

## Interdisciplinary collaboration in the training of entrepreneurs: learning outcomes of biology and food science students working together in the classroom

### Colaboración interdisciplinaria en la formación de emprendedores: resultados de los aprendizajes de estudiantes de biología y de ciencia de los alimentos trabajando juntos en el aula

HERNÁNDEZ-TINOCO, Araceli\*† & CARBAJAL-MARISCAL, Oscar

*Centro Universitario de Ciencias Biológicas y Agropecuarias, CUCBA de la Universidad de Guadalajara. Av. Ramón Padilla Sánchez 2100, Nextipac, 45200 Zapopan, Jal. México.*

ID 1<sup>st</sup> Author: *Araceli, Hernández-Tinoco* / ORC ID: 0000-0002-8420-0530, CVU CONAHCYT ID: 80799

ID 1<sup>st</sup> Co-author: *Oscar, Carbajal-Mariscal* / ORC ID: 0000-0001-5373-3062, CVU CONAHCYT ID: 242918

DOI: 10.35429/JET.2023.18.7.1.9

Received: July 10, 2023; Accepted December 30, 2023

#### Abstract

Before the new world scenarios, graduates of public universities require new skills and competencies in the management of information and technologies capable of solving real contemporary problems. Entrepreneurship gains value and sets trends for its incorporation into educational programs, including basic education, aimed at solving real problems in the field, outside the classroom. The validated methodologies Design Thinking and Lean Canvas were used for the detection of problems and development of solutions with a business vision with sustainable impact. Two groups, from different careers, created a multidisciplinary course with an emphasis on meaningful learning per session, with products from each stage of the process, from the final portfolio. A satisfaction survey was applied to the students at the end of the course. The results of educational practices developed entirely in an immediate geographical environment, in a multidisciplinary way, with the focus on the solution of contingent socioeconomic problems are presented; The data obtained in the evaluation of the learning signified by the students are analyzed to know their perceptions of the immersion experience in a target locality and the creation of their projects with individual business potential and elaborated in a collaborative way.

#### Resumen

Ante los nuevos escenarios laborales, los egresados de las universidades públicas requieren nuevas habilidades y competencias en el manejo de información y tecnologías capaces de resolver problemas reales contemporáneos. El emprendimiento cobra valor y marca tendencia para su incorporación en los programas educativos, incluyendo la educación básica, dirigidos hacia la solución de problemas reales en campo, fuera del aula. Se usaron las metodologías validadas Design Thinking y Lean Canvas para la detección de problemas y desarrollo de soluciones con visión de negocio con impacto sustentable. Dos grupos, de diferentes carreras crearon un curso multidisciplinario y con énfasis de aprendizaje significativo por sesión, con productos de cada etapa del proceso, del portafolio final. Se aplicó una encuesta de satisfacción a los alumnos al final del curso. Se presentan los resultados de prácticas educativas desarrolladas completamente en un entorno geográfico inmediato, de forma multidisciplinaria, con el enfoque en la solución de problemas socioeconómicos contingentes; se analizan los datos obtenidos en la evaluación de los aprendizajes significados por los alumnos para conocer sus percepciones de la experiencia de inmersión en una localidad objetivo y la creación de sus proyectos con potencial de negocio individuales y elaborados de forma colaborativa.

#### Entrepreneur, Classroom, Collaboration

#### Emprendimiento, Aula, Colaboración

**Citation:** HERNÁNDEZ-TINOCO, Araceli & CARBAJAL-MARISCAL, Oscar. Interdisciplinary collaboration in the training of entrepreneurs: learning outcomes of biology and food science students working together in the classroom. Journal Educational Theory. 2023. 7-18:1-9.

\* Author's Correspondence (E-mail: araceli.hernandez@academicos.udg.mx)

† Researcher contributing as first author.

## Introduction

Technological advances such as artificial intelligence represent a huge challenge for the new generations of students graduating from public universities: international companies could consider the substitution of key job positions by these large language models (LLM), consequently, the job outlook would be uncertain for people who conclude their higher education with certain professional profiles.

The culture of entrepreneurship has a very significant value, with a strong growth trend in Jalisco and in the world. In 2021, the government of Jalisco enacted the "Law for the Promotion of Entrepreneurship in Jalisco" to increase competitiveness among companies, which includes: training, incentives, support and awards, among other aspects. This law provides for curricula to incorporate entrepreneurship subjects from basic education onwards (Government of Jalisco, 2023).

On the other hand, the University of Guadalajara, a public institution of higher education with more than 80 years of tradition and the largest in terms of coverage, infrastructure and projects in the west of the country, sustains in its vision the commitment to "promote innovative approaches to teaching and learning and to the generation of knowledge for the benefit of society" (University of Guadalajara, 2023). Consequently, it is a challenge for the teaching staff of this educational institution to achieve a comprehensive training of students; this requires constant updating with alternative learning models that are adjusted to the immediate work scenarios, through flexible organic actions that allow students to establish relationships with actors in the business and productive environment and to carry out training practices of real value.

The University of Guadalajara establishes in its mission statement that it is "a decentralised public body [...] whose aims are to train and update [...] human resources [...]; organise, carry out, promote and disseminate scientific, technological and humanistic research; rescue, conserve, increase and disseminate culture, science and technology" (University of Guadalajara, 2023).

Thus, in 2018, an academic, business and social networking event called "ExpoImagina" was created, which has been held uninterruptedly up to the date of publication of this article. In the 2019 edition of "ExpoImagina", a workshop was held at the University Centre for Biological and Agricultural Sciences, with the participation of more than 60 students from five thematic University Centres of the University of Guadalajara and higher secondary education, together with authorities from the Municipality of Tlaquepaque, Jalisco and the target community, setting a precedent on the need to support entrepreneurial development strategies that link university students with the entrepreneurial ecosystem and society, mainly in the communities where the students come from, to address the solution of local contingent problems.

In this sense, for the Entrepreneurship Development and Entrepreneurship courses - which will be used interchangeably throughout this paper - taught respectively in the Biology and Food Science degrees at the Centro Universitario de Ciencias Biológicas y Agropecuarias, a collaboration was carried out between two teachers of both courses to reorganise the contents of the courses with the vision outlined above. Table 1 shows the adaptation of the contents of the descriptive chart for the inclusion of an immersion activity in a community, based on the unification in the teaching of the courses "Development of Entrepreneurs" and "Entrepreneurship".

Content of the units of competence of the course "Development of Entrepreneurs".	Content of the blended course in the January-June cycle 2023
Learn about the basic concepts of entrepreneurship, the entrepreneurial ecosystem in Mexico and current needs.	Module I - Integration, presentation of personal and professional objectives. Activities: - The life plan. - The Wallet Project
Develops and builds sketches of business models using different tools with novel methodologies.	Module II - Participation in a business activity (exhibition and sale on the occasion of Valentine's Day) Activities: - Design of the proposal (type of product/service, production cost, unit cost, design of the presentation)

	<ul style="list-style-type: none"> <li>- Development of the product/service design</li> <li>- Exhibition and sale</li> <li>- Recovery of classroom experiences</li> </ul>
Develops and generates appropriate strategies for launching a product, business or service to the market and achieves a minimum viable product..	<p>Module III - Problem to be solved and market segment.</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>- My venture idea</li> <li>- Problem tree</li> <li>- 360° strategy to find the solution (value proposition)</li> <li>- Re-engineering and final solution</li> <li>- Identity of the solution</li> <li>- Market segment</li> <li>- Networking</li> </ul>
Construct a financial run to understand the key concepts that will allow you to obtain financial viability in the market and develop strategies that will allow you to finance the project.	<p>Module IV - Business Model, Prototyping, Validation and Sales</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>- Lean Canvas Model</li> <li>- Prototype development</li> <li>- Marketing strategy</li> </ul>
Identifies the regulations, bodies and procedures for the registration of copyright and intellectual property rights.	<p>Module V - Financial Tools / Product or Service Presentation</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>- Cash flow</li> <li>- Strategy for the search for financing (crowdfunding)</li> <li>- Creation of the Pitch</li> <li>- Delivery of the executive project.</li> </ul>
Develop a document with technical feasibility. Financial and market feasibility that describes the generalities of the new product, business or service, its value proposition and profitability.	<p>Module VI - Immersion in the community for the creation of proposals for solutions to problems</p> <p>Activities:</p> <ul style="list-style-type: none"> <li>- Visit to the community and interview with the villagers and agricultural producers.</li> <li>- Elaboration of the diagnosis</li> <li>- Identification of the problem</li> <li>- Proposed solution</li> <li>- Delivery of the proposed solution to the community</li> </ul>

**Table 1** Comparison of the contents of the descriptive letter and the activities carried out in the courses "Development of Entrepreneurs" and "Entrepreneurship". Source: Collegiate descriptive charter (document for internal use, unpublished)

Source: Own elaboration

During the 15 weeks of the workshop course, collaborative dynamics were carried out so that the students could apply each of the terms, concepts and learning from the programme in context, as they were being developed, all from validated methodologies such as Design Thinking and Lean Canvas, used in the course.

Two groups from different degrees worked together: the Entrepreneurship Development group from the Biology degree and the Entrepreneurship group from the Food Science degree. Each class session provided them with a topic with a complementary activity that was incorporated into the individual portfolio; at the end they obtained a proposal for a personal business project.

From the literature review, we can first highlight the social retribution options that the Mexican government has established for people who have benefited from some type of support through CONAHCyT, among which the following stand out: "Systematise and present social and innovation initiatives", "Participate in education and communication processes for sustainability" and "Provide free advice to young entrepreneurs with ideas that address current problems in the country. (CONACyT, 2023).

The development of entrepreneurial skills requires new didactics, new training pedagogies towards educational and business innovation with the consequent link between business and academia to create successful ventures. "Entrepreneurship in universities is an effort to contribute to the economic development of society" (Macías, 2023).

Universities already include entrepreneurship as a trend and by government regulation, to support the creation and promotion of new businesses. Thus, work is being done to train entrepreneurial graduates for the creation of these companies. "In order to comply with the policy, business models have been taken, but no models or methodologies have been built for teaching entrepreneurship" (Saldarriaga et. al, 2023).

It is important to review whether what universities are doing to promote and teach entrepreneurship is really resulting in the new entrepreneurial culture that is intended for graduates or whether it is just another subject to pass (Saldarriaga et. al, 2023).

In the current university context, more importance is given to the generation of the business than to the training of the entrepreneur, with the intention of generating indicators and obtaining resources to obtain recognition in the environment, "which makes the sustainability of businesses very difficult" (Saldarriaga et al., 2023). (Saldarriaga et. al, 2023).

It is important, in the role of the educator-entrepreneurship trainer, to have education and experience in entrepreneurship so that he/she can be the model, motivator and transmitter of the knowledge of the subject, so that he/she can transmit it to the students in the classroom by promoting the culture, carrying out external extracurricular work of application in the field. Through these actions "entrepreneurial education is being strengthened with teachers and fostering entrepreneurial culture in the medium term and within the university classroom". (Mamani et. al, 2023).

The recent pandemic situation and the latent threat that anything can happen that puts working conditions at risk or creates an atmosphere of uncertainty leads to the development of skills in students that help them to face a social and working reality, so the teacher must also stimulate the student to undertake, "to do", with strategy and vision (Mamani et. al, 2023).

"The research developed contributes to the education and entrepreneurial culture that is generated in the university community, highlighting the role of the teacher as a trainer and that is key to impact on students through their knowledge and experience" (Mamani et. al, 2023). (Mamani et. al, 2023)

According to Quejada-Pérez et al. (2016), the theory of entrepreneurship has been studied from very varied perspectives, finding out on the one hand the entrepreneurial spirit and on the other hand the entrepreneurial profile taking into account many particularities and traits thus establishing the "Entrepreneurial Intention Model" which is constituted by aspects such as the psychological, sociological and economic vision, which is developed according to the entrepreneurial impact on personality traits, growth and cultural conditions that exist in the environment.

Leyva-Carreras et. al., (2019) emphasise that the entrepreneurial profile is constituted by the set of attitudes, aptitudes and skills that an individual acquires through family, social and educational experiences, for the generation of new ideas or innovations to existing ones.

With all of the above, the objective of this document is to present the results of the practices in the Entrepreneurship and Innovation training classroom directed and applied in the development of a product with the aim of ensuring the learning of the methodologies used while developing a personal business project with added value, validated and the experience seen from the student for the case.

### **Methodology**

The course was developed according to the proposed programme which included: Exposure of personal and professional motives through a personal SWOT matrix (in which the student identified the physical biological, mental, socio-emotional, spiritual, economic, professional dimensions through a short, medium and long term scheme, including strengths, weaknesses, threats and opportunities, creating their personal strategies), Design thinking methodology (empathy, problem, solution, prototyping, validation) and Lean Canvas (business model conversion template for the solution), the latter for the search of the problem to be solved, the solution idea and its transformation into a monetised idea or business proposed individually by each course attendee.

- A. The individual business project that each student developed during the semester was through the free choice of the problem of their particular interest; for those who did not have a business to develop in mind and for those students who already had a business idea or a family business underway, a strategy of value analysis was developed, in which their existing service or product was analysed and, through a focus group and a directed dynamic, their idea was examined and added value was given to generate a fresh proposal with new value.
- B. The steps followed to create the value proposition of the business idea are presented below:

1. Introduction to the subject. We worked on the development of definitions in a collaborative manner based on the concepts of entrepreneurship, business and innovation. The concepts and definitions were translated into familiar and clear language so that the students could transmit and communicate what they had learnt to other people.

2. Understanding and defining the problem. The "problem definition" was the core of the work, therefore, it was a requirement that each student understood that defining, knowing and describing the problem was of utmost importance for the optimal development of the solution, which leads to a business venture with real potential, if it solves a demand for someone. Emphasis was placed on the rigorous search of bibliographic sources to study and understand it, using practical examples of problems so that they had the clarity to differentiate between the problem, the cause and the solution, and at the end of the exercise each one obtained a well understood and appropriate definition. The didactic strategy of the "Problem Tree" was used as a contextual support.

3. Solution to the problem. Having defined and described the problem, the students worked on the proposed solution. They started by brainstorming ideas derived from their personal and professional experience and from previous knowledge and information provided by the research developed by the student. The following didactic tools were then applied:

C. Brainstorming (individual work). Each student proposed five different solutions to the problem. All of them were based on experience, on sources of information consulted or on similar success stories in Mexico or in the world. After elaborating the five proposals, they were reduced to three, selecting the most viable ones or making a combination and finally a single solution proposal was presented, which could be one of the initially proposed ones or a combination of all the previous ones. The template in table 2 was used for this purpose.

Description of the problem:				
Idea 1	Idea 2	Idea 3	Idea 4	Idea 5
Idea 1		Idea 2	Idea 3	
Idea for a solution				

**Table 2** Template for brainstorming

*Source: Own elaboration*

D. Strategy 360 (collaborative work). From the chosen brainstorming proposal, each student, using the template in table 3, wrote the problem and the solution to that problem in the central quadrants. Then they left the sheet on the work table and each student went on to read the problem and the solution proposed by their classmates and if they had any kind of contribution to the solution or modification of it, they wrote it on the sheet.

Proposal 1	Proposal 2	Proposal 3
Proposal 4	PROBLEM _____	Proposal 5
Proposal 6	SOLUTION _____	Proposal 7
Proposal 8	Proposal 9	Proposal 10

**Table 3** 360 strategy template

*Source: Own elaboration*

At the end of the exercise, each student reviewed the contributions of their peers and rewrote the new proposed solution from the aggregated material.

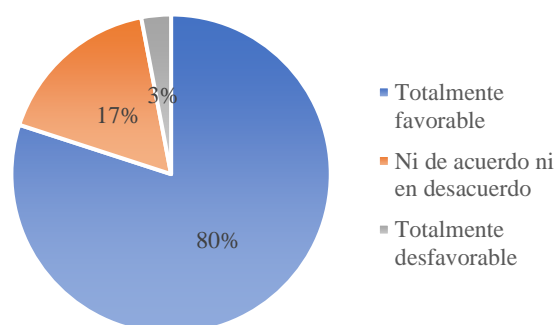
4. Conversion of the proposed solution into a business model using the Lean Canvas. Based on the solution idea, it was necessary to transform it into a business, i.e. into a proposal with the capacity to be monetised, and for this purpose the Lean Canvas template was used, which is a nine-component methodology that gives a business sense to the solution. During the class time, each aspect of the methodology was reviewed for each of the students' proposals, with the aim of identifying the sequence of the components, supported by the advice of their classmates and teacher guides. It is worth noting that doing so during the class provided them with understanding and learning, as some students grasped it almost immediately, organically and helped to explain the doubts to the classmates in the group. By the end almost the entire group had understood the topics developed in each class.

### *Documentation of the overall experience of the entrepreneurship course: satisfaction survey*

In order to validate the achievement of the objective of the course and to know the experiences of the students during the semester, a satisfaction survey was applied at the end of the course through the Google Forms tool, with 17 questions, five of which were multiple choice and the rest open to receive proposals for improvement for the following school cycles.

### Results

During the introductory talk to the course, a dynamic presentation was carried out to find out the perceptions of the Entrepreneurship Development course they were about to start. Graph 1 shows the results on the degree of acceptance of the course, according to the background they had of the subject through the opinions expressed by the students who had taken it previously.



**Graphic 1** Level of acceptance of the Entrepreneurship Development course for the January-June 2023 cycle  
Source: Own elaboration

One of the reasons that we consider key to the students' opinion of the course content is that the rest of the teachers of the subject have no experience in training entrepreneurs, so there is no rigour in the information or educational strategies that they share with their students, which results in a theoretical course, attached to a descriptive chart, but without support in real situations, or from the students' environment. According to the "totally unfavourable" opinion, the main comment was that the course "was boring and you didn't have to make a big effort to accredit it".

The creation of the SWOT matrix provoked various expressions of their feelings and perceptions. About 60% of the students had not asked themselves: "what do I want? what are my strengths?" and 15% of the population did not recognise their strengths or did not attach value to them. Regarding "Weaknesses", 20% did not identify them or confused their weaknesses with their strengths. For example, "being empathetic or emotional" was identified as a "weakness" by some of the students. 85% of the students had not asked themselves about the importance of setting their personal goals in the short and medium term. More than 50% did not have self-care as an immediate priority, therefore their nutrition was poor and they considered rest as an unimportant activity. Their skills and abilities, as they were easy for them to perform, were of little value to them.

In order to achieve the objective of proposing an entrepreneurship aimed at a business idea with potential, the students were sensitised to use the information from their skills to enrich such an idea beyond their disciplinary knowledge. An entrepreneur has one or more of the following characteristics: initiative, creativity, confidence, responsibility and passion (Fernandez, 2023). We consider that this was one of the most outstanding contributions to the proposal of individual business ideas and to the creation of a solution for a community problem, because academically the institution does not promote the development of talent or soft skills. Their identification, promotion and further application will make them competitive and with the potential to point out and solve internal problems of the companies in which they work in the future.

### Understanding the problem

The identification of the problem represented a challenge for each of the students. In the first part we worked with the existing definitions of "problem" until we found the one that seemed most familiar and easy to handle: "A problem is the objective not solved by the client". Many exercises were done in the class with the examples of the students until most of them understood it sufficiently. Having understood what a "problem" is, each person chose a problem based on their interest in finding a solution; among other reasons, they also chose situations that triggered their indignation or annoyance.

By influencing their emotions, they were provided with the direction towards the solution intention, which motivated their willingness and eagerness to solve in order to build their business proposal.

### Problem solving results

41 individual business ideas were created and integrated into an executive document that was sent to the portfolio for scoring. The ideas presented in table 4 are those that are linked to social entrepreneurship, i.e. 15 proposals that encompass various aspects of economic and sustainable development, health, technical, disciplinary and attention to vulnerable groups.

Type of solution related to social entrepreneurship
Promotion of environmental education through art
Equipping first level mobile health care units with efficient, sensitive and accurate diagnostic equipment for rural communities in inaccessible areas.
Promotion of awareness and responsibility in the field of self-medication.
Summer course: Educating for life for children aged 4-9 years.
Consultancy for manufacturers and distributors of environmentally responsible and affordable products, as well as for organisations that encourage sustainable innovation.
Laboratories for analysis of soils with erosion problems in the agricultural community in Mexico.
Support network for transplant recipients
Support network for student work
Bioremediation of heavy metals in water.
Powdered drinking supplement made from natural extracts
Platform for accommodation of foreigners
Aquaculture farm with biofloc system
Workshops with a philosophical-scientific approach in contact with nature
Interdisciplinary research centre for scientific dissemination in the community
Psychological support network and job counselling for women over 50 years of age

**Table 4** Executive projects that exhibit links to social entrepreneurship in communities

Source: Own elaboration

### Satisfaction survey

The following results were obtained from the satisfaction survey:

Out of 48 students only 16 (33%) responded. Of these, 69% agreed that the course provided elements to develop their personal and professional life.

75% of the respondents agreed that the course provided them with the necessary tools to develop any future venture they may propose because they already know how to structure, sequence, prototype and validate the project. 94% of the respondents would recommend the course to their peers. 81% of the respondents stated that they finished the course with a potential product or service to do business with. 88% of the respondents have no interest in following up or continuing their project after finishing the course.

Among the things they stated "what they liked about the course" were the dynamics and participation, the attitudes of the teachers, the experience of the teachers, having made a life plan, the personal SWOT at the beginning and the experience in the rural community.

They highlighted the advantages of working with colleagues from another career that brought value to their proposals, as well as new ways of seeing their environment, and sharing other ideas and knowledge.

They reported having obtained new non-disciplinary learning such as the use of artificial intelligence language models and the action of having applied a SWOT to their own person. They highlighted having experienced the development that can be made to a proposal from the enunciation of the problem, through collaborative work and recognise significant learning from the theme of Entrepreneurship and Innovation.

### Acknowledgements

This research was not supported by any institution or any concurrent fund.

### Conclusions

In light of the results obtained, it is recommended that the current descriptive charter of the Entrepreneurship and Entrepreneurship Development course at the University Centre for Biological and Agricultural Sciences be updated to include the topics and strategies for immersion in communities in vulnerable situations in order to create proposals for social entrepreneurship solutions.

From the satisfaction survey the students stated:

- To have learned and fulfilled the intended objective of the course.
- That their relationship with their potential clients is fundamental for understanding their real needs without making assumptions that lead to solutions without value for the users, and that they collaborate with other professional profiles to generate better ideas for solutions.
- Emphasised that the knowledge will be useful in their professional and personal lives.
- They emphasised that they have gained confidence in their proposals, their knowledge and the way they conduct themselves.
- They emphasised that working with colleagues from another career brought value to their proposals, and new ways of seeing their environment, and of sharing other ideas and knowledge.

Although each member of the group developed an idea with business potential, only one of the 41 students was willing to have post-course mentoring to implement their project.

The number of projects with a vision of social entrepreneurship developed by the students of the Bachelor's Degree in Biology stands out.

Therefore, one of the challenges for subsequent courses will be to increase the percentage of projects advised in order to take them to the level of incubation before the corresponding bodies or to seek strategies for transferring them.

The inclusion of students in the activities of "ExpoImagina" and other triple helix activities of the University of Guadalajara should be considered, as another way of carrying out the social retribution of the public university to the community.

## References

CONACYT (2023) [http://www.astro.ugto.mx/recursos/Formatos/A\\_nexo1\\_Actividades\\_de\\_Retribucion\\_Social.pdf](http://www.astro.ugto.mx/recursos/Formatos/A_nexo1_Actividades_de_Retribucion_Social.pdf) consultado el 15 de junio de 2023

Fernández, Juan (2023, 12 de junio) La importancia del emprendimiento en la educación. <https://escueladeexperiencias.com/la-importancia-del-emprendimiento-en-la-educacion/>

Gobierno de Jalisco, (2023,10 de junio) En Jalisco contamos con una ley de fomento al emprendimiento. <https://www.jalisco.gob.mx/es/gobierno/comunicados/en-jalisco-contamos-con-una-ley-de-fomento-al-emprendimiento>

Leyva-Carreras, A. M.; Alcántara-Castelo, J. R.; Espejel-Blanco, J. E.; Coronado- García, M. A. (2019). Formación del perfil emprendedor en educación superior en la Universidad de Sonora, México. *Revista Escuela de Administración de Negocios*, (86), 115-132. <https://journal.universidadean.edu.co/index.php/Revista/article/view/2293> <https://doi.org/10.21158/01208160.n86.2019.2293>

Macías González, Gizelle Guadalupe (2023, 10 de junio) Emprender en la universidad Reflexiones sobre el desarrollo de las habilidades de emprendimiento en las universidades <https://www.researchgate.net/publication/308438742>

Mamani Quispe, Diego Jesus, Zamata Machaca, Juan Santiago y Bautista Lopez, Juliana Mery (2023, 10 de junio) The significance of teaching entrepreneurship and the development of an entrepreneurial culture at the university. <https://publi.ludomedia.org/index.php/ntqr/article/view/756> <https://doi.org/10.36367/ntqr.15.2022.e756>



Quejada-Pérez, R. F. & Avila-Gutiérrez, N. (2016). Aproximación al perfil del emprendedor en América Latina. *Panorama Económico*, 24, 249–268.

<https://revistas.unicartagena.edu.co/index.php/anoramaeconomico/article/view/1560>

Consultado el 16 de noviembre de 2023.

<https://doi.org/10.32997/2463-0470-vol.24-num.0-2016-1560>

Saldarriaga Salazar, María Eugenia y Guzmán González, María Fernanda (2023, 9 de junio) Enseñanza del emprendimiento en la educación superior: ¿Metodología o modelo?

<https://www.redalyc.org/journal/206/20658110008/html/>

<https://doi.org/10.21158/01208160.n85.2018.2054>

Universidad de Guadalajara, (2023, 10 de junio)

<https://www.udg.mx/es/nuestra/presentacion/mision-vision/>

.