

## **A strategy for the Development of Competency Small-Company Project Management as a Professional Competency**

Estrategia para el desarrollo de la competencia profesional gestionar  
proyectos microempresariales

Jessica Mariela Zambrano Cedeño<sup>1\*</sup> <https://orcid.org/0000-0003-1370-5934>

David Wilfrido Moreira Vera<sup>2</sup> <https://orcid.org/0000-0002-7020-4178>

Evelio F. Machado Ramírez<sup>3</sup> <https://orcid.org/0000-0002-1538-2887>

<sup>1</sup>*Eloy Alfaro* Laic University of Manabi, Bahia de Caraquez extension, Province of Manabi, Ecuador

<sup>2</sup>*Manuel Félix López*, Higher Polytechnic School of Agriculture of Manabi, province of Manabi, Ecuador

<sup>1</sup>*Enrique Jose Varona* Center for Educational Sciences Studies, *Ignacio Agramonte* University of Camagüey, Cuba

\*Correspondence: [jessica.zambrano@uleam.edu.ec](mailto:jessica.zambrano@uleam.edu.ec)

### **ABSTRACT**

**Aim:** To design a didactic strategy for the development of professional competency micro-company project management through project-based learning.

**Methods and techniques:** The essential research methods to fulfill this aim were theoretical, such as modelling, analysis-synthesis, and induction-deduction, which were used for systematic structuring of the contribution presented throughout the research process.

**Results:** Several different phases and stages of the didactic strategy are suggested, and different types of tasks to be implemented are explained.

**Conclusions:** This rationale can encourage university students in the economy or related sciences to manage small-company projects as part of their professional competencies within the Ecuadorian context, which demands initiatives such as this as a way to promote economic and social development of the country.

**Key words:** project management, small-company, project-based learning, didactic strategy.

## RESUMEN

**Objetivo:** Se fundamenta una estrategia didáctica para el desarrollo de la competencia profesional gestionar proyectos microempresariales, mediante el aprendizaje por proyectos.

**Métodos y técnicas:** Los métodos de investigación esenciales utilizados para llegar a cumplimentar el objetivo estuvieron, en el orden teórico, en aquellos que propician la modelación, el de análisis-síntesis e inducción-deducción, los cuales permitieron, desde el proceso investigativo, estructurar sistémicamente el aporte que se presenta.

**Resultados:** Se ofrecen las diversas fases y etapas de la estrategia didáctica y se argumentan diversos tipos de tareas a utilizar.

**Conclusiones:** Lo fundamentado puede contribuir a que los estudiantes universitarios que cursan carreras con perfil económico u otras afines, logren gestionar proyectos microempresariales como competencia profesional en el contexto ecuatoriano, urgido de iniciativas de este tipo para poder desarrollarse económica y socialmente como país.

**Palabras clave:** gestionar proyectos, microempresa, aprendizaje por proyectos, estrategia didáctica.

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## INTRODUCTION

The general discussion and literature generated by project management, and the specific aspects related to the creation of small companies have been extensive, usually wrapped in a specialized character that occasionally contributes to have a limited and specific space for specialists engaged in economic matters and particular tangible services.

Based on this appreciation, the proposal of considering such type of management a type of competency takes this topic beyond the limits of the specific, interpretative, and pragmatic treatment of implementation that it has generally received in the literature. Therefore, the education of professionals has become a university undertaking for those who can become the support and bulwark of the interests of the Ecuadorian State, or public or private institutions that consolidate the present and future development structure.

Additionally, when the processes known as business management, entrepreneurial, CEO-related, and social are tackled, they evidence the absence of the need and performance of professional competencies. And when it happens, it is just mentioned without requiring a study as a platform needed for these processes to be dealt with optimally; or if they are contextualized according to terms that constrain their scope in the most diverse documents. In spite of it, the complexity of small-company project management must be treated within a setting that overcomes any intention of narrowing its importance and influence.

Besides, the current forms of labor organization demand the teaching-learning process (TLP) in universities to be in concert with the changes produced in society, the culture, economy, employment, and technology, particularly in moments when the cycles of innovation succeed in increasingly shorter time spaces. As a response, universities have been required to have greater versatility and flexibility to adapt to the new forms of labor organization in the area of work, and in specific societies.

Among the essential research methods used to meet the aim of this research were the theoretical methods to model, perform analysis and synthesis, and induction-deduction, which permitted a systematic structuring of the contribution proposed.

Hence, the aim of this paper was to design a didactic strategy for the development of professional competency managing small-company projects through project-based learning.

## **DEVELOPMENT**

The current concept of competency is difficult to establish, particularly when the scarce literature in this field, besides evidencing the continuous efforts dedicated to such task, and the several ups and downs of its materialization from the psychological, labor, pedagogic, and social perspectives, indicate that this term is not univocal (Machado and Montes de Oca, 2020a, b; Marcillo, 2018; Tobón, 2014, 2015).

Moreover, it is also significant to point out that every definition contains previous assumptions or different levels of abstraction for every author. This heterogeneity implies various parameters of reference, and causes a different conceptual outcome, naturally; what for some authors is competency, is not for others. What is more, every day, more proposals are made, which divert the notion of what the reality should be, in the broadest terms, to be used for suitable criticism, and therefore, any process or quality means competency.

Something similar occurs with the so-called professional competencies (Abambari, 2015; Castro, 2015; Tejada, 2011), which is an aspect treated in this article, are guiding decisions and strategic processes of change set in place by several nations in the last two to three decades. It all moves around axes of performance: the approximation between the labor and education/formation sides; the conciliation of human resources to the most advanced transformations in the area of technologies, and the social structure of production-services; the metamorphosis that follows in educational institutions and teaching training to adapt to new settings; and the new ways to offer and implement diploma processes from different organizational forms of teaching, and recognition of these education types.

Particularly, the generality of professional competency management of small-company projects has not received a broad space in the literature that can place it as a competency in this particular area. Rather, the studies abound in relation to process management in multiple areas of the economy, business, tourism, etc., which are meant to coordinate human and material resources efficiently to transform and improve certain practices.

The need for such transformation, according to the current times marked by the variabilities and versatilities of the markets –labor, technological, and ethical organization– demands a multivalent, multifunctional, reflexive, and flexible education. It requires the substitution of the current theory-practice, planning-execution, thought-action divisions by education that tends to the systemic and integrative concepts. In fact, the demands of a competency such as small-company project management, which has a multidisciplinary, social, and action-oriented character, is within the line of selection and utilization of methods and procedures that demand this activity from TLP.

Therefore, in sight of the existing breach, there is interest in explaining a didactic strategy based on project-based learning (PBL) to be used in university education so that it contributes to the development of the competency management of small-company projects to assist in the growth of the country with an academic and scientifically trained perspective, especially in relation to the engagement of university professionals of the economic-related bachelor degrees where this competency can be developed as well.

In this conceptual and complex setting, it is also a strategy to achieve similar purposes that quite a few authors support the use of PBL within TLP to develop competencies. This method, after being recreated with relevant psychological and pedagogic theories, promotes a creative and actively oriented performance to fulfill the learning objectives in the sense that they transmit a context, besides their inter and transdisciplinary conception.

Coincidentally, one of the tendencies that has influenced PBL most is the historical-cultural (situated cognition) of Vygotsky (1979), among other authors. His conception directly opposes to the vision spread by different theories represented in the cognitive psychology, which in many cases considers implicitly or explicitly knowledge to be

abstracted from the context and circumstances in which learning is produced and applied. Paradoxically, those who stand for situated cognition mention, as a condition, that knowledge is situated. It means that it is part and result of the activity, the context, and culture in which knowledge is acquired and applied.

This angle has become a pedagogic vision that highlights the importance of the activity and the concept for the learning process, and recognizes that it is, above all, a process of culturization in which students are inserted proactively. Hence, learning and doing are inseparable. It is today, the key to efficacy and acceptance of PBL, and adjustment to develop a competency.

### **A didactic strategy for the development of competency small-company project management**

The rationale for this contribution, as mentioned earlier, comes from PBL, under a conception based on the historical-cultural approach.

The objective is to promote the learning of professional competency management of small-company projects in university bachelor degree students in related areas.

A number of actions with a didactic foundation were performed, which permitted the utilization of TLP to fulfill the objective. It contains the following phases:

- Preparation (organization-planning)
- Implementation
- Assessment

The preparation includes several activities by the teachers, including the analysis of the program of the subject to develop the competency, based on the topics and aspects related to project management (small-company).

Specifically, as part of the curriculum of some bachelor degrees, such as Agro-industry, Business Management, Agricultural Engineering, and Tourism and Hospitality, the subject Entrepreneurship is delivered – having some variations in denomination among courses– in the final cycles or levels. It is directly linked to the scope of the profession;

however, it is a poorly treated aspect, focus is particularly given to the company, using overall conceptions. In this aspect, the above entails that the educator limits and adjusts the learning contents so that this purpose becomes a choice of work for the benefit of the context, using the essential and particular links of development.

Therefore, the actions to be developed by students are determined. Through them, small-company project management must be implemented, which is important since the teacher will focus on essential aspects, and will consider them for the evaluation of work and self-control from TLP.

The objectives that demonstrate the criteria for performance also have boundaries and are conveniently derived, as they emerge from cognitive determinations of competency, which will help develop the professional competency, also considering the importance of this work as a long, slow, and complex process, without showing any substantial progress in the beginning. Hence, the objective should be set for the long, mid, and short-term, in addition to separating how to assess or evaluate the concept of development in every moment.

According to the specific topic treated in TLP, the particular objectives subordinate to the general objectives, whereas in the PBL activities and tasks assigned, the specific objectives are set, as subordinated to the particular objectives, and adjust to the conditions of the class and every student in particular. The objectives may correspond to the terminal aspirations of graduates, in keeping with the policies in place in the Republic of Ecuador.

The task or tasks included in PBL, which are part of the initial motivating part of the small-company project management, should have such a level of demand that they become a challenge, and can also solve problems (considering the cycle or level, usually advanced), so they are ready to manage some high complexity projects.

Finally, during this stage, the design of the diagnostic to know the needs, potentialities, and motivations of students toward small-company project management is remarkably important. In this sense, it must observe the initial state of the implementation of the competency, and when no correspondence is observed, the same state will be used as a starting point to adjust all the plan to promote development.

The implementation of the strategy includes the materialization of actions by the teachers and students, from the particular subject, namely Entrepreneurship, in its application variants in all the different bachelor degrees, so that they help accomplish development processes of competency management of small-company projects. This is a critical step to attain that objective.

In this phase, teachers organize and ensure certain conditions for successful implementation by the students, so that the latter accomplish the desired performance results. In other words, it is necessary to determine the role of teachers in their leading and mediating performance, and students as the main subjects of learning.

Considering the above, implementation includes several moments that permit proper implementation of the professional competency within PBL:

1. Motivation and orientation toward project management. Motivation is an essential factor, a transversal substrate of the process, so it is important to achieve a positive arrangement to conduct PBL in favor of competency development. It is very important to focus on the meaning of such management as the essence of personal and professional development in their contexts; they must be aware of the possibilities to cope with small-company project management, from the perspective that in the beginning, the teacher can show the students or orient them toward essential actions in terms of individual or collective behavior.

To deal with the project, students must be oriented, must know what to do and how to do. Students must know why they should learn certain system of knowledge, the aspects they need to focus on to perform their job, and how they can control the efficiency of performance by themselves.

For instance, they can offer help in different stages of the design, through tips, questions, guides, and materials, providing an opportunity for students to practice them through PBL. As part of the strategy, it can be materialized when the teacher uses didactic procedures that entail the active engagement of students by means of stimuli and assistance like, Do you have any experience about this project? Have you ever materialized small-company projects of this sort? How and what were the conditions and realities? Have the circumstances changed according to the



directions? Is there any relation between the existing projects and the ones expected to be materialized? Do you think you can cope with a challenge of this kind, and project a new reality using a gender approach? What? How? and others.

In short, motivation, as a transversal aspect pursues:

- Affective, committed, and volitive mobilization so students manage projects, in this case small-company projects.
  - Orientation of their performances and forms of feedback, control, and self-control of the results.
  - Ideal materialization of the rationale that leads to the implementation of actions at different moments of the strategy (Machado, Zambrano, and Moreira, 2021).
2. Previous work to domain the system of knowledge of the subject, and its relation to small-company project management that will be oriented as part of PBL. That moment requires communication and cooperation associated with the educational processes of the competency, from the conceptual, process, and performance of related ethical sides, such as responsibility and willingness to perform team work, just to mention some examples. In this moment the sources and procedures for information management are oriented; how it must be processed and socialized, the way in which the results can be assessed, including other procedures of TLP.
  3. Orientation toward methodological acquisition of the process; for instance, how to plan and design the sequence of the project (associated with the procedural side of project management), where cognitive and meta-cognitive strategies are implemented (Machado *et al.*, 2020).
  4. Orientation toward the particularities of the small-company context, which is an essential condition, provided the project gains significance when the designing experience is close to the surrounding, familiar, and committed.

Therefore, in the phase of implementation, from this perspective, which responds to already designed theoretical foundation, the following must be considered:

- To inform: it is associated with the definition of the process and situational analysis (Machado *et al.*, 2020). Here the students compile the necessary information for the implementation of the task assigned as part of PBL, considering the two aspects. Accordingly, several sources of information are helpful (experience, technical books, journals, and manuals, technology use, and videos). When setting the objectives, it is necessary to review the experiences of students, through collective work with all the participants in the project, in order to achieve a high level of identification and motivation.

The teacher should work on the familiarization to PBL and determine the joint way of determining the most suitable topics to deal with. Therefore, it is important that teachers provide orientation and guidance to students in terms of motivating, promoting, and developing attitudes of respect, understanding, and participation, because they may not be used for collaborative work otherwise.

- To plan: it is associated with process development (Machado *et al.*, 2020), and it is characterized by the creation of the plan of action, the structuring of the methodological process, planning of instruments and working tools, and determining each one's functions on the team. The procedure will also be effective through some margin to perform adjustments or changes in the plan of action justified by the circumstances.
- To decide: it is associated with the identification of mechanisms (Machado *et al.*, 2020). Before performing the practical work, the students on each team must decide the variables or strategies of project management that must be followed. When the participants in the project have agreed on the strategy, it is commented and discussed with the teacher. That is, the decision is taken by the two parties.

During decision-making, the teacher must comment, discuss, and if necessary, correct the possible solution strategies recommended by the students. It is important that they assess problems, risks, and benefits related to every alternative. Another aspect is given by communication (negotiation), which is established in the class, where the participants learn to make decisions jointly.

5. Project materialization: It relates to the organization, planning, implementation, and control of project management (Machado *et al.*, 2020), when the experimental and innovating action takes a relevant position. The creative, autonomous, and responsible actions are exercised and analyzed. Every member of the project performs their task following a plan or agreed division of work.

The partial results are compared to the initial plan, and the necessary corrections are made, both in planning and practice. Feedback helps examine the partial results, and as an instrument of individual and group self-control.

In every moment of organization, planning, implementation, and control, the students must try to execute their tasks in the most independent possible way, though it does not mean that they will be completely alone; the teacher and expert student help system is important to achieve greater result optimization.

A special place is given to control, especially self-control, to learn to evaluate the quality of work better. In this sense, the role of the teacher is that of an advisor or measurer, only intervening in case of disagreement on processes and results.

Evaluation (assessment and reflection) of project management is done at the end, and it is materialized through a final discussion of the result and processes conducted, experiences, improvement proposals in which the students and teachers comment and discuss the results collectively, according to their performance. Special interest is given to ICT.

The previous observations can be summarized with the idea that planning and project materialization must be conducted through flexible mechanisms and open criteria.

### **An illustration of the implementation phase of the didactic strategy for the development of professional competency management of small-company projects**

This strategy is illustrated below, using PBL in the subject Entrepreneurship, which shows the complexity of the procedure followed.

Project: Project management for a small fruit processing company.

Synthesis of previous contextualization made by the teacher to implement the project:

The teacher will give a detailed explanation; for example, about the origin and projects of the National Farmer Coordinating Foundation, especially projects associated with women engagement, in which no previous studies of the impact of their activities on them and their households have been done. The presentation can continue with arguments on the no existence of gender-approach projects and the need to materialize them, especially in production.

Then, a reference is made to the introduction of the Foundation in gender and development topics through an economic, social, and organizational viable project. It shows the need to conduct a study of gender factors, since the viability of the project should not only be measured as to how much they improve the basic needs of country men and women, but how much they contribute to the satisfaction of their strategic needs. It also directs the students in the search for alternative economic development models to figure out mechanisms that can improve life quality.

It ends by remarking that the creation of a small company that belongs to the Association must make proper use of its resources to process fruit and manufacture products that can be sold at a reasonable price in the market. In the conclusion, a petition is made, as part of PBL, which consists in the projection of specific process making designed in keeping with the reality of the zone, for which they must manage information, without putting aside company criteria of efficiency and quality demanded by the current market. Below is the methodology to follow:

- The design of a project must be according to the logframe matrix with a gender approach.
- It will be developed in five phases: process definition, situational analysis, process development, identification of mechanisms and organization, planning, implementation, and control, in association with the socio-organizational axes of fruit-processing technology, and company-market in relation to the main axes: equity and sustainability.

- The concept of equity is transversal to the project; it will refer to a customized analysis of the impact of different human groups of the Foundation in terms of generations, gender, class, and ethnic.
- Focusing on sustainability from a technological perspective on small-company development, the environment, and the organization that will manage it.
- Achieving the participation of beneficiaries through related techniques that guarantee long-lasting future commitment, and encourage self-management of the company.
- They are encouraged to use bibliographic search, interviews, focal groups, experiences, market and context studies, calendars, 24-hour stories, and others, as ways of managing information.
- The project should be designed according to the logframe matrix studied in the subject, which must begin with a description of the expectations of the project, processes and phases to obtain results described as verifiable indicators, and equally, the way in which their materialization will be checked.

Another addition could be, as part of the assignments, the introduction of a generic table to observe the sequence of programming the necessary contents to achieve the materialization of a small-company project that can solve problems, and its implementation in favor of the community, using timely strategies. For instance, they must include basic economic, environmental, human, and technical concepts, the design of lists of conditions, economic appendixes of project memoirs, customized technical information for different groups, depending on the problem to be solved, technical and economic information blocks needed for the documentation phase, etc.

- It is necessary to consider the possible assumptions as potential events that might affect a project negatively or positively.
- The project must analyze the impact of gender relations on the implementation, focusing on three levels: human, environmental, and technological.

- The design of the evaluation of the project will not only include the results, but also the processes, not forgetting that managing must be social, economic, and environmentally cost-effective, and that the impact in these settings becomes relevant. Hence, the study of feasibility of these factors will be essential.
- Information is also given in relation to the inclusion of the design of complex activities linked to the materialization of small-company project management, and its integration in the social, technological, market-related, and environmental settings.

The purpose throughout PBL is to achieve the integration of a working style given by:

- The application of PBL from the beginning of the processes of competency development to the implementation of the project, to define planning of processes used for the creation of the small-company through a technical project, which must meet certain premises posed by the necessity observed.
- Knowledge and study of the necessary markets for the implementation of the project according to the legal requirements, constituting a possible commercial, social, technological, and environmental success.

This is the cornerstone of the logframe of project sequencing, and it must help in the implementation of:

- The theoretical knowledge acquired through the subjects associated both in theory and practice, not only in Entrepreneurship, and the ones related to business management pertaining to goods sales.
- The utilization of ICT for communication and socialization of a project, depending on the fulfillment of the set objectives, and the corresponding documents that have been issued.

In short, PBL as part of this didactic strategy aims to integrate processes associated with the procedure of small-company project management, and the educational side of the competency (Machado *et al.*, 2020). Hence,

- It is evidenced that the design of a project requires self-processes that specialize in this area.
- The logical process of thought is implicitly and explicitly shown, along with the presence of research activity based on information management.
- The presence of human values assumed, for example, when analyzing gender, class, and ethnic differences, which is present in the illustration given, and it is part of the small-company context.
- Emphasis is made on a sustainable approach for the implementation of development technologies in the small company, in keeping with the existing efficiency and efficacy criteria.
- The students should become aware of the need to consider the possible assumptions as potential events that might affect a project negatively or positively, which must be taken into consideration as parts of it.
- It expresses the way in which TLP is integrated to small-company project management processes and procedures that contribute to the development of this competency in the degree.

## **CONCLUSIONS**

The priority and need of the Ecuadorian government to encourage the presentation of small-company projects is acknowledged; hence, it has posed a challenge to universities in the education of students who can assume this role. It has brought about the need to argument the complex character of developing professional competency management of small-company projects, which has not been given proper treatment according to the importance, complexity, and universality of a group of bachelor degrees that deserve the inclusion of these ideas as part of their educational processes.

Consequently, a didactic strategy for the development of competency small-company project management was presented with a PBL perspective, with a historical-cultural

background. Particularly, during the implementation phase, in which associated performance has been emerging from training university students.

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### **Conflict of interest and conflict of ethics statement**

The authors declare that this manuscript is original, and has not been submitted to another journal. We are responsible for the content published in this paper, and certify the existence of no plagiarism, or interest or ethical conflicts.

### **Authorship statement**

Jessica Mariela Zambrano Cedeño. Conceptualization (leader), formal analysis, redaction – original draft.

Evelio F. Machado Ramírez. Conceptualization (support), research, methodology, redaction, editing, and proof-reading, visualization.

David Wilfrido Moreira Vera. Conceptualization (support), project administration.