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The impact of active learning on entrepreneurial capacity

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Abstract

Purpose: This paper intends to shed light on the teaching-leaning methodologies that best contribute to developing entrepreneurial competences.

Design/methodology: We pose an active learning model that integrates the content of three subjects from the field of marketing in a single business project. We also measure the impact of this model on entrepreneurial competences through a validated questionnaire. The measurement instrument includes the short FINCODA questionnaire version to assess innovative behaviour and creativity, and indicators from the GEM survey on entrepreneurial perceptions for assessment of entrepreneurial spirit.

Findings: The results show a slightly positive effect on creativity and innovation capacity but that some active models may not be sufficient to develop skills linked to starting up projects or risk-taking.

Originality/value: It seems reasonable to consider rethinking the teaching-learning model used with marketing students in order to boost greater development of their entrepreneurial capacity. Setting up systems that promote greater engagement between universities and social, cultural or business agents in their area could foster entrepreneurial competences. This paper contribute to the debate on education policies that drive entrepreneurship and the possibility of designing new education models.

Keywords: Entrepreneurship, Creativity, Innovation, Competences, Marketing

Jel Codes: M13, M31, I23

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1. Introduction

The current teaching-learning framework in higher education has moved beyond mere knowledge-based teaching to competence-based learning. This new education model poses curricula and learning outcomes in terms of competences which are understood as a set of skills, knowledge, attitudes and values (Halász & Michel, 2011). The entrepreneurial competence is key to quality education, training and lifelong learning (The Council of the European Union, 2018). It is therefore vital to foster training in this field within higher education (Achcaoucaou,

Guitart-Tarrés, Miravitlles-Matamoros, Núñez-Carballosa, Bernardo & Bikfalvi, 2014; Borrero-Sánchez & Borrero-Domínguez, 2022; Rueda-Sampedro, Fernández-Laviada & Herrero-Crespo, 2014; Vall-llosera Casanovas, Renart Vicens, Saurina Canals & Serra, 2022). Similarly, promotion of entrepreneurship in higher education can boost society's economic development and well-being (Acs, 2006; Alvarez, DeNoble & Jung, 2006; Ferrandiz, Fidel & Conchado, 2018; Fuentelsaz, González, Maícas & Montero, 2015; Martins, Monsalve & Martinez, 2018; Taatila, 2010; Valencia Arias, Montoya Restrepo & Montoya Restrepo, 2016).

Villa and Poblete (2010) explain that creativity, innovation and entrepreneurial spirit form students' entrepreneurial capacity. Therefore, fostering these competences in higher education takes on relevance which is even greater in studies related to Economics and Business (Cabana-Villca, Cortes-Castillo, Plaza-Pasten, Castillo-Vergara & Alvarez-Marin, 2013; Rincón & Zorrilla, 2017; Zorrilla, Rincón & Sáiz, 2020). Edwards-Schachter, García-Granero, Sánchez-Barrioluengo, Quesada-Pineda and Amara (2015) discuss the development of creativity, innovation and entrepreneurship as a meta-competence and in their literature review note that these competences are widely recognised as a driver to promote entrepreneurial culture.

Interest in the entrepreneurial competence is not only due to its connection with creation of firms but also its impact on fostering a vital state that strengthens personal initiative and business motivation (Peña Calvo, Cárdenas Gutiérrez, Rodríguez Martín & Sánchez Lissen, 2015; Pinho & Thompson, 2016; Uribe Toril, De Pablo Valenciano & Bonilla Martínez, 2013). In addition, it can also add value and benefit society when it is oriented towards solving social problems (García-González & Ramírez-Montoya, 2021; Markley & Koernig, 2015; Schlee, Curren & Harich, 2009). However, little research has been conducted on how to teach and learn this competence to prepare students to better identify opportunities to undertake new business or social ventures (Karimi, Biemans, Lans, Aazami & Mulder, 2016; Sherman, Sebora & Digman, 2008).

As several aspects impact graduates' entrepreneurial potential in this framework, our work focuses on evaluating the role of the teaching-learning model used in the classroom. We specifically pose an active learning model and examine its impact on achieving creativity, innovation and entrepreneurial spirit. This model implements Project-Based Learning jointly in three subjects taught on the Bachelor's degree in Marketing at the University of the Basque Country. Our research intends to shed light on the techniques and methodologies that best contribute to developing students' entrepreneurial capacity. The aim is to specifically assess how the sub-competences that make up said capacity are affected by the proposed teaching-learning model, in order to help adapt, if necessary, the methodologies used.

The work is organised into five sections. In the following section, we review the literature on active methodologies in relation to the entrepreneurial competence and we put forth, in addition to the main research hypotheses, a measurement instrument to assess the degree to which said competence is achieved. We then show the characteristics of the quasi-experimental intervention used to measure the active learning model's impact on creativity, innovation and entrepreneurial spirit. In the fourth section, we present the results of the intervention. The last section shows the main conclusions of our study.

2. Literature review and hypotheses

2.1. The role of active teaching-learning methodologies in fostering entrepreneurial capacity

There is currently wide debate on universities' contribution to employability and numerous higher education institutions have begun to see this as a strategic issue and take action to achieve higher labour market insertion (Pérez García, 2018). Universities are playing a key role in economic and social development in their areas and have added the Third Mission, which is also known as the triple helix model: university-industry-government, to their traditional teaching and research roles (Saiz-Santos, Araujo-De la Mata & Hoyos-Iruarrizaga, 2017). A vital aspect of this approach consists of using new education models based on lifelong learning, innovation and a commitment to social and economic growth. Hence, it is critical to include teaching-learning strategies, methodologies and techniques that foster them (Arasti, Kiani & Imanipour, 2012).

Due to the role of the competence being studied, we raised the question of how to encourage and foster university students' achievement of creativity, innovation and entrepreneurial spirit. Can the teaching-learning model used have a positive impact on entrepreneurial capacity? In this sense, Paños Castro (2017) pointed out the importance of using active rather than traditional, one-way and passive methodologies that proved to be obsolete and failed to achieve students' best performance in the entrepreneurial competence. Following her interesting bibliographic review, the above author gathered the most commonly used methodologies to develop the entrepreneurial competence. Although they are varied, they are all interactive and action-oriented and therefore different from traditional methods. Among the main methodologies, the author mentions case studies, games and simulations, cooperative learning, problem-based learning and Project-Based Learning (PBL). In this study, we pose a teaching-learning model based on the latter methodology and examine its impact on development of entrepreneurial capacity.

The PBL methodology provides students with a learning experience that engages them in developing a project. During this process, students approach real-world situations, problems or challenges that must be solved by developing skills, which motivates them to learn. According to Maldonado Pérez (2008), PBL enables students to attain significant learning as the activities are relevant to the students themselves and often envisage objectives and content that go beyond curricular goals. This is a methodology that can promote creativity as students are required to seek solutions to specific problems and also entrepreneurship as decision-making is needed.

However, there is little research that connects the use of PBL and competence acquisition. Some studies have analysed the relationship between certain active methodologies and engineering students' level of innovation and entrepreneurship development (Chau, 2005; Doppelt, 2009; Malicky, Lord & Huang, 2007) or between those methodologies and acquisition of strategic management-related skills, also in engineering students (Williams & Figueiredo, 2014). Similarly, nursing students who have used problem-based learning showed better development of critical thinking than those who had learned with a traditional methodology (Tiwari, Lai, So & Yuen, 2006). Other studies have focused on the teaching-learning process of skills related to creativity and innovation in students from different degree disciplines (Fixson, 2009; Ruano-Borbalan, 2019).

There is even less research on this topic among business administration students. Nevertheless, there seems to be a certain positive relationship between problem-based learning and "managerial thinking" which can be understood as an approach to entrepreneurial capacity (Scarbrough, Bresnen, Edelman, Laurent, Newell & Swan, 2004; Sherwood, 2004; Smith, 2005) or unstructured problem-solving (Bigelow, 2004). Along the same lines, Bissola, Imperatori and Biffi (2017) and Dias, Sauaia and Yoshida (2013) presented an interesting active learning experience in postgraduate entrepreneurial studies. The relationship between variables linked to entrepreneurial capacity like critical thinking and creativity has also been analysed with business students in firm creation simulations (Eggers, Lovelace & Kraft, 2017). Similarly, Hebles, Yaniz-Álvarez-de-Eulate and Jara (2019) gave empirical evidence that connects cooperative learning and teamwork competence development. In the field of business ethics and social innovation, Dal Magro, Pozzebon and Schutel (2020) posed the emancipating and transforming nature of active teaching techniques and their capacity to promote critical reflective thinking as well as encourage deep value changes in international students on business programmes.

Nor are there many teaching experiences published for the field of marketing and even fewer that analyse transversal competences related to entrepreneurial capacity. However, active learning can be considered, at least tangentially, to contribute to better skills like critical thinking, problem-solving, marketing decision-making and perhaps entrepreneurial capacity (Geitz, Brinke & Kirschner, 2016; Hsu, 2011; Klebba & Hamilton, 2007; Metcalf, 2010; Nouwen & Van Hoorick, 2014; Rincón & Zorrilla, 2015a; Theodosiou, Rennard & Amir-Aslani, 2012; Wee, Alexandria, Kek & Kelley, 2003).

In short, the contexts studied to date are diverse, the samples used are limited, the replication rate of studies that analyse the impact of the learning system on similar competences is low and works that examine intervention with a PBL model in comparison to traditional methodologies are lacking. We therefore understand that it is not possible to give a conclusive answer on the true effects that a PBL model can have. Hence, it is necessary to nurture this research with new field work that helps to expand on the published experiences (Hansen, 2003;

Lopes & Lima, 2019). Analyzing the impact of active learning on the sub-competences that make up entrepreneurial capacity in the context of marketing studies contributes to fill this research gap.

With this study, we aim to learn more about the process of acquisition of transversal skills and the role that teaching-learning methodologies play in achieving skills linked to entrepreneurship in marketing studies. Thus, we intend to put forth arguments that help to answer questions such as: Does the teaching-learning model influence development of entrepreneurial capacity in marketing courses? Do active learning models have a positive influence on entrepreneurial capacity in marketing studies? Bearing in mind the literature reviewed, active methodologies set up suitable contexts for the acquisition of transversal competences (Amador Alarcón, Torres Gastelú & Lagunes Domínguez, 2023; Larraz, Vázquez & Liesa, 2017; Luka, 2019; Urquidi Martín & Tamarit Aznar, 2017). Learning techniques focused on student participation and involvement seem to have a positive impact on skills related to entrepreneurship (O'Brien & Hamburg, 2019). In this study we analyze the impact of an active teaching-learning model on creativity, innovation and entrepreneurial spirit. The aim is to understand in detail the effect of the proposed model on entrepreneurial capacity in order to identify possible improvements that foster its acquisition. Taking this approach into account, we have formulated our first hypothesis as follows.

> *H1. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on ENTREPRENEURIAL CAPACITY in marketing studies.*

2.2. Creativity, innovation and entrepreneurial spirit

Competence is a holistic concept that describes a person's capacity to manage a specific context (Mulder, 2012). According to the classification of competences to be developed in higher education set out in the Tuning Project, the so called generic or transversal competences are common to all university students. In other words, they go beyond the limits of the different disciplines as they are considered necessary to perform in all of them (González & Wagenaar, 2003).

Creativity, innovation and entrepreneurial spirit determine entrepreneurial capacity (Villa & Poblete, 2010) and are therefore key for all twenty-first century graduates from various points of view. On the one hand, from the traditional approach of creation of new business or opportunities to obtain profits (Shane & Venkataraman, 2000), and on the other, in the creation of self-employment and identification of opportunities, including intrapreneurship or social entrepreneurship (Alvarez & Barney, 2007; Kirby, 2004).

Assessment of the role of creativity, innovation and entrepreneurial spirit in the framework of transversal competences as drivers of entrepreneurial culture requires studying their content. Although the different degree programmes at our faculty set them out together as the *capacity for development of creativity, innovation and entrepreneurial spirit*, in our analysis we can break this down into three closely interrelated sub-competences. Rincón and Zorrilla (2015b) cite various authors and explain that creativity is linked to the capacity to tackle situations in new and original ways, finding an appropriate answer in a certain context. On the other hand, they state that innovation is deliberate action that implies introducing new developments in a system or organisation intending to achieve better results. As regards entrepreneurial spirit, they define it as the capacity to develop projects of one's own accord in order to take advantage of an opportunity, accepting the risks that this involves and organising the necessary resources to do so. According to the description, acquisition of these competences empowers students to better carry out their activities not only in the professional but also in the personal sphere.

In this work, we use the Framework for Innovation Competencies Development and Assessment (FINCODA) model to assess a person's innovative behaviour and creativity. This model poses that innovation may be understood as a set of capabilities, skills or behaviours and is determined by three aspects: creativity, critical thinking and intrapreneurship. In turn, the latter is formed by initiative, teamwork and networking. According to this approach, creativity forms part of a skill set that shapes a person's capacity to develop innovation. Marin-Garcia et al. (2016) presented the model mentioned and defined innovation as the introduction of a new development or improvement of something that already exists. It must be useful and add value to meet the needs of people or organisations. The components of the assessment model used can be defined as follow.

Creativity: The capacity to think beyond traditional ideas, rules, patterns or relationships and create or adapt significant alternatives, ideas, products, methods or services, regardless of their potential usefulness and future added value.

Critical thinking: The capacity to analyse and deconstruct problems for a purpose (assess advantages and disadvantages, foresee how events will unfold, estimate the risks involved).

Initiative: The capacity to make decisions or carry out actions that start up ideas and promote positive changes, as well as manage and mobilise creative persons and those who have to implement ideas.

Teamwork: The ability to work efficiently with others in a group.

Networking: The capacity to involve external stakeholders.

These skills related to innovative behaviour can be fostered by active learning systems (Audet & Marcotte, 2018; Gittings, Taplin & Kerr, 2020; Levkoe, Brail & Daniere, 2014; Sgambi, Kubiak, Basso & Garavaglia, 2019). In this sense, a greater engagement of the students with their learning process promotes favourable situations to develop said abilities. This study aims to identify the impact of an active learning model on each of the components that determine entrepreneurial competence. Therefore, taking into account the skills that make up entrepreneurial capacity and specifically persons' innovative behaviour, we have formulated the hypotheses shown below.

> *H2. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on CREATIVITY in marketing studies.*
>
> *H3. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on CRITICAL THINKING in marketing studies.*
>
> *H4. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on INITIATIVE in marketing studies.*
>
> *H5. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on TEAMWORK in marketing studies.*
>
> *H6. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on NETWORKING in marketing studies.*

Furthermore, we have adapted the indicators included in the Global Entrepreneurship Monitor (GEM) survey to specifically assess a person's entrepreneurial spirit. The survey results are published yearly in different reports on the entrepreneurial activity of countries across the world. The GEM project is an international observatory which measures and assesses entrepreneurial phenomena through a harmonized approach (Saiz et al., 2019). The theoretical model of the GEM project poses the population's entrepreneurial perceptions and capabilities as one of the key areas of entrepreneurship. According to this approach, it is vital to assess issues like perception of opportunities to undertake entrepreneurial activity, risk tolerance, the existence of entrepreneurial points of reference or the possession of entrepreneurial knowledge and skills (Arenius & Minniti, 2005). These skills linked to the entrepreneurial spirit can be promoted through active methodologies and learning environments where students are the protagonists of their learning (Noorlizawati, Zainai, Zaidatun & Sya Azmeela, 2022). In this sense, by examining the components of entrepreneurial capacity, we formed the following hypothesis.

> *H7. A comprehensive teaching-learning model based on implementation of PBL has a positive impact on ENTREPRENEURIAL SPIRIT in marketing studies.*

3. Intervention and methodology

This research follows the three-stage publishing approach (Marin-Garcia, 2021). Although not yet common in the field of management, this approach has been utilized in some studies (Marin-Garcia, Villaescusa & Bonavia,

2019; Robles-Santana, Sanchez-Ruiz & Gomez-Lopez, 2022; Alkurdi & Vazquez-Bustelo, 2022; Marin-Garcia, Garcia-Sabater, Garcia-Sabater & Maheut, 2020; García Magro, Martín-Peña & Díaz-Garrido, 2019; Oltra-Badenes, 2020; Diez-Busto, Sanchez-Ruiz & Fernandez-Laviada, 2020). The description of the intervention is adapted to the recommendations of Marin-Garcia and Alfalla-Luque (2021). The initial protocol was published in 2017 (Rincón & Zorrilla, 2017) and provides additional details regarding the methodology of this research.

For this study, the PBL methodology was applied jointly and simultaneously in the following subjects: Product and Price Decisions (PPD), Commercial Distribution (CD) and Commercial Communication: Fundamentals and Planning (CCFP), in the second year of the Bachelor's degree in Marketing. Its impact on entrepreneurial capacity was then measured. The students were initially asked to develop a business idea and turn it into an attractive product with commercial feasibility to create jobs and profits. In this respect, the marketing students developed product, price, distribution and communication policy around the same business project thus covering the content of the three subjects mentioned. This system allows students to design actions related to the four marketing mix variables in a consistent manner and provides a comprehensive vision of the role of marketing.

The quasi-experimental intervention was held during the second term of the 2018-19 academic year at the University of the Basque Country. A total of 257 students were involved in this study. The total number of participants included 68 second-year students on the Bachelor's degree in Marketing who were enrolled in the three above subjects. The control group was formed by 189 second-year students on the Bachelor's degree in Business Administration who were enrolled in the subject Commercial Management Policies, whose content is equivalent to that of PPD. The methodology used with the control group was not strictly traditional and lecture-based as active methodologies were also used to some extent. In this sense, traditional teaching is complemented with group or individual activities to encourage the participation of students attending class. However, the teacher is the main actor in the classroom and the one who sets the pace and sequence of student learning. Therefore, it is different from the methodology applied in the Bachelor's in Marketing which is a comprehensive Project-Based teaching-learning model and develops the content of the subjects PPD, CD and CCFP in a coordinated manner.

The students' level of creativity, innovation and entrepreneurial spirit was measured through a self-assessment questionnaire. This was due to the fact that the subjects in which the new teaching-learning model was used do not have a specific assessment system for the transversal competences mentioned. Specifically, a questionnaire was distributed to students on paper which contained different variables related to creativity, innovation and entrepreneurial spirit and enabled us to assess the students' level of development at the beginning and end of the term. All the variables included in each of the categories of the questionnaire are shown in the results section (Creativity as part of innovative behaviour, Innovation and Entrepreneurial spirit).

The measurement instrument included the short FINCODA questionnaire version to assess innovative behaviour and creativity (Marin-Garcia, 2018; Marin-Garcia et al., 2016). It also contained indicators on entrepreneurial perceptions and attitudes from the GEM survey for assessment of entrepreneurial spirit (Saiz et al., 2019). This self-diagnostic tool had previously been validated and includes components like those studied by Andreu-Andres, González-Ladrón-de-Guevara, García-Carbonell and Watts-Hooge (2018), Arenius and Minniti (2005), Marin-Garcia et al. (2023), Edwards-Schachter et al. (2015), Hernández et al. (2014), Keinänen, (2019) or Watts, García-Carbonell and Andreu-Andrés (2013). The validation process is shown in detail in Marin-Garcia (2018).

The students assessed the different characteristics related to creativity, innovation and entrepreneurial spirit with this instrument by using a metric scale from 0 to 5 (0: not observed / not demonstrated, 5: excellent). This enabled us to study the improvement they had perceived in the different aspects related to the transversal competences mentioned, both in the intervention and control groups. We were thus able to examine the impact of the comprehensive teaching-learning model on entrepreneurial capacity.

In all cases, different one factor analyses of variance were used to detect the indicators that show significant differences at the beginning and end of the term. With this technique it is possible to identify significant differences in the values of a dependent variable according to the categories of an independent variable or

factor. In each of these analyses, the dependent variable is a self-assessment variable of entrepreneurial capacity and the independent variable shows whether said perception has been collected before or after having studied the course. We were therefore able to detect variables related to the transversal competences analysed that show significantly higher values at the end of the term than at the beginning. We present the main results obtained for the group receiving the intervention as well as the control group in the following section.

4. Results

Firstly, we show the marketing students' perception of their creativity, innovation and entrepreneurial spirit before and after having studied the subjects PPD, CD and CCFP, in which the new comprehensive teaching-learning model was used. In addition to comparing the information collected before and after the intervention, the variables which showed significant changes are indicated. We also study the improvement perceived by the control group throughout the term.

	DIDACTIC INTERVENTION				
	PRE-TEST		POST-TEST		
	M	SD	M	SD	F
CREATIVITY					
Think differently and adopt different perspectives	3.45	.711	3.69	.796	1.588
Use intuition and own knowledge to start actions	3.61	.747	3.82	.626	1.670
Find new ways to implement ideas	3.21	1.023	3.71	.710	5.580*
Generate original solutions for problems or to opportunities	3.55	.754	3.51	.919	.023
Make suggestions to improve current process, products or services	3.58	.663	3.80	.833	1.497
Present novel ideas	3.39	1.088	3.46	.817	.074
Show inventiveness in using resources	3.45	.869	3.80	.759	3.056
Search out new working methods, techniques or instruments	3.18	.983	3.43	.948	1.110
Refine ideas into a useful form	3.42	1.032	3.49	.781	.077
CRITICAL THINKING					
Use trial and error for problem solving	3.36	1.084	3.51	.742	.451
Develop and experiment with new ways of problem solving	3.52	.870	3.40	.847	.306
Challenge the status quo	3.91	.879	3.83	.985	.126
Face the task from different points of view	3.39	.788	3.51	.702	.443
Forecast impact on users	3.06	1.116	3.31	.718	1.256
Ask "Why?" and "Why not?" and "What if?" with a purpose	3.70	.770	4.11	.832	4.592*
INTRAPRENEURSHIP					
Initiative					
Foster improvements in work organization	3.58	.751	3.69	.832	.326
Take an acceptable level of risk to support new ideas	3.39	.788	3.68	.912	1.836
Go beyond expectations in the assigned task or job without being asked	3.39	.899	3.49	.853	.187
Convince people to support an innovative idea	3.52	1.004	3.57	.979	.055
Systematically introduce new ideas into work practices	3.42	.902	3.57	.948	.429
Act quickly and energetically	3.64	.962	3.46	.950	.597
Teamwork					
Be attentive when others are speaking, and respond effectively to others' comments during the conversation	3.97	.728	3.89	.867	.186
Invite feedback and comments	3.76	.969	3.91	.887	.485
Obtain constructive comments from colleagues	3.48	.834	3.94	.851	4.914*
Identify sources of conflict and take steps to overcome disharmony	3.36	1.194	3.80	.833	3.083
Provide constructive feedback, cooperation, coaching or help to team colleagues	3.70	.684	3.86	.772	.816
Work well with others, understanding their needs and being sympathetic with them	3.91	.843	3.86	.974	.055
Consult about essential changes	3.53	.950	3.89	.832	2.650
Networking					
Meet people with different kinds of ideas and perspectives to extend your own knowledge domains	3.42	.792	3.60	.881	.745
Acquire, assimilate, transform and exploit external knowledge to establish, manage and learn from informal organisational ties	3.06	.827	3.60	.775	7.714**
Share timely information with the appropriate stakeholders	3.55	.905	3.71	1.017	.521
Build relationships outside the team	3.33	1.242	3.60	1.143	.850

	DIDACTIC INTERVENTION				
	PRE-TEST		POST-TEST		
	M	SD	M	SD	F
Engage outsiders of the core work group from the beginning	2.88	1.219	3.37	1.087	3.103
Work in multidisciplinary environments	3.36	.994	3.51	1.121	.342
ENTREPRENEURIAL SPIRIT					
Existence of reference points	3.25	1.047	3.34	1.327	.100
Perception of opportunities to undertake entrepreneurial activity (next 6 months)	2.69	1.091	2.54	1.421	.215
Perception of possession of knowledge and skills to undertake entrepreneurial activity	2.91	1.027	3.00	1.085	.131
Intention to undertake entrepreneurial activity in the next three years	2.59	1.478	2.71	1.624	.086
Perception of fear of failure as an obstacle to undertaking entrepreneurial activity	3.00	1.164	3.06	1.371	.034
Perception of entrepreneurship as a good career option	3.44	.840	3.43	1.092	.001

ANOVA's significance values: * p<.05; ** p<.01

Table 1. Evolution of entrepreneurial capacity in marketing studies

The results presented reflect the new teaching-learning system's impact on entrepreneurial capacity. This effect can mainly be observed in the students' innovation capacity. Use of this new teaching-learning system had a positive influence on some of the students' skills that are related to their capacity to develop **creativity**, **critical thinking**, **teamwork** and **networking**. According to the students' perception, their capacity to find new ways to put ideas into practice, their skill to ask why, why not and what would happen if, pursuing an objective, their aptitude to elicit constructive remarks from their peers and the ability to acquire, assimilate, transform and exploit external knowledge, to establish, manage and learn from the organisation's informal relationships improved significantly following the didactic intervention. In this respect, the results support, at least partially, the ideas stated in hypotheses H2, H3, H5 and H6.

It is remarkable that, contrary to the expected results (H4 and H7), the indicators related to aspects like **initiative** or **entrepreneurial spirit** did not show a significant impact. Through use of the teaching-learning model proposed, students develop a project from the perspective of different subject areas in order to attain a comprehensive vision of the role of marketing and more experiential learning in closer contact with reality. Nevertheless, it seems mainly to have had little effect on areas related to implementing projects or risk-taking.

The business administration students' opinion of their creativity, innovation and entrepreneurial spirit at the beginning and end of the term is compared below. The following table shows the results for this 189 students who made up the control group where the new teaching-learning model was not used.

	CONTROL GROUP				
	PRE-TEST		POST-TEST		
	M	SD	M	SD	F
CREATIVITY					
Think differently and adopt different perspectives	3.32	.872	3.35	.874	.037
Use intuition and own knowledge to start actions	3.48	.795	3.64	.802	1.743
Find new ways to implement ideas	3.19	.800	3.22	.791	.062
Generate original solutions for problems or to opportunities	3.31	.859	3.46	.838	1.466
Make suggestions to improve current process, products or services	3.29	.912	3.51	.816	2.850
Present novel ideas	2.99	.908	3.12	1.001	.911
Show inventiveness in using resources	3.28	.831	3.43	.946	1.218
Search out new working methods, techniques or instruments	3.11	.863	3.36	.824	4.191*
Refine ideas into a useful form	3.28	.815	3.52	.930	3.241
CRITICAL THINKING					
Use trial and error for problem solving	3.36	.954	3.46	.861	.547
Develop and experiment with new ways of problem solving	3.32	.738	3.35	.832	.045
Challenge the status quo	3.72	.879	3.60	.944	.790
Face the task from different points of view	3.52	.795	3.57	.844	.143
Forecast impact on users	3.19	.788	3.35	.894	1.491
Ask "Why?" and "Why not?" and "What if?" with a purpose	3.77	.894	3.77	.876	.001

	CONTROL GROUP				
	PRE-TEST		POST-TEST		
	M	SD	M	SD	F
INTRAPRENEURSHIP					
Initiative					
Foster improvements in work organization	3.81	.692	3.63	.815	2.615
Take an acceptable level of risk to support new ideas	3.37	.802	3.58	.821	3.027
Go beyond expectations in the assigned task or job without being asked	3.48	.795	3.71	.810	3.815
Convince people to support an innovative idea	3.41	.856	3.46	.939	.142
Systematically introduce new ideas into work practices	3.28	.727	3.47	.832	2.646
Act quickly and energetically	3.39	1.038	3.58	.839	1.985
Teamwork					
Be attentive when others are speaking, and respond effectively to others' comments during the conversation	3.96	.907	3.91	.978	.117
Invite feedback and comments	3.73	.949	3.77	.897	.072
Obtain constructive comments from colleagues	3.53	.798	3.63	.861	.612
Identify sources of conflict and take steps to overcome disharmony	3.36	.864	3.55	.925	1.889
Provide constructive feedback, cooperation, coaching or help to team colleagues	3.72	.708	3.79	.799	.332
Work well with others, understanding their needs and being sympathetic with them	4.13	.827	3.97	.915	1.484
Consult about essential changes	3.62	.976	3.83	.943	2.072
Networking					
Meet people with different kinds of ideas and perspectives to extend your own knowledge domains	3.52	.891	3.49	.949	.044
Acquire, assimilate, transform and exploit external knowledge to establish, manage and learn from informal organisational ties	3.45	.843	3.48	.867	.037
Share timely information with the appropriate stakeholders	3.59	.790	3.53	.900	.219
Build relationships outside the team	3.55	.905	3.65	.865	.573
Engage outsiders of the core work group from the beginning	3.11	.945	3.29	1.019	1.581
Work in multidisciplinary environments	3.38	.989	3.55	.994	1.390
ENTREPRENEURIAL SPIRIT					
Existence of reference points	3.21	1.233	3.15	1.210	.114
Perception of opportunities to undertake entrepreneurial activity (next 6 months)	2.55	1.142	2.89	1.303	3.465
Perception of possession of knowledge and skills to undertake entrepreneurial activity	2.95	1.019	3.12	1.075	1.152
Intention to undertake entrepreneurial activity in the next three years	2.85	1.312	3.24	1.364	3.742
Perception of fear of failure as an obstacle to undertaking entrepreneurial activity	3.09	1.176	3.21	1.219	.455
Perception of entrepreneurship as a good career option	3.48	1.095	3.49	1.087	.002

ANOVA's significance values: * p<.05; ** p<.01

Table 2. Evolution of entrepreneurial capacity in business administration studies

In the business administration programme, the students' opinion of their entrepreneurial competence did not change considerably during the term. The only aspect in which they perceived improvement was related to **creativity**. Specifically, a significant improvement was detected in the interviewed students' opinion of their capacity to search for new work methods, techniques or instruments. The methodology used with this group is not solely based on lectures and some active learning activities are carried out. However, a learning system based on a single project related to other subjects in the programme was not applied, which was the case of the Bachelor's degree in Marketing. This may have influenced the results shown in the above table.

If we compare the students' self-assessment in the control group with the results obtained for the marketing students, with whom the new PBL model was applied, we can state that said model seems to have a positive influence on the level of entrepreneurial capacity development, which would support the statement in hypothesis H1. In summary, the results show that the teaching-learning model studied seems to have a positive impact on skills related to the marketing students' entrepreneurial capacity, specifically those linked to their creativity and innovative behaviour.

5. Conclusions

A great deal of the literature on active teaching-learning methodologies refers to their benefits and advantages concerning aspects like achieving students' transversal competences in comparison to traditional methods (Marcillo-Manzaba & Portilla-Faicán, 2022; Sandobal Verón, Marín & Barrios, 2021). Some of these studies analyse the impact of teaching-learning models based on active methodologies on students' entrepreneurial capacity (Ruiz-Rosa, Gutiérrez-Taño & García-Rodríguez, 2021). In this study, we have posed a comprehensive model that develops the content of three subjects in the bachelor's degree in marketing in a coordinated consistent manner around a single business project. Furthermore, we have examined the influence of this model on entrepreneurial capacity measured through a validated questionnaire.

The results demonstrate that said influence has been positive and significant in a small number of variables. The new teaching-learning model presented seems to have improved issues related to students' creativity, critical thinking, teamwork and networking. Specifically, the impact has been significant on the variables linked to the identification of new ways of working, reflection on work processes, interaction between students, and taking advantage of informal relationships in the working group. Thus, it can be said that the effect of the teaching-learning model has been moderately positive and has mainly influenced the indicators related to creativity and innovative behaviour in students on the Bachelor's degree in Marketing.

One of the limitations of our study lies in the fact that the analysis is restricted to a certain sample and context. Further research on the influence of active learning on entrepreneurial capacity at several universities, educational levels or disciplines could complete and complement the results of our work. On the other hand, the faculty that taught in marketing studies and in the control groups is not the same, which may have affected the results obtained. In addition, the instrument used for measuring entrepreneurial capacity is based on the students' self-assessment, which may also limit the results. Other measurement tools which include lecturers' impressions and perceptions could enrich the findings we have presented.

Research in the field of active methodologies and their usefulness on the students' learning process needs to be expanded. This study sheds light on the impact of active learning models on the development of transversal skills in marketing studies. In this sense, the analysis carried out shows that active learning fosters the development of the entrepreneurial capacity of marketing students. In addition, the research allows to specify which of the sub-dimensions of entrepreneurial capacity are most affected by the comprehensive teaching-learning model proposed. Nevertheless, we believe it is important to highlight that the positive impact of this model on students' entrepreneurial capacity is modest. We understand that the teaching-learning system we have presented may have lost the newness it had during the first years it was used. We believe it is an attractive, motivating model and, in comparison to traditional teaching techniques, it provides multiple advantages like deeper knowledge acquisition or a stronger connection between theory and practice as well as between the content of different subject areas. However, in a constantly expanding context of active learning techniques, we think it is important to recognise its limitations in relation to achievement of some transversal competences, particularly those linked to the implementation of projects or risk-taking, which may be the case of initiative or entrepreneurial spirit.

It therefore seems reasonable to consider rethinking the teaching-learning model used with marketing students in order to promote greater development of their entrepreneurial capacity. Some learning techniques and approaches like business simulation, service-learning, cooperative learning strategies or closer contact and engagement with new entrepreneurs beyond occasional presentations could be useful. We believe that a model oriented to closer interaction between university students and their most immediate social and business environment could foster development of the entrepreneurial competence we have studied. Including methodologies that promote a context in which students work together with public or private entities in the region, such as Challenge-Based Learning, could contribute to deepen said interaction. Some of the experiences discussed in the literature seem to be good reference points (Bissola et al., 2017; Dal Magro et al., 2020; Rossano, Meerman, Kesting & Baaken, 2016). We consider that development of real-life marketing projects in direct

contact with intensely engaged firms and cultural or social agents could add value and benefit all of the participants and society in general.

Therefore, as an interesting possibility for future research, we propose the design and assessment of transformative learning models focused on the relationship and commitment of students to their community. In this regard, it may be useful to consider teaching techniques where the learning process is developed through the search for a solution to a problem in the environment. Finally, for the assessment of these learning systems, in addition to quantitative assessment instruments such as those used in this work, we believe that the use of other evaluation tools of a qualitative nature could complete the study.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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