process to identify companies for participating in the pilot program. Initially, a database of companies provided by the Chamber of Commerce of Manizales facilitated the development of business cartography. This process was complemented by an analysis of internal databases, allowing the university to identify companies with existing agreements. Notably, several of these companies-maintained relationships with academic programs beyond those involved in the pilot, thereby broadening the scope of university-industry collaborations.

In addition, meetings and working sessions were conducted with entrepreneurs to analyze the specific needs of various sectors and explore potential strategies for training students from the three academic programs chosen. Companies already affiliated with the institution through internship programs were invited to a socialization event to present

the methodology and assess their interest in implementing the methodology. The reinforcement of these partnerships through the academic programs was crucial for the challenge-based learning strategy, as well as for evaluating the solutions proposed by students, thereby providing valuable feedback to refine and enhance the projects.

Key aspects identified during this process included the need to strengthen soft skills, such as leadership and teamwork, as well as updates on emerging artificial intelligence trends relevant to the professional field. As a result, 85 companies aligned with the prioritized academic programs were established.

- The **Universidad Autónoma de Manizales (UAM)**, within the framework of the business practice programs carried out at the university, the Faculties of Engineering and Social and Business Studies connected with 228 organizations. These companies included private, public, and non-profit entities, under various modalities such as framework agreements, internships, and apprenticeship contracts. This group constituted the target population for a pilot analysis. As a result, 85 active companies aligned with the prioritized academic programs were identified.

1.1.2 Second phase. Business cartography: stakeholder relations and selection of prioritized organizations

In this phase, relationships were mapped, and criteria were established to select the companies incorporated into the pilot programs. Similarly, companies were prioritized based on their sector and their relationship with the related academic program. Additionally, the techniques and instruments to be applied were defined, including technological and digital tools. Once the business cartography was developed based on the obtained results, a work agenda with the participating companies was structured. The number of institutions involved in business mapping and their distribution by sector within the work agenda are outlined below.

BUSINESS CARTOGRAPHY AND WORK AGENDA WITH THE PRODUCTIVE SECTOR		
University	Number of Companies	Prioritized Sectors
UAN	6	Tourism, Restaurant Industry, Leisure and Entertainment
UTN	18	Service Sector
U Caldas	24	Food, Logistics Services, and Industrial Safety.
UAM	10	Industrial Engineering, Fashion Design, Industrial Desing

1.1.3 Third Phase of Business Cartography. Transfer and Communication

Once the business cartography was done, it served as the basis for developing the work agenda with the companies. Consequently, in the third phase, the results were graphically represented. Subsequently, the business cartography was presented as a visual tool, and dashboards were created to highlight the key findings. Finally, an awareness and communication strategy was structured to ensure effective dissemination of the results

- **Universidad Autónoma de Nayarit (UAN).** Meetings were conducted with the university's governing body to present the objectives of the pilot program and simultaneously create a space for dialogue to exchange perspectives on its implementation. Additionally, various events, workshops, conferences, training sessions, and awareness-raising activities were organized for students and faculty from the participating academic programs. These initiatives focused on strategic areas such as the development of soft skills within the framework of the Job Ready Cycle.
- **Universidad Tecnológica de Nayarit (UTN)** The strategy for linking companies to the pilot programs was implemented through meetings, workshops, and inter-institutional collaboration initiatives. Additionally, working sessions were conducted with representatives from business chambers, foundations, companies, government agencies, UT Nayarit authorities, and the Ibero4Jobs team. Furthermore, various collaborative actions were planned to enhance the development of soft skills and digital competencies for employment and entrepreneurship.
- **Universidad de Caldas (UCaldas)** The methodology was socialized with the selected companies, in which 21 representatives from 11 companies participated. The main outcomes of this event included the establishment of effective connections with the business sector, the identification of areas for improvement, and the exchange of experiences and best practices.
- **Universidad Autónoma de Manizales (UAM).** The methodology for the pilot program was presented to entrepreneurs, asking them to participate as mentors through the learning circles strategy and to engage in a challenge creation workshop. The representatives of the companies recognized the relevance of the project, emphasizing its contribution to the development of key competencies such as leadership, problem-solving, adaptability to change, and effective communication.

In conclusion, the business mapping in each of the pilot programs focused on the identification and analysis of business agents, their relationships and their roles within the economic environment, in order to generate effective strategies for business growth and sustainability. The following aspects that were identified in the preparation of the business cartography are highlighted below:

The results facilitated the transfer of capacities and the empowerment of stakeholders, enabling their perspectives and experiences to become the driving force behind territorial understanding and management within the pilot program at each Latin American university. This process allowed for the recognition of the bidirectional relationship in working with stakeholders. Through this approach, a two-way learning channel was established, fostering the integration of companies' experiences into the pilot program.

It is important to highlight that, for Colombian universities, the contributions of external organizations were essential in the process of designing challenges, providing training, and offering support. Notably, the Chamber of Commerce of Manizales by Caldas, through the NeuroCity Laboratory of Creativity and Innovation, as well as the Luker Foundation, played a relevant role.

The key elements that comprised the work agendas are presented below in Table 2.

Table 2

General aspects of the work agenda carried out by Latin American universities with the productive sector

CATEGORIES	UAN	UTN	UCALDAS	UAM
Implementation	September and October 2024	August 2024	July 2024	August and September 2024
Number of events	3	6	1	5
Type of event	Sessions for Socialization and awareness of the methodology	Workshops to socialize the methodology and identify job skills and competencies	Meeting to socialize the pilot and to identify the needs of the companies	-Meeting to socialize, -Workshops for challenge design, and mentoring training
Number of attendees	84	29	21	122

1.2 Awareness and Communication Strategy

This strategy aimed not only to inform key stakeholders about the project's scope and benefits but also to encourage their active participation and foster a sense of collective ownership of the results. The project's visibility and the community's understanding of its significance are crucial for consolidating its impact and ensuring long-term sustainability. In the specific context of Ibero4jobs, the implementation of a comprehensive communication strategy was essential to achieving these objectives

These actions were not only aimed at informing stakeholders about the project's objectives but also at fostering a broad consensus on the need to strengthen key competencies in students, such as effective communication, leadership, and teamwork,

among others. These skills were essential for students as they embarked on their experiences in the productive sector.

The communication strategy served as a bridge between all actors involved in the process, reinforcing the project's transformative impact and contributing to the sustainable development of the regions where it was implemented. Considering this aspect, the Latin American universities participating in the project adopted various strategies, highlighting both common elements and distinctive approaches that allowed each pilot program to reach its target audience effectively.

These strategies are outlined below:

The 'UAM-Dual-Skills' pilot program, developed by the Universidad Autónoma de Manizales, and the 'Closing Gaps' initiative of the Universidad de Caldas implemented awareness and communication strategies through a three-stage process. (1) The expectation-setting phase, which involved providing information to the educational community and entrepreneurs about the pilot program. (2) The launch phase, where entrepreneurs, students, teachers, administrators, and graduates were introduced to the program's objectives, strategies, timeline, and expected outcomes. (3) The awareness and dissemination phase, which included activities designed to communicate the pilot program's benefits and results.

Similarly, the website used various institutional channels and formats, including social networks, emails, news updates, and newsletters. Additionally, the systematization and secure storage of the information generated throughout the process were ensured using digital folders on different platforms, such as Microsoft Teams and Google Drive.

The Universidad Tecnológica de Nayarit developed a strategic plan to inform, e, and engage istudents, faculty, administrative staff, and entrepreneurs from various sector about the implementation of the UT4Jobs pilot program. The strategy included workshops and conferences to ensure the accomplishment of the objectives, along with the development of materials and interactive resources aimed at facilitating access to information about job opportunities and the skills in demand within the sector.

Meanwhile, the Universidad Autónoma de Nayarit implemented a comprehensive awareness and communication strategy, which included events, workshops, and conferences targeted at students, faculty, and administrative personnel. Additionally, varieties of materials were created, such as videos and social media posts, to effectively promote the project and its objectives.

The attendance metrics for the events held by the institutions are presented in Table 3 below.

Table 3*Distribution of participation in awareness and communication events*

INSTITUTION	INSTITUTIONAL GOVERNING BODIES	STUDENTS	TEACHERS	ENTREPRENEURS
UCALDAS	7	103	32	21
UAM	27	19	32	9
UTN	44	245	58	-
UAN	35	86	39	39

Regarding communication strategies through social networks, institutional websites, and other digital platforms, the visualization, recording of interactions, user comments, and content-sharing activities related to institutional events and strategies were successfully achieved. Social media metrics indicated that the digital strategies effectively fostered community growth and increased engagement with the project's thematic focus.

In conclusion, the awareness and communication strategies implemented by the four universities participating in the project were effective. By aligning the communication actions with the project's objectives, it was possible to generate commitment among the key actors, facilitating the social appropriation of the results. The use of a variety of communication channels, such as social media, email and face-to-face events, made it possible to reach a wide and diverse audience.

1.3 Training Strategies for Teachers, Entrepreneurs or Graduates

In the specific case of the four pilot programs implemented within the framework of the project, the training strategy aimed at teachers, entrepreneurs, and graduates was designed to contribute to the consolidation of students' soft skills. This strategy was regarded as one of the most critical components of the pilot programs, as it was conceived as a valuable process for students, educators, entrepreneurs, and universities alike. The following section outlines the specific characteristics of this training as implemented by each university

- **Universidad Tecnológica de Nayarit.** The implementation of innovative methodologies aimed to enhance educational quality and strengthen connections with the productive sector. The “UT4jobs” project focused on training teachers, entrepreneurs, and students in key competencies related to digital technologies and labor market demands. The process involved strategic allies and entrepreneurs from various sectors interested in developing human talent and fostering innovative practices. Programs such as Gastronomy and Business Development were incorporated into the initiative, ensuring an integrated approach to theory and practice in teaching methodologies. This strategy included workshops, meetings, and hybrid courses implemented in collaboration with the Wadhvani Skilling Network (WSN) Employability Foundation. Through this partnership, teachers received training in innovative pedagogical approaches, while entrepreneurs gained insights into identifying essential competencies within their respective industries.

- **Universidad de Caldas.** The 'Teachers Closing-Gaps' strategy, developed within the project focused on training educators in key competencies such as academic leadership and business collaboration. This in-person training program, comprising 14 certified hours, combined theoretical and practical components to address contemporary educational and industry demands.

The training was structured around three thematic pillars: leadership in academic and business environments, collaborative skills, and innovative methodologies. An interactive methodology was used, including workshops, specialized tools, and practical activities, enabling participants to apply their newly acquired knowledge in three activities: (a) socialization of practice formats, (b) training in soft skills, and (c) methodologies for generating business challenges.

The soft skills training was conducted in collaboration with the Luker Foundation, while the challenge-generation methodology was developed in partnership with the Manizales Chamber of Commerce for Caldas. As previously mentioned, certification was granted based on full attendance. The initiative certified the participants, equipping them with the skills necessary to lead innovative educational initiatives and foster stronger links between academia and the productive sector.

- **Universidad Autónoma de Nayarit.** The “Job Ready” Training program, developed in collaboration with the Wadhvani Skilling Network (WSN) Employability Foundation, aimed to train teachers, students, and graduates in soft skills for the 21st-century job market. The initiative combined hybrid learning modalities, practical simulations, and real corporate contexts. The program, 104 certified training hours, covered key competencies such as oral expression, writing, self-management, innovation, and entrepreneurship. These competencies were developed as follows: a) interpersonal skills; b) problem solving; c) digital communication; d) financial knowledge, and e) entrepreneurial mentality.

To achieve the objective, the learning strategy centered on globally relevant simulations and practical examples. Through a digital platform, participants obtained a microcertificate based on competency assessment. In the initial phase, 51 teachers were trained as mentors. In the second phase, 125 teachers participated in the *Job Ready* cycle. The program emphasized the critical role of soft skills as a cross-cutting component in educational curricula, initially focusing on teachers to facilitate the subsequent transfer of knowledge to students in future stages. This initiative sought to equip participants with the necessary competencies to navigate the challenges of the labor market using technological tools and simulated scenarios

- **Universidad Autónoma de Manizales.** The mentoring process was designed to foster a challenging, participatory, and trust-based environment that facilitated the recognition of strengths and areas for improvement. This was achieved through in-depth individual feedback and collective group discussions. To ensure progress in this process, it was essential within the framework of the pilot program that the UAM-Dual-Skills mentors participated in a training program, which, aimed to equip

mentors with the necessary tools and knowledge to effectively guide their students (mentees). Their role included creating, guiding, inspiring, mobilizing, and challenging students, ensuring a meaningful and transformative learning experience.

These challenges specifically contributed to strengthening soft skills such as self-awareness, communication, responsibility, respect, solidarity, high-level thinking, continuous learning, and leadership, which supported the UAM-Dual-Skills training strategy. This strategy was structured around three learning circles: (1) Self, which focuses on developing the mentor profile based on the consolidation of soft skills; (2) The Learning Cycle, which structures experiential learning through business challenges; and (2) The Mentoring Route, which involves designing a mentoring plan based on the mentee contract.

Table 4 presents relevant aspects of the training in each university.

Table 4

Training strategies for teachers, entrepreneurs, and graduates in the pilot programs

Institutions	UAM	UCaldas	UTN	UAN
Duration	112 hours	14 hours	40 hours	104 hours
Target population	19 Teachers 18 Entrepreneurs 297 Graduates	9 Teachers	13 Teachers 5 Entrepreneurs	51 Teachers
Topics	Digital Skills Dual Training	Leadership Innovative Methodologies	Entrepreneurial Mentoring Creativity	Social Emotional Business Skills
Activities	Collaborative hybrid workshops	Interactive workshops and analysis templates	Experiential Learning Circles	Simulations and digital platforms
Aim	Career guidance and business practices	Teacher leadership and educational linkage	Personalized Guide for Practice Students	Integration of soft skills into curricula

After analyzing the implementation of the pilot programs several key similarities were identified.

1. Collaboration with External Partners

A notable commonality among the programs was the collaboration with foundations or external strategic allies. Three HEIs partnered with external organizations to enhance their initiatives: the Wadhvani Skilling Network Foundation (WSN) Employability collaborated

with Universidad Autónoma de Nayarit and Universidad Tecnológica de Nayarit, while the Luker Foundation and the Chamber of Commerce supported the Universidad de Caldas.

2. Emphasis on Labor Market Integration

All programs prioritized strategies to strengthen employability by developing specific competencies. These included soft skills training at (UAN), innovative teaching methodologies at (UTN), leadership and problem-solving for business challenges at (UC), and the implementation of a dual-skills approach at (UAM).

3. Development of Soft Skills

The pilot programs contributed significantly to the consolidation of soft skills across all four institutions. Training curricula incorporated key competencies such as leadership, problem-solving, teamwork, and innovation, reinforcing their relevance in professional and academic contexts.

4. Hybrid and In-Person Training Modalities

The programs implemented a combination of hybrid and in-person instructional approaches, integrating both theoretical and practical components to ensure comprehensive learning experiences.

5. Certification Criteria

All programs established clear certification criteria based on attendance, completion of assigned activities, and assessment of learning outcomes. These measures ensured that participants met the required standards before receiving certification.

This comparative analysis highlights the shared strategies and methodologies used by the pilot programs, emphasizing their commitment to improving teacher training and employability outcomes within HEIs.

1.3.1 Student Training

Student training was a central pillar in the project, particularly in the pilots implemented by the four participating Higher Education Institutions (HEIs). The primary objective was to equip students for an increasingly competitive job market, foster a collaborative and innovative learning culture within the university community, and enhance their skills. To achieve these goals, flexible and dynamic programs were designed, integrating theory, practice, and experiential learning. Each university tailored its training strategy to its unique characteristics and the specific needs of its context, identified during the preliminary stages of the pilots. The main strategies are presented below.

- **Universidad Autónoma de Nayarit.** The methodology used was based on incorporating business challenges into training practices, where specific cases were identified for students. They received support from qualified teachers who monitored, evaluated, and guided the projects while promoting soft skills. Hands-on learning

emphasized scenario-based simulations and content tailored to the productive sector contexts

The soft skills training program was conducted in collaboration with the Wadhvani Skilling Network (WSN) Employability Foundation, which served as a strategic ally by implementing a hybrid training approach known as "Job Ready Training." This program comprised 104 certified hours and was designed to align with the competencies and learning outcomes achieved by participants.

Participants were awarded a micro-certificate. The program engaged a total of 51 participants from two academic disciplines: the Bachelor's Degree in Computer Science and the Bachelor's Degree in Tourism Management and Innovation.

For the Tourism Innovation Management students, "Integrative Projects" were implemented. For those enrolled in the Computer Science, a program a technology conference was organized, in which there was a panel with participants of the productive sector and Hackathon based on real-world challenges. This event allowed a collaborative work among faculty and students.

The topics included soft skills, a customer-service approach, work productivity tools, digital communication and data security, financial literacy, a start-up mindset, and an introduction to entrepreneurship. To explore these areas, projects were implemented, and participation in technology-related congresses was encouraged, incorporating practical learning through simulations and employability events.

- **Universidad de Caldas.** The core pillar of the training program centered on challenge-based learning through business practices and classroom projects, exposing students to real-world problems presented by companies in the productive sector. Similarly, within the framework of dual education, the implementation of bootcamp models in emerging fields such as artificial intelligence and cybersecurity, along with articulated education and entrepreneurship training, was facilitated. Through these strategies, students were able to apply the knowledge acquired in the classroom while developing essential skills such as teamwork, problem-solving, leadership, and effective communication.

Similarly, the cycle proposed by the UCaldas consisted of several phases. Initially, collaborative workshops were conducted with companies to define the challenges to be addressed. This was followed by feedback sessions in which students presented preliminary solutions and received constructive input to refine their proposals. Subsequently, students participated in training activities focused on soft skills, which are essential for navigating their professional environment.

Finally, a report and a presentation of the results were delivered at the project's closing event, the Meeting of Training and Research Activities in Engineering (EAIPI). This event brought together students from four courses within the Food Engineering program—Meat Processes, Cereal Processes and Bakery, Dairy Processes, and Packaging—along with four faculty members, 65 students, and representatives from companies, all collaborating to address industry-related challenges.

As previously mentioned, the second component of the methodology was based on the implementation of dual education, which integrates academic training with practical experience in the productive sector. This approach enabled students to develop technical skills in a real-world setting while simultaneously strengthening practical competencies that complement their theoretical learning.

To ensure effective monitoring of student activities, each participant was assigned an academic tutor responsible for tracking their weekly progress through meetings and company visits. Additionally, a control system was implemented, consisting of practice initiation and follow-up forms, periodic supervisory visits, and a final report. This system facilitated continuous assessment and ensured the achievement of learning objectives.

Similarly, the program incorporated entrepreneurship training as a fundamental component of its methodology. sessions were conducted to address common myths about starting a business, followed by practical workshops on key tools such as Design Thinking, rapid prototyping, idea generation and evaluation, the CANVAS business model, value proposition development, and PITCH techniques. Ultimately, business ideas were presented at events open to the academic and business communities, providing opportunities for valuable feedback and networking to support future entrepreneurial initiatives. Additionally, the boot camps, designed as intensive training programs, employed a hands-on methodology focused on problem-solving, following the learning by doing approach. This method enabled participants to acquire highly demanded technical skills through practical application. Finally, the pilot program engaged 119 students from the academic programs of Food Engineering, Logistics Technology, and Occupational Health and Safety Process Technology.

The university's main objective was to prepare participants for a competitive labor market, reduce the digital gap, and promote labor insertion in key technological sectors. To achieve this, it focused on strengthening skills for entrepreneurship, teamwork, problem-solving, and critical thinking through the analysis of real challenges and cases from the productive sector. Additionally, students participated in the Soft Skills for Entrepreneurship event, which featured contributions from the Chamber of Commerce of Manizales for Caldas, Socobuses, and the Caldas Compensation Fund (Confa). Moreover, modules for simulating work environments were developed, along with workshops on Design Thinking and rapid prototyping tools for entrepreneurship.

- **Universidad Tecnológica de Nayarit.** The approach centered on fostering collaboration networks among various stakeholders, facilitating the exchange of experiences and best practices. As part of this strategy, students received career guidance and opportunities for direct immersion in partner companies. This initiative aimed to enhance their employability, strengthen the connection between higher

education and the labor market, and ensure their readiness to meet the challenges of the professional world.

To ensure training aligned with these objectives, efforts were made to train educators with innovative tools and methodologies that would enable them to adapt their teaching approaches to the demands of the labor market. This initiative was structured around a framework that included modules on the integration of digital technologies in the classroom, active learning strategies, and the implementation of collaborative projects, thereby fostering dynamic and relevant instructional practices. Regarding student training, the partnership with the Wadhvani Skilling Network (WSN) Employability Foundation was maintained, aiming to develop employability and professional growth skills through experiential and collaborative learning. The program emphasized key competencies such as speaking and listening skills, impactful writing, personal presentation, self-management, digital communication and data security, a start-up mindset, interpersonal skills, a customer-centric approach, safety practices, an introduction to entrepreneurship, problem-solving, innovation, work productivity tools, and financial literacy

The phases proposed and implemented for this training process included “Conecta UT” a program focused on the development and strengthening of soft skills, emphasizing a tutoring model and digital skills training. Additionally, the Incubator-Entrepreneurship strategy was implemented to foster university students' entrepreneurial initiatives by supporting the development of innovative projects. A total of 297 students participated in this program, including 247 students from the Gastronomy program and 50 from the Marketing program.

To conclude, student training focused on developing skills for employability, entrepreneurship, and professional growth. The program covered key areas such as oral and written expression, listening comprehension, and digital communication. Additionally, students were trained in personal presentation, self-management, professionalism, data security, and an entrepreneurial mindset. A client-centric approach, safety practices, labor productivity, and financial literacy were also emphasized. These topics were addressed through specialized training provided by the Wadhvani Skilling Network (WSN).

Universidad Autónoma de Manizales. The student training process aimed to develop professional skills by strengthening soft skills to enhance employability through solving business challenges. This process was designed and implemented using *The Island software*, which is a The Island simulator is a tool designed to facilitate the development of soft skills such as analytical thinking, problem-solving, planning, adaptability to change, and innovation, among others. To assess the impact of the implemented training strategies, students' competencies were measured both at the beginning and at the end of the process. Through the software students' abilities were assessed in multitasking, innovation, entrepreneurship, adaptability, problem-solving, planning, analytical thinking, and overall evaluation. A key differentiator was the software's application at the end of the training, providing insights into

competency development, tracking progress, and informing adjustments for scaling the pilot.

Aligned with the objective of developing professional competencies through soft skills training, the activities were carried out through boot camps, providing a fast and effective approach to acquiring the skills necessary for professional success through the practical application of knowledge. By integrating theory with practice, this approach enabled students to advance in both technical and soft skill development while fostering reflection on their immediate employability prospects. Moreover, the program aimed to train students with the ability to lead, communicate effectively, solve problems creatively, and work collaboratively. The boot camps were conducted with experts who facilitated two-way learning between mentors and students. Prior to their involvement, mentors underwent specialized training to ensure a comprehensive and structured approach to guiding students throughout the practice process.

Following this framework, the training process was conducted through six boot camps: a) Personal Brand (Self-e), b) Transformation (Catharsis), c) The Island (Let's Go), d) STEAM-CreinTIC, e) Team Building, and f) Empowerment (The Closure). Students received certification upon completion. The pilot program involved 18 participants from the second semester of 2024, enrolled in the Industrial Engineering, Industrial Design, and Fashion Design programs.

The results of the pilot program highlight the potential of experiential learning, particularly through boot camps, in fostering the development of soft skills that align with labor market demands. Additionally, the standardization of certification criteria through the issuance of micro-credentials emerges as a key practice for recognizing students' achievements and enhancing their motivation.

Figure 2 presents the results obtained, demonstrating overall progress in the development of each measured skill.

The Universidad Autónoma de Manizales focused on issues related to personal branding, teamwork, high-performance multidisciplinary teams, change management, innovation, generation of new ideas, and networking. Likewise, topics such as emotional intelligence, decision-making, and essential skills like critical thinking, creativity, problem-solving, and digital skills, necessary for the world of work, were covered.

Figure 2

Comparative results of the Island's software: start-closure average

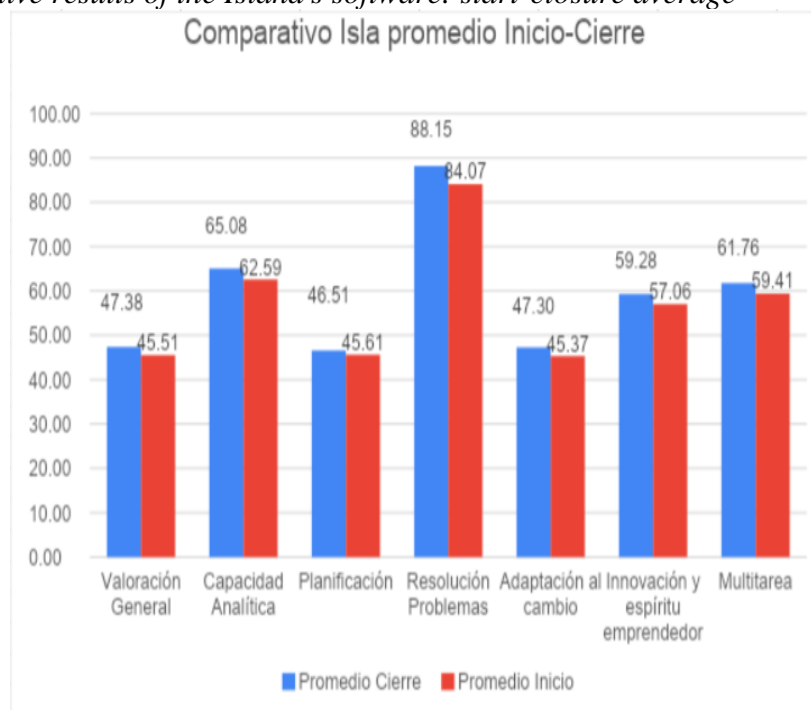


Table 5 presents a synthesis of the main elements developed by the pilot programs in the four institutions. Within this methodological framework, the HEIs structured different thematic axes that supported the student training processes in alignment with the proposed objectives.

Table 5

Identification of programs and student training methodology implemented by the HEIs in the pilot programs.

Institutions	UTN	UAN	UCaldas	UAM
Students	297	51	119	18
Training strategy	-Creation of collaborative networks, experiential exchange and good practices. -Training in skills and promotion of innovative projects.	-Business challenges in training practice and adaptation of cases for students' work. - Simulations are based on scenarios, and content is focused on corporate contexts. Integrative projects and technology congress.	-Challenge-based learning through business practices and classroom projects, boot camp, and socialization of results.	-Solving business challenges. -Skills identification -simulator for skills development, -bootcamp and mentoring.

Structure	-Stage 1. Phase training in soft	- Identification of allies, implementation of linking councils, socialization of the pilot), -Curricular analysis: identification of key points for specific interventions within the pilot (review of designs, design of contributions, and implementation). -"Training in Softskills". -Integrative Projects, congress, panels, multidisciplinary Hackaton.	-Workshops with the leading teachers of the subjects. -Working sessions between teachers and students to appropriate project methodologies and activities. Workdays prioritize challenges and opportunities. Participation in challenges in business practices and integrative projects in the classroom. -Co-creation sessions, "Workshops" with the actors involved, and feedback sessions. Analysis of results and socialization in the academic event, final report.	-Bootcamp -Personal brand, -Transformation-catharsis, -La isla-Lets go, -Teamwork-Team building, -STEAM-CreinTIC - Empowerment Accompaniment with mentors trained in the process during the practice period.
	-Stage2 Training with Ibero4jobs team personnel			

The table below included the activities and the period of time for its development.

Table 6
Student training strategy

UAN	UTN	UCaldas	UAM
Phase 0-Virtual Conceptualization: (6 sessions of 2 hours) Total 12 hours. Phase 1-Formalization of soft skills, digital competencies, entrepreneurship promotion: (10 sessions of 2 hours,) Total 20 hours.	"Job Ready Training," hybrid modality, 104 hours Competencies and learning outcomes: the cycle certifies 13 competencies with 70% attendance.	Two (2) bootcamps, academic training combined with work experience in the productive sector. Monitoring, visits, reports, and socialization. Entrepreneurship training, Design Thinking workshops, and prototyping (according to themes).	Six (6) bootcamps each lasting 4 hours. Total 24 hours of training, mentoring, and certification 80% attendance.

In conclusion, the implementation of the pilot programs facilitated the identification of 834 companies actively collaborating with Latin American universities within the Ibero4jobs project consortium. Additionally, 58 companies participated in the development of the pilot programs, and 15 socialization events were conducted, engaging 256 attendees. The training

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

initiatives reached 258 students, 92 teachers, 297 graduates, and 23 entrepreneurs, strengthening employability skills and fostering deeper collaboration between academia and the productive sector.

Chapter Two

Lessons Learned

According to the Inter-American Development Bank (IDB, 2020), lessons learned (LL) are a methodology applied during the implementation of a program or project to build and manage knowledge acquired from experiences. This process involves reflection and critical analysis of factors that have positively or negatively influenced execution, identifying both best practices and areas requiring improvement. It includes identifying, documenting, and analyzing experiences or situations that reveal correctable errors, making necessary adjustments during implementation, and recording strategies to enhance the overall process

The information presented aims to provide valuable insights for decision-making, as well as for the scalability and implementation of the program (MinTIC, 2023). In this regard, LL offer empirical evidence and experiential knowledge derived from specific contexts, contributing practical and applicable recommendations for replicating newly acquired insights in different settings. Additionally, they serve as a the basis for designing and implementing projects or initiatives with similar approaches (BID, 2020).

Within the framework of the development of the four pilot programs that are part of the project "Universities of Ibero-America Weaving Ties with the Business Sector," the stakeholders, purpose, and LL methodology used were analyzed.

Initially, the stakeholders were identified and categorized based on the phases of the pilot programs, as detailed in Table 7 which outlines the different stages of program implementation and highlights the level of stakeholder participation throughout the process.

Table 7
Involved Stakeholders per Phases

PHASE	STAKEHOLDERS
Preparation Phase	<ul style="list-style-type: none"> • Companies' collaboration with Entrepreneurs of companies prioritized with the project • Office of Innovation • Entrepreneurship units • Internationalization of Participating Higher Education Institutions (HEIs) • Deans and coordinators of prioritized academic programs

Contextualization Phase	<ul style="list-style-type: none"> • Entrepreneurs from prioritized companies • Ronsel-Spain Foundation • Manizales Chamber of Commerce by Caldas - NeuroCity Creativity and Innovation Laboratory
Awareness-raising process and communication phase of the methodology	<ul style="list-style-type: none"> • Community Manager of the participating HEIs • Pilot Program Communication Coordinator
Training phase for professors, entrepreneurs, and graduates (mentors)	<ul style="list-style-type: none"> • Professors from the participating HEIs • Coordinators of formative internships • Entrepreneurs from prioritized companies • Graduates from the participating HEIs
Student training phase	<ul style="list-style-type: none"> • Students from prioritized academic programs • Professors • Subject Matter Experts • Mentors (professors and entrepreneurs)
Evaluation phase and lessons learned	<ul style="list-style-type: none"> • Professors • Students • Entrepreneurs • Internship coordinators

Note. Source: Report LL of the participating HEIs pilot programs 2024.

The purpose of the Lessons Learned (LL) process was to document key insights, best practices, success factors, and challenges encountered during the implementation of the pilot programs in the participating Higher Education Institutions (HEIs). This information aimed to facilitate the scaling of the pilot programs to other academic programs and institutions across Latin America.

The methodology for documenting LLs integrates various strategies to enhance collaborations between universities and the business sector. Each pilot program followed the Ibero4jobs methodology to collect and document LLs, were structured into four stages to build a common analytical framework: a) preparation and contextualization; b) data gathering; c) classification of LL; and d) documentation of LLs in the information-recording matrix. The Lessons Learned (LL) methodology applied during the implementation of the pilot programs provided objective information to evaluate each university's progress and document key elements of management and execution within their specific contexts.

For data gathering, the participating universities used both qualitative and quantitative approaches, including focus groups, participant observation, interviews, and surveys. These methods contributed collect valuable insights related to the implementation process, its phases, and the perceptions and contributions of various stakeholders, such as entrepreneurs, professors, students, and foundations.

The documentation of LLs took place between July and November 2024, aligning with the implementation and evaluation period of the four pilot programs.

2.1 Characteristics of the Pilot Programs

The pilot programs implemented by the universities aim to bridge academia, the productive sector, the State, and civil society in the co-construction of training strategies that enhance quality and innovation in education. As educational innovations, these programs integrate elements that facilitate the redesign and implementation of new training strategies in participating programs. The productive sector played a crucial role by contributing to the improvement of training methods and strategies while also helping to identify innovative approaches to addressing challenges in real work environments.

By identifying challenges, businesses integrate real-world problems into training strategies such as boot camps, workshops, and pitches, among others, fostering the development of soft skills, hands-on experience in professional environments, and access to employment opportunities. Simultaneously, businesses enhance their capabilities by receiving innovative solutions to specific challenges within their sectors through collaboration with students and faculty in business training internships. These initiatives were designed as experiential learning experiences within a corporate context, enabling participants to deepen their knowledge while actively contributing to problem-solving. Furthermore, they facilitate the formation of strategic alliances through various interaction mechanisms, which are formalized through partnerships, cooperation agreements, and business internship arrangements, among other collaborative frameworks.

2.2 Role of the Stakeholders in the Implementation of the Pilot Programs

The pilot actively engaged entrepreneurs, civil society organizations, professors, and students throughout their development phases. Entrepreneurs played a key role in identifying and co-developing business challenges, which served as the foundation for training strategies. They acted as mentors, providing guidance and support during the student training process. Additionally, they offered feedback on project ideas and student-delivered products, ensuring that content and training strategies aligned with real-world work environment needs.

Professors were responsible for designing and guiding training strategies, developing rubrics, and assessing skills development, ensuring that the implemented content and strategies were relevant and aligned with the training objectives of the pilot programs and the challenges presented in the business context. Students played a crucial role in the process, as their commitment and performance were decisive for the successful implementation of the pilot programs and the achievement of their objectives. Likewise, they provided valuable insights and feedback on the training received, highlighting its potential impact on their job placement and future professional performance.

2.3. Lessons Learned (LL) Analysis

The experiences gained from the pilot programs contributed to the consolidation of key elements that HEIs should consider for implementation and scaling up to other academic programs, faculties, and institutions of higher education.

2.3.1 Building Strategies that Generate Shared Value Between the Universities and the Productive Sector in Training, Research, Development and Innovation.

One of the lessons learned from the implementation of the pilot programs was the necessity to build shared value between universities and the productive sector. In this regard, Mazzucato (2022, 2019) argues that shared value integrates companies' economic interests with social well-being, where businesses not only seek to increase their profits but also actively contribute to economic and social development. This approach involves all stakeholders, including the State, businesses, and civil society. From this perspective, a company can generate economic value while simultaneously addressing social or environmental challenges, among others, thus creating mutual benefits for both the business and society.

In the context of higher education institutions (HEIs), shared value is achieved through the development of interdisciplinary and context-sensitive engagement strategies. Universities reorient their training efforts to ensure quality and relevance in response to the needs of the business sector. In turn, companies contribute their expertise, resources, and infrastructure to enrich learning environments while simultaneously fostering their own development and economic growth (Balart et al., 2018). The key to this process lies in the reciprocal and synergistic interaction among stakeholders, fostering continuous improvement and benefiting both universities and businesses. Through this collaboration, not only do students enhance their technical and soft skills, but businesses also strengthen their capacity for team formation and problem-solving.

This dynamic promotes a cooperative and mutually beneficial relationship in which companies become active participants in student training and contribute to the development and co-financing of Science, Technology, and Innovation (CTeI) initiatives. As a result, shared value is generated for both Higher Education Institutions (HEIs) and the business sector. From this perspective, the Ibero4Jobs methodology should serve as a framework for building shared value and establishing long-term, sustainable relationships with host companies for internship programs.

2.3.2 Experiential Learning Training

The pilot programs align with the context of business internships, contributing to the consolidation of the graduate profile. They demonstrated the alignment of the pedagogical and didactic components with the experiential learning approach.

The pilot programs linked strategies such as problem-based learning; challenge-based learning; project-based learning; service-based learning and simulation-based learning. These pedagogical strategies were transversal to the development of the professors' training

processes, entrepreneurs, graduates, and students. The identification of business challenges, which was co-constructed with various stakeholders, especially entrepreneurs, served as the common thread for its implementation. This resulted in the development of the best practice-oriented learning environments focused on problem-solving within the business context. Similarly, an opportunity for improvement has been identified in the need to develop strategies that enhance student engagement with the specific contexts of application.

Therefore, the Ibero4Jobs methodology is structured around the experiential learning approach, promoting reflective experiences across various business fields to strengthen the development of soft skills essential for integration into the 21st-century workforce. These skills include personal brand awareness, effective communication through emotional management, teamwork and conflict resolution, leadership, and adaptability to change, among others.

2.3.3 The Ibero4jobs Methodology Expects the Ongoing Evaluation of the Learning Process

The Ibero4Jobs methodology comes out from the application of an experiential approach in the training process of participating stakeholders, requiring a continuous reflective attitude based on initial assessment, process evaluation, and product evaluation.

From this perspective, the programs used a variety of methods, techniques, and instruments to document and analyze potential emerging transformations, ensuring a comprehensive understanding of the impact and effectiveness of the implemented strategies.

The LL systematization facilitated the identification of the action-reflection relationship for adjusting the dynamics in each pilot program. Regarding the initial evaluation, software-mediated instruments or rubrics were applied to identify the stakeholders' entry profile into the process. For the evaluation process, the experts provided feedback during the development of the learning activities including boot camp, seminars, and workshops. Finally, for the assesment, the Canvas model, workshops, conferences, and pitch presentations were used.

2.3.4 University-Productive Sector Relationship

The Ibero4Jobs methodology strengthens strategic alliances between universities and the productive sector by enhancing student training, supporting the development and co-financing of research, development, and innovation (R&D&I) projects, and effectively addressing business challenges. This generates a positive impact on both business competitiveness and the quality of education.

Collaboration between the university and the productive sector is a best practice for facing challenges in academic training and business innovation. This relationship enhances higher education institutions and results of practical solutions to respond to the needs of the market and society. The alliances between both sectors help a two-way relationship that enhances the quality of students' training and the ability of businesses to innovate and solve problems in their environment.

In terms of developing students' job skills, the alliance between the university and the productive sector, through business internships and joint projects, aids students in acquiring skills and knowledge applicable to real-world environments, particularly in soft skills, problem-solving, and innovation. In addition, businesses, by being involved in the design of academic programs and the student's training, have the opportunity to influence the education of future employees, ensuring that they are equipped with the skills and knowledge to face the challenges of the productive sector.

Regarding the relationship through Research, Development, and Innovation (R&D&I), university-productive sector alliances play a crucial role in the co-financing and execution of projects. Universities contribute their expertise through highly trained human talent across various fields of science, technology, and innovation, while businesses apply this knowledge in the market. This collaboration fosters the development of R&D&I projects, generating new knowledge and facilitating technology transfer to foster business innovation.

By collaborating on Research, Development, and Innovation (R&D&I) projects, universities can direct their research efforts toward areas of high demand in the productive sector, while businesses gain access to new technologies and solutions emerging from academic research. Additionally, financial support and co-financing from businesses enhance universities' research capabilities, facilitating the development of new knowledge that can be patented, commercialized, or directly applied in industry.

Another key aspect of the university-business alliance is its contribution to solving specific business challenges. Through collaborative projects, universities provide innovative solutions to industry-specific problems, including the implementation of emerging technologies, process optimization, and new product development. This synergy not only strengthens academia-industry ties but also fosters innovation and competitiveness in the productive sector.

The implementation of pilot programs in university-business relationships represents a best practice that strengthens business competitiveness and enhances the development of higher education institutions. It creates synergies that foster innovation, boost business competitiveness, improve graduate employability, and contribute to the sustainable development of regions and the country.

2.3.5 The Ibero4jobs Methodology Responds to the Principles of Flexibility, Contextualization and Participation

The Ibero4jobs Methodology is flexible, contextualized, and participatory. It places students at the center of the learning experience, engaging them through a problem-based, challenge-driven, simulation, and service-oriented approach across pedagogical, didactic, and evaluative dimensions. It includes the phases of preparation, contextualization, awareness and communication, training of entrepreneurs, professors, and graduates, the phase of student training, and transversally, the initial, intermediate, and final evaluation. This enables companies to define their mode of engagement and the role they will assume throughout the different phases of implementation.

During the preparation and contextualization phases, businesses actively participate in the identification of the most relevant soft skills for the work environment, in the identification and detection of problems, and the co-construction of challenges. These elements are crucial for defining learning contexts and structuring training programs, ensuring their alignment with workplace needs and training objectives. This approach alligns to the principles of relevance, contextualization, and practical application.

In the training phase for mentors and students, participating entrepreneurs particularly those who meet the required mentor profile, such as holding leadership positions or possessing demonstrated expertise in a specific area—can assume the role of mentors. Their task will be to guide students in the development of soft skills and assist in creating individualized mentoring plans, focusing on those competencies or areas that students need to improve.

Likewise, companies can participate in mentor training processes (learning circles), as part of the process of qualification and development of human talent. This contributes to raising the level of qualification and productivity of a specific sector while strengthening the employability skills of its workers. Additionally, during the evaluation phase, the company provides feedback on student performance, not only in technical areas but also in team dynamics, adaptability, and workplace behavior.

From this perspective, business participation enables students to engage with real-world challenges contextualized to industry needs. This interaction allows them to transfer, apply, and construct knowledge while developing essential soft skills in practical settings. Direct exposure to business environments is crucial for students to acquire and refine competencies that prepare them for a successful transition into the workforce or entrepreneurial endeavors.

Similarly, companies benefit from their involvement in pilot programs by contributing to the training of future professionals who understand and align with their organizational values. This alignment facilitates the seamless integration of students into the company, either after graduation or even during their studies through internships or long-term employment programs, ensuring a workforce that is well-prepared for industry demands.

In conclusion, businesses offer a contextualized experiential learning scenario for the training of students, and take an active role in developing soft skills, fostering synergies that benefit both students and the organization itself.

2.3.6 Roles of the Productive Sector in the Context of Business Internship

In the implementation of the pilot programs, educational institutions have incorporated various business practices that offer diverse scenarios, providing students with learning experiences that go beyond traditional methods. These experiences expose them to contexts,

challenges, and issues that require a shared vision between academia and industry to be effectively addressed.

In this regard, the role of companies in the training process varies depending on their characteristics, the practice environment, and participants involved. The lessons learned (LL) reveal the coexistence of different roles assumed by companies to support the development and implementation of the training experience.

- ***The company as a provider of contextualized learning environments:*** The company facilitates learning spaces where students apply and transfer their knowledge in specific areas. This allows them to gain experience with the processes, methodologies, and dynamics of the productive sector.
- ***The company as a mentor in the student's learning process:*** Experienced employees with leadership in specific areas act as mentors or tutors for students. Their role includes guiding, supporting, and providing feedback on both technical aspects and soft skills, contributing to the development of expected practice outcomes and products.
- ***The company as a co-designer of training and certification programs:*** Companies actively collaborate in designing internship programs by identifying the required competencies, skills, and challenges that need to be addressed. This ensures that training remains relevant, aligns with market demands, and supports professional development objectives.
- ***The company as a co-evaluator of student learning and performance:*** The company participates in the co-evaluation of students' performance using pre-established rubrics and criteria. Through this process, continuous feedback is provided on task execution, problem-solving, and project development. Additionally, this evaluation allows companies to identify potential talent for future roles within their organization.
- ***The company as a sponsor of internships:*** The company plays a key role as a financial supporter, contributing economic, logistical, or material resources to facilitate internship development. This support includes sustainability incentives, provision of tools, and necessary resources for assigned tasks. This investment benefits both students, by ensuring optimal learning and performance conditions, and companies, by fostering high-quality employment and talent development.
- Ultimately, by assuming roles as a provider, mentor, co-designer, evaluator, and sponsor, the company contributes to student training while simultaneously strengthening its own organizational processes through the integration of innovative solutions. This collaboration highlights the importance of aligning efforts between academia and the productive sector, creating synergies that enhance experiential learning and promote the sustainable development of the involved communities and organizations.

2.3.7 Strategic Communication as a Transversal Axis in the Ibero4Jobs Methodology

Within the framework of the methodology, communication is conceived as an intentional and structured process designed to align with the objectives of communicative action. This process must begin with a clear purpose and be supported by well-founded arguments that can be applied throughout the various phases of program implementation, including inviting, raising awareness, motivating, persuading, and socializing, among others (Euler, 2019).

Therefore, communication must be strategically and systematically structured, taking into account the different stages and stakeholders involved in the implementation of the pilot programs. Each participating institution developed a comprehensive communication plan, ensuring the process was cross-cutting—from generating initial expectations to effectively disseminating program progress, results, and key components.

To achieve this, planning must include multichannel communication strategies, using diverse platforms and media to ensure broad outreach and engagement:

- Dissemination through social networks and institutional media ensures that information reaches both internal and external audiences in a timely and effective manner.
- The production of engaging and dynamic audiovisual materials aims to create an emotional connection with the target audience and effectively showcase the program's benefits.
- The development of outreach material such as infographics, e-newsletters, blogs, and interactive presentations summarizing the program's value proposition.
- The organization of socialization events, such as business fairs, colloquiums, and pitch-style presentation sessions, which favor the exchange of ideas and the enhancement of strategic alliances between educational institutions, companies, and other key stakeholders.

To summarize, effective communication must not only be adapted to the particularities of each phase of the program but also be aligned with the general objectives of the Methodology. This implies that communication acts as an articulating axis that links the participants' expectations with the achievements reached, thus promoting commitment and sustainability of the program over time.

In conclusion, during the implementation of the pilot programs, the lessons learned (LL) have helped identify key factors that constitute best practices, including:

- a) Business mapping,
- b) Designing challenges with active participation from the business sector, and
- c) Directly linking internship programs with academic curricula through curriculum committees.

These practices ensure a meaningful learning experience and align students' training with labor market demands. Business mapping plays a strategic role in identifying key sectors and organizations, allowing students to engage in relevant and contextualized professional environments. Similarly, the design of business challenges fosters the development of critical thinking and innovation skills, challenging students to solve real-world and complex problems.

From this perspective, integrating internship programs with academic curricula ensures coherence between theoretical knowledge and its practical application, thereby enhancing the training process and strengthening organizational capacities. They not only enrich students' professional experiences but also serve to consolidate strong alliances between academia and the productive sector, fostering sustainable collaboration and innovation.

Chapter Three

The Adjusted Methodology of Ibero4Jobs

The Ibero4jobs Methodology emerges from the analysis of the pilot experiences carried out by the all the universities, based on the lessons learned during the implementation phase. It is important to highlight that the programs of each pilot were constructed based on the knowledge transfer carried out by the UVigo, PPorto and the FunRonsel. Likewise, the development of the pilot programs at the Colombian universities benefited from the contributions of the FunLuker and the CCMPC.

The Ibero4jobs Methodology aims to strengthen the relationship between the academic and productive sectors with the purpose of generating shared value, consolidating students' competencies and soft skills in the context of business practice. The structure of the Methodology was designed based on the identification of six issues found in the diagnostic stage : a) disconnection between academic training and labor market demands, b) failure to consolidate the soft skills of the university community and entrepreneurs in terms of developing entrepreneurial and digital competencies, c) low involvement of students in early-stage business contexts, d) lack of curricular flexibility to integrate business challenges more easily, e) unawareness of potential allies to strengthen training, research, and outreach processes, and f) finally, the limited preparation of students to access their first job.

These factors explain the diagnosis prepared by the European partners, which served as the basis for constructing the pilot programs, resulting in three lines of action. The first is the consolidation of soft skills for students, professors, entrepreneurs, and graduates. The second is the development of curricular feedback strategies in relation to business challenges. Lastly, the third is the strengthening of university-business-state relationship strategies. It is important to highlight that under the principles of contextualization and flexibility, each university can define one, two, or three lines of action for the implementation of the Ibero4jobs Methodology.

The theoretical framework that serves as a reference for the Ibero4jobs Methodology is also emergent, based on the experiences of the pilot programs. Two training approaches are recognized: experiential learning and the STEAM (Science, Technology, Engineering, Art, and Mathematics) approach, through which learning strategies based on problems, challenges, service, simulation, and projects are developed. Learning strategies integrate different Experiential Learning Activities (ELAs) aimed at consolidating soft skills, which also contribute to the development of the entrepreneurial profile. In this context, entrepreneurship has been used as a tool to shorten the gap between the completion of university studies and immersion in the business world. In addition to the technical knowledge mentioned in other sections, it is worth emphasizing the knowledge of entrepreneurial competencies. These skills encourage students to reflect on and understand their professional skills thereby enhancing their self-confidence as they prepare for their first work experiences. Specifically, there are four key aspects to highlight:

- The improvement in employability by incorporating specific knowledge in the curriculum.
- The vision that a young student gains by having worked on the different areas of a business plan, enhancing their understanding of the environment they will work in.
- The Demonstration an entrepreneurial attitude adds extra appeal as an employee, showcasing initiative and persistence.
- Reports indicating that the number of self-employed workers is increasing globally, and this model of business relationship is gaining traction among companies, which is why we need young people prepared to understand this type of contract.

In this regard, the Methodology involves analyzing the relationship between competencies and soft skills. Competencies are understood as the integration of concepts, processes, procedures, and values that enable individuals to develop alternative solutions to the challenges presented by the productive sector. The Ibero4jobs Methodology pathway is structured in six phases: preparation, contextualization, awareness and communication, training of professors, entrepreneurs or graduates, training of students, and, finally, the evaluation phase of the methodology.

3.1 Context of the Problem

To address this element, it is essential to recognize that a problematic context refers to a situation, condition, or aspect of a system, process, or environment that presents difficulties, challenges, or obstacles requiring attention or resolution. Identifying such a context allows for a deeper understanding of reality by analyzing the causes and effects of the problem, thereby enabling the prioritization of actions and the proposal of effective solutions.

In this case, the identified challenge relates to current academic training, which faces the challenge of not aligning its programs with the demands and dynamics of the labor market. University students, for the most part, lack comprehensive training that encompasses soft skills, digital competencies, and an entrepreneurial spirit. According to the SDGs report (2022), these elements are necessary to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all, in order to contribute to building resilient infrastructures and fostering inclusive and sustainable industrialization through innovation.

This disconnection is highlighted by limited collaboration with the business sector during the early stages of training, curricular rigidity that hinders the agile integration of new knowledge, and the lack of identification of potential allies to strengthen training, research, and innovation. As a result, graduates face significant challenges in securing their first job, posing a complex issue for Colombia and Mexico that demands coordinated efforts among the public sector, private sector, civil society, and academia.

Although both countries have implemented various policies to address this issue, gaps continue in ensuring that young professionals have sufficient opportunities for professional development and can effectively contribute to their countries' economic growth. Furthermore, the inability to adapt to evolving labor market conditions exacerbates unemployment and underemployment rates, underscoring the urgency of comprehensive reforms that foster greater alignment between higher education and industry needs.

On this matter, it is important to recognize that in 2024, the global youth unemployment rate remained at 12.6%, reflecting that the economic recovery has not benefited young people to the same extent as the rest of the population. In some countries, youth unemployment is three to four times higher than adult unemployment rates, highlighting a persistent generational gap in access to employment. Particularly in upper-middle-income countries, progress in reducing youth unemployment has stalled, failing to return to pre-pandemic levels from 2019. (International Labour Organization, 2024)

Similarly, the proportion of young people who are not in education, employment, or training (NEET) reached 20.4% globally in 2024, with a significant gender gap: 28.2% of young women are in this situation compared to 13.1% of young men. These high NEET rates reflect the persistent exclusion of youth from the labor market, representing a missed opportunity for human capital development and a critical challenge for economic and social sustainability (ILO, 2024). On the other hand, companies face difficulties in hiring professionals with the necessary competencies to drive their growth and development, which is reflected in low productivity, difficulty achieving objectives, higher staff turnover, among other issues.

The World Economic Forum's *Future of Jobs Report* (2025) reveals that the transformation of the labor market is generating significant challenges in terms of the skills gap. According to the report, 63% of employers identify the lack of skills as the main barrier to business transformation in the coming years. Furthermore, it is estimated that 39% of the current workforce's skills will become obsolete or change significantly in the next five years. Regarding the most in-demand skills, the report highlights that 70% of companies consider analytical thinking to be an essential skill for the future. Other key competencies include resilience, flexibility, and agility, which are projected to grow by 66%, and leadership and social influence, which 59% of employers deem fundamental for organizational success.

3.2 Objectives

3.2.1 General Objective

- Strengthening the relationship between university and business to contribute to students' employability.

3.2.2 Specific Objectives

- Consolidating soft skills, digital competencies, and entrepreneurial capabilities for students, professors, and entrepreneurs.
- Establishing curricular feedback strategies for academic programs with the participation of the productive sector.
- Building strategies that generate shared value between university and business in the areas of training, research, development, and innovation.

3.3 Theoretical Framework

The Theoretical framework of the Ibero4jobs Methodology has been developed based on insights from the four pilot programs. In terms of training approaches, three key methodologies were identified: (1) the competency- and soft skills-based approach, (2) the experiential learning approach, and (3) the STEAM approach. Furthermore, during the development of the pilot programs, learning strategies—such as problem-based, challenge-based, service-based, and simulation-mediated approaches—were integrated. Another fundamental component in the development of the Ibero4jobs Methodology is Mentoring, which serves as a cross-cutting support strategy for students by professors, entrepreneurs, and graduates, with the aim of contributing to the consolidation of the graduation profile. Below is a summary of the mentioned conceptual elements.

3.3.1 Approach Focused on Competency and Soft Skills Development.

Referring to the problem that motivated the current project, it is essential to recognize the relationship between the competencies and soft skills required in professional training to foster employability, as one of the central categories of analysis. Both are fundamental to professional success; however, they represent different aspects of an individual's performance, where competencies encompass skills, knowledge, and attitudes. In an increasingly dynamic and globalized environment, the development of “applied” skills or soft skills is increasingly required of professionals; these are considered a key differentiator factor achieving not only a job but also good job performance. Now, numerous studies suggest that the gap between the skills and capabilities of students today is increasing (Mourshed, 2012). This is also highlighted by a survey conducted by *The Wall Street Journal* with the participation of 900 executives, which revealed that 89% of them reported difficulties in finding individuals with the required skills or attributes, and 92% claimed that soft skills were more important than hard or technical skills (Torres, 2022).

The research conducted by Gruzdev et al. (2018) indicates that Companies place significant value on social skills, recognizing their role in business success; however, their research also highlights a prevailing dissatisfaction with the educational outcomes of university graduates. “And this is the most important basis for building a dialogue between education and business in order to ensure the quality of education” (Gruzdev et al., 2018, p. 697).

According to Guerra (2019), soft skills refer to an individual's ability to interact effectively with others and navigate various situations through assertive decision-making. This highlights the importance of graduates developing the capacity to think systemically, critically assess situations and available resources to solve problems, collaborate, and self-organize (Drobotenko et al., 2021).

According to Drobotenko et al. (2021), the term “soft skills” refers to the abilities necessary for effective collaboration with others. These include strategies such as critical thinking, creativity, and cooperation; techniques for reflection and self-regulation, and the development of character traits that foster awareness of choice and the willingness to assume responsibility.

Table 8 presents the taxonomy of competencies and soft skills that serve as a reference for the development of the Ibero4jobs Methodology.

Table 8

Taxonomy of Competencies and Soft Skills according to Drobotenko (2021)

Universal competencies (UC)		Soft skills
UC-1	The ability to search for, critically analyze, and synthesize information, and to apply a systematic approach to problem-solving.	High-level thinking skills: <ul style="list-style-type: none"> • Research skills • Analytical ability • Creativity, innovation • Information management skills
UC-2	The ability to determine the scope of tasks within the established objective and select the most effective solutions based on current legal standards, available resources, and constraints.	Goal orientation: <ul style="list-style-type: none"> • Managerial skills • Decision-making ability • Adaptability to change
UC-3	The ability to effectively engage in social interactions and fulfill one's role within the team.	Social interaction skills: <ul style="list-style-type: none"> • Leadership skills • Network management • Stress management
UC-4	The ability to communicate effectively, both verbally and in writing.	Communication skills: <ul style="list-style-type: none"> • Negotiation skills
UC-5	The ability to perceive the cultural diversity of society within socio-historical, ethical, and philosophical contexts.	Social interaction skills: <ul style="list-style-type: none"> • Adherence to professional ethics • Cultural adaptability • Orientation • Conflict resolution and management skills
UC-6	The ability to manage time effectively, build, and implement a self-development plan based on the principles of learning.	Self-control (self-management), goal orientation: <ul style="list-style-type: none"> • Self-development and self-awareness skills

		<ul style="list-style-type: none"> • Learning skills • Responsibility
--	--	---

3.3.2 *Experiential Learning Approach*

Experiential learning is an educational approach that places the learner-context relationship at the center of the process, linking two key components: experience and reflection. This approach aims to bridge the gap between theory and practical application, understood as the actions of individuals in social contexts to contribute to problem-solving. In this sense, experiential learning involves interaction among individuals in authentic, problem-based contexts.

The origins of the experiential learning approach can be associated with the proposal developed by Dewey (1938) and its consolidation through Kolb’s model, which, in the terms of Morris (2019), consists of "a concrete, contextually rich experience, critical reflective observation, specific contextual abstract conceptualization, and pragmatic active experimentation" (p. 064). From this perspective, Kolb (as cited in Gleason et al., 2023) identifies experiential learning as the method that provides a framework that strengthens the connections between education, work, and personal development. In other words, it not only addresses the competencies required by the labor market but also aligns with educational objectives, effectively integrating classroom learning with real-world applications. By emphasizing student-centered learning and promoting competency and skill development through direct experience, this approach provides an innovative and effective alternative to traditional teaching methods.

3.3.3 *STEAM Approach*

The learning process in the STEAM approach integrates the fields of science, technology, mathematics, art, and engineering with the aim of enhancing the relationships between analytical, logical thinking and divergent thinking modes oriented toward creation and expression. In this way, the approach to problem situations, cases, and challenges is carried out from an interdisciplinary perspective. This approach was introduced in the educational field in the 1990s by the National Science Foundation in the United States. Santillan et al. (2019) affirm that the STEAM approach not only contributes to the development of digital competencies, but also enhances education through collaborative and cooperative processes, strengthening communicative competencies and reinforcing values of respect, solidarity, and reciprocity. Furthermore, it promotes the recognition of diversity as a human potential that unfolds in the fields of science, technology, and art, among others. The project-based learning strategy has traditionally been integrated into the development of the STEAM approach. The resolution of problems presented to students as challenges is a dynamic that characterizes this approach, favoring the introduction of research, development, and innovation perspectives.

3.3.4 **Mentoring**

Mentoring, according to Fernández and Ruiz (2019), is the interaction between an experienced individual (mentor), and a less experienced individual who seeks to learn and develop in that same field (mentee). In this sense, mentoring has been established as a methodology for providing support, guidance, and direction toward achieving personal, professional, or academic goals. Recent studies have focused on analyzing the usefulness of mentoring from different perspectives: social, organizational, group, and individual (Corrales, 2019), highlighting the following key contributions:

Mentoring positively impacts mentees by supporting the development of personal skills, team integration, and fostering an environment of support and trust. Studies also suggest that an organizational culture centered on mentoring can play a crucial role workforce development. In this regard, an effective mentoring process should begin with understanding the mentee and then implement methods that not only enhance the development of competencies and skills, but also drive success and achievement in personal, professional, or academic domains. Moreover, mentoring facilitates continuous learning and lifelong personal growth. As a methodology for interaction and relationship-building, mentoring is applied across various fields and contexts, including the following:

- **Peer Mentoring:** This occurs both in the business and academic settings, where a mentor —someone within the same environment or institution with greater experience and knowledge—shares their expertise with peers to support one another in achieving common goals.
- **Mentoring in the Business Field:** In corporate settings, mentoring is aimed at promoting an organizational climate based on trust and fostering a healthier work environment that facilitates the achievement of organizational goals. It also helps develop soft skills essential for effective workforce integration (Godoy et al., 2021).
- **Mentoring in the Academic Field:** In the educational settings, the primary goal of mentoring is to support inclusive processes or assist in the mentee’s successful transition with the aim of improving their interactions and strengthening their academic knowledge and skills, promoting a mutually supportive environment between mentors and mentees (Jackson and Price, 2019).

Studies on the effectiveness of mentoring identify the mentor’s characteristics and skills as key predictors of success, followed by a systematic plan and structured support tailored to the specific context to reduce academic dropout and failure rates. In the workplace, it is associated with improvements in job satisfaction, organizational commitment, job performance, as well as a reduced intention to change jobs.

In summary, it is necessary to define the context of mentoring according to the specific needs of different environments to promote the development of individual and organizational talent. This approach also contributes to building a culture of mutual support that promotes sustainable personal, professional, and organizational development in the long term (Godoy et al., 2021).

3.5 Strategies for Learning

The strategies evidenced in the pilot programs are flexible in nature, allowing for their integration with experiential learning approaches, STEAM, and the development of mentoring. Table 9 outlines the experiential activities recommended to develop these training approaches. These activities can be complemented with those suggested in Guide 015, which provides an inventory of the most commonly used activities during the pilot experiences.

Table 9
Strategies for learning

Strategy	Conceptual approach	Skills it promotes
Challenge-based learning	It is based on the principle that students learn from their experiences, actively participating in the proposed activity (the challenge), in such a way that they immediately apply the learning by proposing and testing different paths to solve a real problem based on well-reasoned decision-making. Gilbert et al. (2018)	<ul style="list-style-type: none"> ● Problem solving ● Decision making ● Reflection ● Teamwork ● Assertive communication
Problem-based learning	It promotes skills to identify problems, collect, assess, and analyze information about the detected problems or needs, propose contextualized and theoretically argued solutions, implement the proposed solutions, and draw conclusions from the findings in experimentation. Montejo (2019 as cited in Ortiz and Hernández, 2023)	<ul style="list-style-type: none"> ● Reflective and creative thinking ● Knowledge integration ● Cooperation and teamwork
Project-based learning	An integrated strategy that aims for the student to solve a problem through the design and implementation of a project that integrates different areas of knowledge. It focuses on the development of technical competencies, but also strengthens competencies such as cooperative work, oral communication, and knowledge generation. Williams (as cited in Apaza et al., 2022)	<ul style="list-style-type: none"> ● Collaboration for learning ● Effective communication ● Logical and creative thinking ● Problem-solving and adaptive thinking
Simulation-based learning	A strategy that facilitates the assimilation of knowledge through experiential learning, requiring participants to overcome a series of challenges that realistically bridge the gap between learning and meaningful understanding. This methodology seeks to enhance each student's ability through cooperative work to find different solutions to each challenge, strengthening the virtues of each student while helping to find new ways to achieve it through teamwork. (Bueno and Martínez, 2023)	<ul style="list-style-type: none"> ● Decision making ● Teamwork ● Communication ● Integration of theory and practice
Service-based learning	It refers to strategies in reciprocity that combine community service with reflective learning of knowledge, skills, and values; where both those who provide the service and those who receive it learn. (Vivero et al., 2020)	<ul style="list-style-type: none"> ● Empathy ● Reflection ● Solidarity commitment

3.6 Methodological Phases

The methodology integrates various strategies that enhance collaboration between universities and the business sector based on Learning Outcomes (LO) within the framework of pilot program experiences. It is structured in six phases, serving as guidelines for the specific construction of each university. It should be noted that activities have been specified to ensure the processes. However, each university may design the project by adapting the most relevant activities according to its interests and needs. The process should be developed over 20 weeks based on the two prioritized lines of action for the academic programs subject to intervention. The phases that make up the methodology are: preparation, contextualization, awareness and communication, training of professors, business people, or graduates, training of students; and, finally, the evaluation phase.

3.6.1 Preparation Phase

The preparation phase refers to the planning process for the other phases. Its seven activities are to be developed in a period of eight weeks, with the possibility of some activities running in parallel. This phase includes the diagnosis based on the selected academic programs for implementing the methodology, prioritizing two lines of action. Additionally, the project formulation is carried out according to Guide 002.

In this phase, the plan for raising awareness and communicating the Ibero4jobs methodology should be designed, outlining activities targeted at students, professors, entrepreneurs, and graduates. It is recommended to include introductory, follow-up, and closing activities mediated by both physical and digital formats.

Additionally, the roadmap for the experiential training program for professors, businesspeople, and graduates should be designed based on the certification level (basic, intermediate, and advanced). For this, each institution may select the most relevant modules accordingly. Regarding student training, the experiential training plan should align with the selected lines of action. In both cases, challenge-based learning, project-based learning, problem-solving, and simulations should be integrated. The proposed preparation activities are presented in Table 10 below.

Table 10
Preparation phase activities

ACTIVITY	PRODUCT	RESOURCES
0.1 Needs diagnosis (analysis of professional training profiles based on the demands of the selected academic programs).	Prioritization of two lines of action to develop the Ibero4jobs project.	Guide 001. Diagnosis of Academic Program Needs Based on the Business Context.
0.2 Formulation of the Ibero4jobs project.	Ibero4jobs project	Guide 002. Modified Institutional Project Format – University of Vigo.
0.3 Design of the awareness and communication strategy.	Awareness and communication plan,	Guide 003. Awareness and Communication Plan Format – Ibero4jobs Methodology.

	Ibero4jobs Methodology.	
0.4 The design of the experiential training pathway for teachers, employers, and graduates.	Experiential training pathway for teachers, employers, and graduates.	Development of the training pathway for each university. Review Table 13 and 14.
0.5 Design of the experiential training pathway for students.	Experiential training pathway for students.	Guidelines for designing the training strategy for students. Bootcamp guides 11, 12, 13, and 14.
0.6 Design of the evaluation strategy for entry and exit profiles in relation to competencies for students, teachers, graduates, and employers. Include sociodemographic variables.	Selection of techniques and instruments for the evaluation of competencies and soft skills.	Guide 004. Inventory of Recommended Instruments for the Assessment of Competencies and Soft Skills. Format for Sociodemographic Variables Registration.
0.7 Design of the evaluation strategy for the implementation of the methodology.	Evaluation plan by the participating stakeholders and lessons learned.	Monitoring and evaluation plan for the Ibero4jobs Methodology. Table 18. Guide 16. Lessons Learned Guide.

3.6.2 Contextualization Phase

This stage focuses on analyzing the business sectors related to the academic programs. The goal is to familiarize businesspeople with the Ibero4jobs Methodology to build an effective connection between universities and the business sector. Additionally, this phase involves identifying companies interested in participating in the training process, assessing areas for improvement, and facilitating the exchange of experiences and best practices to enhance graduates' professional profiles. The activities implemented in this phase are shown in Table 11.

Table 11

Activities in the contextualization phase

Activity	Product	Resource
0.8 Individual entry profile of participants regarding sociodemographic variables and the results of the initial evaluation of competencies and soft skills.	Characterization of the participating population (students, teachers, employers, and graduates).	Guide 005. Guidelines for Defining Participant Admission Profiles (students, teachers, employers, graduates). Guide 017. Business Sector Engagement.
0.9 Application of complementary evaluation instruments according to institutional requirements.		Application and analysis of the evaluation of emotional, digital, and entrepreneurial competencies, among others.

0.9 Identification of companies by sector in alignment with academic programs.	Business mapping Work agenda with companies	Guide 006. Development of Business Mapping. Guidelines for recognizing partnership opportunities in the areas of training, research, development, and innovation.
10. Identification of partnership opportunities in the areas of training, research, development, and innovation.		
11. Development of business challenges	Challenge Development Workshop	Guide 007. Guidelines for the Business Challenge Workshop – Creativity and Innovation Lab Methodology “NeuroCity” of the Manizales Chamber of Commerce for Caldas.

3.6.3 Awareness and Communication Phase of the Methodology

This phase corresponds to the socialization of the methodology to the target groups (students, professors, entrepreneurs, or graduates). The goal is to provide an environment of trust through consistent and clear information that guides participants on the development of the methodology, with the purpose of promoting the empowerment of students, professors, businesspeople, and graduates. The activities for this phase are outlined in Table 12.

Table 12

Activities in the awareness and communication phase of the methodology Phase

ACTIVITY	PRODUCT	RESOURCES
12. Dissemination of the Ibero4jobs Methodology to the university community.	Minutes or institutional document, photographs, videos, attendance list.	Presentation of the institutional roadmap for the Ibero4jobs methodology. Custom development by each institution. Guide 008. Attendance Record Format for Ibero4jobs Events.
13. Linking the curriculum committees or related bodies to the academic programs.	Minutes or institutional document.	Strategy for linking the program to the Ibero4jobs Methodology. Custom development by each institution. Guide 008. Attendance Record Format for Ibero4jobs Events.
14. Dissemination in institutional instances related to training, research, and outreach of the Ibero4jobs Methodology.	Minutes or institutional document.	Presentation of the institutional roadmap for the Ibero4jobs methodology. Custom development by each institution. Guide 008. Attendance Record Format for Ibero4jobs Events.
15. Launch of the Ibero4jobs Methodology with students, teachers, employers, and graduates. Government representatives and relevant social organizations may also be invited.	Event agenda	The launch must incorporate experiential learning strategies, integrating workshops, boot camps, and conferences as defined by each institution. Guide 008. Attendance Record Format for Ibero4jobs Events.

16. Closure of the Ibero4jobs Methodology with students, teachers, employers, and graduates. Government representatives and relevant social organizations may also be invited.	Event agenda.	The launch must incorporate experiential learning strategies, integrating workshops, boot camps, and conferences as defined by each institution. Guide 008. Attendance Record Format for Ibero4jobs Events.
17. Awareness and Communication Strategy.	Digital communication strategy action plan	Guide 003. Awareness and Communication Plan Format – Ibero4jobs Methodology.

3.6.4 Training Strategy Phase for Teachers, Employers, or Graduates

The training of professors, entrepreneurs, or graduates has been designed based on the principles of flexibility and relevance. From this perspective, the training phase integrates three training components: (1). The personal component, which aims to contribute to the consolidation of soft skills. (2). The experiential component, which focuses on recognizing strategies centered on learning in context. (3). The relational Component, which focuses on understanding the relationship processes between the State, universities, and businesses in relation to training, research, development, and innovation processes that can be configured in different modes of business practice. Additionally, it explores mentoring as a strategy for student support. Guide 009, which refers to the mentor training strategy, and Guide 010, provides guidelines for designing the mentoring plan. The components of the training strategy for professors, entrepreneurs, or graduates are presented in Table 13.

Table 13

Components of the training strategy for professors, entrepreneurs, and graduates

COMPONENT	COMPETENCIES	LEARNING OUTCOMES
Personal	Consolidation of soft skills aimed at enhancing team performance.	Build a personal brand by recognizing unique characteristics and practices in alignment with the professional profile. Co-create teamwork strategies based on the recognition of emotional management approaches to promote effective communication as a foundation for conflict resolution. Apply leadership strategies aimed at adapting to change through the development of creativity and innovation.
Experiential	Recognition of experiential learning strategies as alternatives to promote lifelong learning.	Co-create strategies for linking the curriculum with business demands. Co-design strategies for learning how to learn through experiential activities aimed at solving business challenges.
Interaction	Recognition of State-University-Business relationship strategies.	Apply various modalities of practice and mentorship by integrating training, research, development, and innovation processes.

The components are structured, with five micro-courses, each (see Table 14). Based on the entry profile of professors, entrepreneurs, or graduates, and in accordance with the objectives of the Methodology, the university decides the training path. In this regard, each

university can select the different micro-courses to include in the training route, always selecting at least one micro-course from each component or developing a complete component. The experiential learning activities suggested for each micro-course aim to guide the development of the training process, referring to the methods and techniques that can mediate the experience and reflection, thus shaping the learning experience. Guide 015 corresponds to the inventory of experiential learning activities.

Table 14

Structure of micro-courses by component of the training strategy for professors, entrepreneurs, and graduates.

COMPONENT	MICRO-COURSES	SUGGESTED EXPERIENTIAL LEARNING ACTIVITIES	HOURLY INTENSITY
Personal Component	Personal brand	Bootcamp	6
	Effective communication and emotional management.	Simulation: Role-playing	6
	Teamwork and conflict resolution	Bootcamp	6
	Creativity and innovation	Co-creation workshop	6
	Leadership and change management	TED Talk	6
	Total hours		30 hours
Experiential component	Curriculum and experiential learning	Co-creation workshop	6
	Problem-based learning	Film forum	6
	Challenge-based learning	Bootcamp	6
	Project-based learning	Bootcamp	6
	Simulation-based learning	Bootcamp	6
	Total hours		30 hours
Interaction component	State-University-Business relationship strategies: training, research, development, and innovation.	Panel discussion with experts	6 hours
	Startup mindset	Bootcamp	6 hours
	Business practice modalities	Co-creation workshop	6 hours
	Mentorship	Co-creation workshop	6 hours
	Mentorship plan	Co-creation workshop	6 hours
	Total hours		30 hours

Furthermore, the university defines the required training level for participants. These levels are distinguished by the number of certified hours (see Table 15). In all cases, the hours assigned to the induction and closing sessions are included.

Table 15

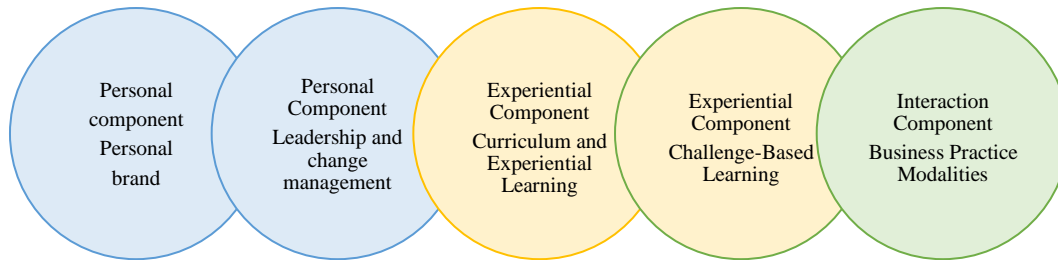
Certification criteria for the training strategy for professors, entrepreneurs, and graduates

LEVEL OF TRAINING	HOURS FOR THE INDUCTION SESSION	HOURS FOR THE CLOSING SESSION	TRAINING HOURS	TOTAL CERTIFIED HOURS
Initial level	5 hours	5 hours	30 hours	40 hours
Intermediate level	5 hours	5 hours	60 hours	70 hours
Advanced level	5 hours	5 hours	90 hours	100 hours

As an example, the following training pathway is proposed for the initial level, with a total duration of 30 hours:

Figure 3

Basic-level training pathway for teachers, employers, and graduates



Finally, it is recommended that the training be conducted in a hybrid format, combining cooperative in-person sessions with individual online activities. For a 6-hour micro-course, it is suggested to develop 4 hours of in-person sessions and 2 hours of online activities. Similarly, for the 5-hour induction and closing sessions, it is recommended to conduct 3 hours in person and 2 hours online.

3.6.5 Student Training Phase

Student training in the Ibero4jobs Methodology aims to contribute to the consolidation of soft skills within the framework of universal competencies, following the model proposed by Drobotenko et al. (2021), and is carried out through two types of experiential learning activities. The first is the development of bootcamps, and the second is the implementation of mentoring sessions. The core element of these experiential learning activities is the co-creation of solutions to business challenges, developed by businesspeople, professors, and graduates within the framework of the challenges posed by the 2030 development goals. The experience focuses on the application and transfer of soft skills during the process. Table 16 outlines the criteria for designing business challenges.

Table 16

Criteria for Designing Business Challenges

Skill	Application Context	Reference Challenge – SDGs
<ul style="list-style-type: none"> - Personal brand - Effective - Communication and emotional management - Teamwork and conflict resolution - Leadership and innovation orientation 	<p>Sectors:</p> <ul style="list-style-type: none"> Agricultural Industrial Services <p>Fields:</p> <ul style="list-style-type: none"> Financial Commercial Operations <p>People Management, among others</p>	<ul style="list-style-type: none"> - End of poverty - Zero hunger - Health and well-being - Quality education - Gender equality - Clean water and sanitation - Affordable and clean energy - Decent work - Industry, innovation, and infrastructure - Reduction of inequalities - Sustainable cities and communities

		<ul style="list-style-type: none"> - Responsible production and consumption - Climate action - Marine life - Life of ecosystems - Peace, justice, and strong institutions - Partnerships to achieve the goals
--	--	---

The student training strategy is structured around the challenges identified by businesses. These are designed to reinforce soft skills, including self-awareness, collaborative work and teamwork, effective communication, adaptability and emotional intelligence, creativity, innovation, and continuous learning, as well as leadership and team management, among others.

The methodology is implemented through bootcamps, as an immersive and engaging strategy designed to address business challenges with a focus on soft skills development. The activities are structured by integrating various methods and techniques centered on experiential learning and STEAM approaches, combined with the mentoring strategies. (1) Simulations and Interactive Techniques – Utilizing tools such as interactive sheets, role-playing, and specialized software (2) Expert-Led Activities – Engaging with experts through forums, discussion panels, and hands-on demonstrations, among others (3) Peer and Independent Learning – Facilitating collaborative tasks, peer mentoring, and self-directed practice. (4) Company Visits – Providing opportunities for exploration, training, or socialization, among others.

Table 17 specifies the activities for the students training, and Guide 015 provides an inventory of experiential activities.

Table 17

Ibero4jobs Students Training

SESSION	EXPERIENTIAL LEARNING ACTIVITIES	TOPIC	KEYS
Session 1	Induction Session	Team Formation, Mentor Assignment	Application of the competency and soft skills assessment tool. Presentation of challenges by the mentors.
Session 2	Bootcamp 1	Personal brand	Self-Knowledge Personal SWOT Analysis Declaration of Unique Value Proposition Social Representation of Oneself
Session 3	Mentorship 1	Challenge Analysis	Business Model Canvas Ring Pitch 6W Canvas

Session 4	Bootcamp 2	Effective Communication and Emotional Management	Simulation: Role-Playing Game Film Forum
Session 5	Mentorship 2	Ideation of Solution Alternatives	Business Model Canvas Artificial Intelligence (AI) Tools
Session 6	Bootcamp 3	Teamwork and Conflict Resolution	Design Thinking Role-playing STEAM activity Rapid prototyping tools Immersive simulation
Session 7	Mentorship 3	Prototyping	Design Thinking Role-playing game STEAM activity Rapid prototyping tools Immersive simulation
Session 8	Bootcamp 4	Leadership and Innovation Orientation	STEAM activity Integration of AI Blog PITCH
Session 9	Mentorship 4	Co-creation of the socialization strategy	PITCH STEAM activity Integration of AI Blog
Session 10	Bootcamp 5	Socialization of the prototypes	Ibero4jobs Fair
Session 11	Mentorship 5	Final feedback on products	Ibero4jobs Blog
Session 12	Closing session	Evaluation of competencies and soft skills Evaluation of the Ibero4jobs Methodology	Application of the competency and soft skills assessment tool. Evaluation of the Ibero4jobs Methodology

Students receive certification when their attendance is at 80% of the planned activities.

3.7 Evaluation Phase

The final phase of the pilot corresponds to the systematization of learned experiences, understood as a structured process that documents, categorizes, and evaluates the different experiences from the perspective of the stakeholders, based on the process and scope of the Ibero4jobs Methodology. Table 18 specifies the techniques, instruments, and expected outcomes, while Guide 016 contains the guidelines for developing the Learning Assessment (LA) strategy.

Table 18*Evaluation Strategy for the Ibero4jobs Methodology*

METHOD	INSTRUMENT	DATA COLLECTION MOMENT	PRODUCT
Pretest	Evaluation rubric	Application of the rubric to students at the beginning	Test results for each participant
Post test	Evaluation rubric	Application of the rubric to students at the end of the Ibero4jobs methodology	Test results for each participant
Likert scale	Attitude questionnaire applied to participating mentors	At the beginning and end of the Ibero4jobs methodology	Scale result

The recommended evaluation criteria include: a) the level of progression of competencies in the participating students according to the applied rubric, b) the involvement of companies in identifying business challenges, c) the involvement of subject-matter experts in the pilot, d) training of professors focused on mentoring, e) the percentage of students who start and complete the program.

Bibliography

- Asociación Nacional de Empresarios de Colombia (ANDI). (2015). *Estrategia para una nueva industrialización*.
<https://www.andi.com.co/uploads/estrategia%20para%20una%20nueva%20industrializacion.pdf>
- Apaza Canaza, M.S., Caveró Pacheco, D.C. & Travieso Valdés, D.C. (2022). Aprendizaje Basado en Proyectos: su influencia en los resultados del estudiante. *VARONA*, (75), 1-10.
- Balart, P., Oosterveen, M., & Webbink, D. (2018). Test scores, noncognitive skills and economic growth. *Economics of Education Review*, 63, 134-153.
<https://doi.org/10.1016/j.econedurev.2017.12.004>
- Banco Interamericano de Desarrollo. (2020). *Lecciones aprendidas: metodología para la gestión del conocimiento*.
<https://publications.iadb.org/publications/spanish/document/Lecciones-aprendidas-del-diseno-y-la-implementacion-de-modalidades-virtuales-e-hibridas-de-los-servicios-de-atencion-a-la-primera-infancia.pdf>
- Bueno Ferrer, Á., & Martínez Vázquez, R.M. (2023). Creación de una empresa simulada a partir de ideas creativas como herramienta didáctica en España. *Revista de Ciencias Sociales*, 29(2), 96-107.
- Corrales, M. L. (2019). *Mentoring: un modelo de aprendizaje para la excelencia personal y organizacional*. Ediciones Pirámide.
- Dewey, J. (1938). *Experience and Education*. Macmillan Company.
- Drobotenko, Y. B., Nazarova, N. A., Smagina, I. L., & Panasenko, E. V. (2021). Soft skills and universal competencies: relationship of concepts, structure and assessment. *SHS Web of Conferences*, 121. EDP Sciences. <https://doi.org/10.1051/shsconf/202112102003>
- Euler, D. (2019). *Participación del sector empresarial en la formación profesional. Herramienta de trabajo para el diálogo político y el diseño de proyectos en el marco de la Cooperación para el Desarrollo Parte 2: Cuestionario*. Institut für Wirtschaftspädagogik, Universität St. Gallen. Zürich.
https://www.dcdualvet.org/wp-content/uploads/DC-dVET_tool_cuestionario.pdf
- Fernández, A. C., & Ruiz Bejarano, A. M. (2019). *La mentoría en la universidad: revisión sistemática sobre el estado de la cuestión*. <https://www.edunovatic.org/wp-content/uploads/2020/03/EDUNOVATIC19.pdf>
- Gilbert, R., Rojo, M., Torres, J. & Becerril, H. (2018). Aprendizaje basado en retos. *Revista Electrónica Anfei Digital*, 5(9), 1-11. <https://doi.org/10.1051/shsconf/202112102003>
- Gleason Rodríguez, M. A., y Rubio, J. E. (2020). Implementación del aprendizaje experiencial en la universidad, sus beneficios en el alumnado y el rol docente. *Revista Educación*, 44(2), 279-298. <https://dx.doi.org/10.15517/revedu.v44i2.40197>
- Godoy Rodríguez, M. R., Loaiza Herrera, Y., & Abril Barbosa, C. A. (2021). Importancia del mentoring en la gestión empresarial de las mujeres en Colombia. *Revista Sinergia*, (10), 42-64.
- Gruzdev, M., Kuznetsova, I., Tarkhanova, I., & Kazakova, E. (2018). University Graduates' Soft Skills: the Employers' Opinion. *European Journal of Contemporary Education*, 7(4), 690-698. <https://doi.org/10.13187/ejced.2018.4.690>

- Guerra Báez S.P. (2019). Una revisión panorámica al entrenamiento de las habilidades blandas en estudiantes universitarios. *Psicología Escolar e Educativa*, 23, 1-11. <https://doi.org/10.1590/2175-3539201901646>
- International Labour Organization. (2025). *World employment and social outlook: Trends 2025*. International Labour Office. https://www.ilo.org/sites/default/files/2025-01/WESO25_Trends_Report_EN.pdf
- Ministerio de Tecnologías de la Información y las Comunicaciones (MinTIC). (2023). *Lecciones aprendidas: gestión del conocimiento*. <https://gestiondelconocimiento.mintic.gov.co/714/w3-propertyvalue-85194.html>
- Mazzucato, M. (2022). *Misión Económica. Una guía para cambiar el capitalismo*. Taurus.
- Mazzucato, M. (2019). *El valor de las cosas*. Taurus.
- Morris, T. H. (2019). Experiential learning – a systematic review and revision of Kolb’s model. *Interactive Learning Environments*, 28(8), 1064–1077. <https://doi.org/10.1080/10494820.2019.1570279>
- Mourshed, M. (2012). *Education to employment: Designing a system that works*. McKinsey y Company.
- Naciones Unidas. (2022). *Informe sobre los Objetivos de Desarrollo Sostenible 2022*. https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022_Spanish.pdf
- Ortiz Ortiz, M. L. & Hernández Yomayusa, O. M. (2023). Aprendizaje basado en problemas mediado por una aplicación educativa móvil. *Revista Virtual Universidad Católica Del Norte*, (69), 43–69. <https://doi.org/10.35575/rvucn.n69a3>
- Santillán Aguirre, J. P., Cadena Vaca, V. del C., & Cadena Vaca, M. (2019). Educación Steam: entrada a la sociedad del conocimiento. *Ciencia Digital*, 3(3.4.), 212-227. <https://doi.org/10.33262/cienciadigital.v3i3.4.847>
- Torres Millones, L. S. (2022). Desarrollo de habilidades blandas en estudiantes: Una revisión sistematizada. *CIEG*, (54), 12–22.
- Vivero Arriagada, L., Molina Chávez, W. & Standen Silva, D. (2020). Un análisis crítico al modelo de aprendizaje servicio: Su implementación en la Universidad Católica de Temuco. *Sophia Austral*, (25), 121-137. <https://dx.doi.org/10.4067/S0719-56052020000100121>
- World Economic Forum. (2025). *The future of jobs report 2025*. <https://www.weforum.org/reports/the-future-of-jobs-report-2025>