Implementation of didactic strategies supported by the use of ICT for the modification of the learning patterns of the students of the marketing fundamentals course.

Implementación estrategias didácticas apoyadas en el uso de las TIC para la modificación de los patrones de aprendizaje de los estudiantes de la asignatura fundamentos de mercadeo

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ABSTRACT

The present classroom project aimed to determine didactic strategies for modifying the learning patterns of the students of the marketing fundamentals subject; proposing the application of project-based learning as a didactic and evaluative strategy; which is an innovative methodology that allows satisfying the needs of the different actors in the process; students, teaching-learning purposes, teachers and educational institutions. It is proposed to change the educational approach towards the teaching-learning process, based on the student and the way he learns, starting from the knowledge of his learning

patterns and incorporating current elements such as information and communication technologies as fundamental elements for the achievement of the training objectives.

Keywords: Learning patterns, didactic and evaluative strategies, project-based learning, Marketing, Learning environments, educational innovation, ICT in the classroom.

RESUMEN

El presente proyecto de aula pretendía determinar estrategias didácticas para la modificación de los patrones de aprendizaje de los estudiantes de la asignatura fundamentos de mercadeo; proponiendo la aplicación del aprendizaje basado en proyectos como estrategia didáctica y evaluativa; la cual es una metodología innovadora que permite satisfacer las necesidades de los diferentes actores del proceso; los estudiantes, los propósitos de enseñanza aprendizaje, los docentes y las instituciones educativas. Se propone cambiar el enfoque educativo hacia el proceso de enseñanza - aprendizaje, basado en el estudiante y la manera como este aprende, partiendo del conocimiento de sus patrones de aprendizaje e incorporando elementos actuales como lo son las tecnologías de la información y la comunicación como elementos fundamentales para el logro de los objetivos de formación.

Palabras clave: Patrones de aprendizaje, estrategias didácticas y evaluativas, aprendizaje basado en proyectos, Mercadeo, Ambientes de aprendizaje, Innovación Educativa, TIC en el aula.

1. Introduction

This research proposal proposes the didactic strategy of Project Based Learning (PBL) supported by the use of ICT, as an active methodology suitable for the achievement of the objectives proposed for the subject Fundamentals of Marketing of the Professional Technical Program in Business Processes of the IES CINOC; since it allows maintaining and mobilizing the learning patterns of the students towards those patterns that present desirable or ideal characteristics of student behavior to meet the requirements of this subject at this level of training.

PBL promotes the motivation of all students and their active participation in the activities proposed for the development of content, teamwork, the application of theoretical knowledge in the real context, creativity, research and critical capacity, among other advantages. Thus, it is evident that in the teaching-learning process it is

very important to start from the knowledge of the way students behave and learn in order to propose and implement didactic strategies that allow guiding all students towards forms of behavior that benefit the achievement of the expected learning objectives.

In the case of vocational technical and technological training HEIs, their teaching processes are directly related to training in occupations more focused on doing and knowing how to do. Their training processes are based on the interaction of intellectual, instrumental, operational and technical knowledge (Law No. 749, 2002); therefore, their capacity to relate with the productive sector and the community, as well as their practice centers and specific laboratories, are fundamental (Congress of the Republic, 2002).

Therefore, in the training of technicians and technologists of the Institution of Higher Education Colegio Integrado Nacional Oriente de Caldas (IES CINOC), priority is given to the development of competencies related to practical knowledge that allow the application in their context of the theoretical contents that the student sees in their training process.

The Marketing fundamentals course is part of the specific technical component of the training of professional technicians in Business Processes; since it aims to provide the theoretical elements related to marketing and the importance of its application in the company for the achievement of organizational goals; as well as to apply the different techniques to perform the effective marketing of the different types of products and services offered by the companies. Therefore, it is a subject that has a strong component of practical work, which requires the student to develop certain behavioral and attitudinal characteristics for the achievement of the proposed learning objectives:

- Active and motivated students
- Able to work as part of a team
- Proactive and participative
- Analytical skills
- Ability to apply concepts in context
- Ability to solve problems
- Creatives, critics, researchers and innovators

The target group for this study is the third semester group of the Professional Technician in Business Processes program. This group has an average age of 18.6 years, is

composed of 14 women and 3 men, 5 of whom are high school students who are simultaneously pursuing their professional technical training.

Another common characteristic of students at this level of education is that they have a strong inclination towards grades, making this factor the main motivation for improving their academic performance and achievement.

Regarding their behavior in class and in general in the development of the subject, their tendency to memoristic and repetitive learning of the concepts being worked on is evident. However, in the development of class activities related to application activities in real cases of the theoretical contents, they behave in a more receptive, proactive and participatory manner, which facilitates the recall and meaningful learning.

When activities oriented to problem solving in class and the contextualization of more practical knowledge are proposed, the group is well disposed; however, the results are not homogeneous and require more time for all students to achieve the expected learning outcomes.

The question that guided the development of the present classroom project was the following:

How can the implementation of didactic and evaluation strategies supported by the use of ICT in the classroom modify the learning patterns of students in the marketing fundamentals course?

Identifying an ideal learning pattern for the development of the subject connected to the design of didactic strategies that mobilize students towards this, allows to potentiate behaviors and attitudes in the learning process by the learners; since learning patterns are related to the processes of knowledge construction performed by students, taking into account how the behavior is guided by the teachers' strategies, previous knowledge and their motivations (Granados López, 2018).

In addition, the use of learning patterns makes it possible to identify the way in which students learn and relate to their context, the intervention needs of the teacher, directing the intentionality of the didactic strategies used to ensure that the results of the teaching-learning process are useful and enable them to meet the requirements of the context in which they will perform (Gonzalez Aguña, 2012).

With the application of different innovative didactic strategies aimed at modifying the learning patterns of students towards the required ones, it will generate performance improvement, greater appropriation of theoretical knowledge and ease of application in different and specific contexts. These strategies that will be addressed in this project have the particularity that they are supported by the use of ICT; which have the

advantages that they are available at all times, improve the use of technological tools, encourage creativity, promote autonomous learning, self-regulation and interaction, among others.

The purpose of the research is to determine didactic strategies for the modification of the learning patterns of the students of the subject fundamentals of marketing, achieving to characterize the learning patterns of the students of the subject of fundamentals of marketing of the Professional Technician in Business Processes program, where it is possible to elaborate didactic and evaluative strategies supported in the use of ICT in the development of the subject, based on the learning patterns identified in the students, achieving to apply the didactic and evaluative strategies based on ICT for the subject fundamentals of marketing.

According to Vermunt (2005) and Endedijk (2011), learning patterns are an integral concept related to the behavior and the way individuals learn; therefore, they propose that there are factors in the individual - student, such as: beliefs, motivations, form of regulation, learning activities and the relationships between these factors; which determine the way they develop their learning processes. (Vermunt & Endedijk, 2011).

Vermunt (1998, 2005 and 2011) conducted extensive research in which he developed a vast conceptual and theoretical framework around learning patterns; which he classified into 5 components and each of these in turn is divided into 20 learning subscales. Based on this, he built his **model called the Inventory of Learning Styles (ILS)**, which presents the components described below:

- **Cognitive processing strategies**. These are activities that students use to process, study materials and convert them into knowledge or skills. Typical examples are: looking for relationships between different concepts, selecting relevant information, thinking of examples, applying and memorizing.

- **Metacognitive regulation strategies.** These activities are related to the monitoring of learning processes in relation to a plan, diagnosis of the causes of difficulties in the learning process and adjustments of the learning process in view of the objectives.

- **Conceptions of learning**. These are opinions or beliefs regarding learning and its relationships with phenomena. Some examples are: knowledge and beliefs about oneself as a learner, about one's learning objectives, learning activities and strategies.

- **Learning orientations**: These include objectives, purposes, motives, expectations, attitudes, concerns and doubts in relation to learning and their studies (Martínez-Fernández & Vermunt, 2013, p. 2).

The theory of learning patterns and Vermunt's Inventory of Learning Styles (ILS) instrument are important tools for identifying and characterizing the learning patterns of students according to their behavioral characteristics. Having this information is very useful for teachers since it is an input to develop and design didactic strategies and teaching-learning processes that adapt to these particular needs of individuals; understanding the way they learn, their motivations and regulatory capacity among other aspects related to their behavior as a strategy to ensure the achievement of the proposed objectives.

Didactic and evaluative strategies

The great changes in society also impose changes in the methodologies used in educational processes, always seeking to meet the changing needs of people in terms of training processes. The current trend has placed the student as the center of the educational processes, turning learning into a process of continuous interaction. Now it is teaching - learning that seeks the way to reach the student, accompany him/her in the learning process and provide him/her with tools to improve. Didactic strategies include the selection of activities and pedagogical practices in different formative moments, methods and resources in the teaching-learning processes (Velazco & Mosquera, 2020).

Learning to learn, more than developing specific knowledge, is directly related to the teaching methods used (Touriño, Taboada, & Doallo, 2010). Nowadays, innovation in educational methods is very focused on the use of ICTs for teaching and learning processes and the incorporation of these new technological tools for this purpose. However, it is important to pay attention to the intentionality and not to use them for the sake of using them with the promise of innovation.

The implementation of didactic and evaluative strategies must correspond to teacher updating processes, clarity in the intentionality of the teaching-learning purposes, analysis of the methodologies and tools to be used and knowledge of the way students learn and behave, to really design innovative proposals that ensure results and achievement of the objectives; within the framework of continuous improvement processes. In summary, it is very important to propose didactic strategies that contemplate the Teaching-Learning objectives from the various methods, which must meet the particular needs of each subject, therefore, teachers must know and use a variety of activities that allow them to realize these processes relying on various strategies (Ibero-American Commission for Educational Quality, 2018).

Learning environments

Historically, learning environments have been associated with a set of internal, external and psychosocial factors that favor or hinder the interaction between people, transcending the concept of a physical space and understanding it rather to the different human relationships that give meaning to culture (Alcaldía Mayor de Bogotá - Education "IDEP", 2017).

In the educational context, it can be said that a learning environment is a pedagogical and systemic process that allows understanding teaching-learning from another perspective; considering the student as an active subject and central axis of learning, who should be recognized for his or her potential from the cognitive, socio-affective and creative physical aspects. Thus, the idea is that learning environments allow the development of different types of knowledge from the curriculum according to their context: Knowing - knowing, knowing - doing and knowing - being.

Flexible learning environments

Regarding flexible learning environments, the institutional pedagogical model presents them as follows:

Flexible learning environments include appropriate spaces that provide students with different learning options in order to promote the development of competencies, facilitating and stimulating knowledge, the acquisition and understanding of information in environments that combine dialogic communication, collaborative learning, problem solving, and the development of new skills.

problems, decision making, social interaction and the use of different media and computational tools, as elements that generate experiences, knowledge and attitudes in the achievement of the institutionally established purposes (IES CINOC, 2008, p. 15).

Learning in collaborative environments

Collaborative learning is a key element in the teaching-learning process, as it allows for dialogic communication between teacher - student, student - student and the productive sector, promoting the permanent exchange of knowledge, experiences, resources and goals.

Learning in collaborative environments seeks to provide spaces in which the development of individual and group skills or competencies takes place through discussion between student-teacher and learning environments where students explore

new concepts, internalize them and then put them into practice in search of a solution to a problem (IES CINOC, 2008).

Project-based learning

Project-based learning is a methodology that promotes collaborative learning through the collective construction of knowledge based on a topic that students will work on in the development of a project during a given time. The purpose is that students apply the conceptual contents seen in class with the orientation or guidance of the teacher (Fernández- Cabezas, 2017).

Project-based learning seeks that the student integrates the knowledge he already possesses with the new knowledge he must acquire in his training process, which makes what he has learned last over time. It is not so important what the student knows at a given moment, but what he may come to know, which is closely related to his learning capacity (Estruch & Silva, 2006).

PBL is a methodology that challenges students to become the protagonists of their own learning, through the development of projects that seek to provide answers to problems of their context and related to their real life. It offers a significant number of advantages over other methodologies.

Project-based learning as a teaching strategy

In the implementation of project-based learning as a didactic strategy, it must be guaranteed that the following phases are incorporated and that these are previously reconciled with the students, to ensure that they are aware of their intentionality, terms and learning objectives:

- Establish the objective of the project

- Identify actions, resources and time required for the project's implementation

- Assign roles and responsibilities

- Develop the project

- Evaluate the project and determine its impact

- The didactic and evaluative strategy of project-based learning also encourages students to develop the following learning associated with the development of the project and the dynamics of collaborative construction proposed in the process:

- Comprehensive reading

- Situation analysis

- Formulation of proposals

- Product or process design

- Product and/or process evaluation

- Problem identification, analysis and evaluation

- Leadership

- Communication, argumentation and cooperation

- Organization and planning

- Ability to formulate objectives, goals and purposes

- Ability to work in unfamiliar and unstructured situations

- Ability to learn how to learn

- Active listening

- Innovation

- Be responsible in both individual and collaborative activities.

- Use of technology to expand your skills and knowledge

- Construct and synthesize information

- Plan and manage time and resources

During the application of the didactic and evaluation strategy of Project Based Learning, the teacher plays the role of process guide and develops the following activities:

- Monitor the development of the project, observing what works and what doesn't.

- Learning as students learn, looking for ways to facilitate learning.

- Advise and provide feedback to students

- Incorporate group decision making, promoting consensus.

Marketing

World economic activity requires a high level of marketing, making it evident that production processes are completed only if what is produced is sold to customers; in this order of ideas there is a growing need for marketing processes because every commercial, industrial or service activity, large or small, requires marketing its products or services.

For Philip Kotler and Gary Armstrong, authors of the book Fundamentals of Marketing, the marketing concept is "A philosophy of marketing management according to which the achievement of

of the organization's goals depends on determining the needs and wants of the target markets and satisfying those wants more effectively and efficiently than competitors" (2003, p. 20).

In very simple terms, it can be said that the main function of marketing in the economy is to organize voluntary and competitive exchange in such a way as to ensure an efficient match between supply and demand of products and services. It is the activity that is carried out to identify and discover products and services that satisfy customer needs, as well as to implement strategies to increase the company's sales, that is, to ensure long-term profits; therefore, it is said that marketing is the area that determines the company's income.

Marketing requires the organization of two types of activities:

a. Organizing material exchange: i.e. the physical flow of goods from the place of production to the place of consumption, known as distribution logistics.

b. Organize communications: i.e. the information flows that must accompany before, during and after the exchange processes with the customer in order to ensure an efficient match between supply and demand, this process is known as the marketing mix.

Stanton, Etzel and Walker, in their work, explain that the marketing concept emphasizes customer orientation and the coordination of marketing activities to achieve the organization's performance objectives (Stanton, Etzel, & Walker, 2000).

2. Materials and Methods

For the development of this project, the methodology to be used will be guided by the specific objectives set forth as follows:

To characterize the learning patterns of the students of the marketing fundamentals course of the Professional Technician in Business Processes program.

Phase 1:

-To apply the instrument called "Learning Patterns Questionnaire" to the students of the third semester group of the Professional Technician in Business Processes program, who are taking the Marketing Fundamentals course. For this purpose, a work session will be organized in a systems room of the institution, since the questionnaire will be organized in an Excel file to facilitate the systematization of the information provided by each of the 17 students.

-Analyze the data collected and identify students' learning patterns, using SPSS statistical software.

1.Develop didactic and evaluative strategies supported by the use of ICT in the development of the subject, based on the learning patterns identified in the students.

Phase 2:
- Design of didactic strategies supported by the use of ICT for the development of the subject in accordance with the desired learning pattern and the requirements of the subject for the achievement of the teaching and learning objectives.

1. To apply ICT-based teaching strategies for the marketing fundamentals course.

Phase 3: Foresight
The strategy will be implemented as soon as conditions permit; given that due to the COVID 19 health emergency, on-site classes were suspended.

- Application of project-based learning strategies in the development of the subject.
- Using rubrics to evaluate the learning results obtained from the application of the strategy to determine if a change was generated in the classroom dynamics.

3. Results

From the implementation of the PBL project-based learning strategy in the development of the Marketing Fundamentals course of the Business Processes Technical Program, the following conclusions can be drawn:

It was possible to identify a change in the motivation of the students in the development of the subject, evidenced in the class dynamics, since the topics of the projects were chosen by the work teams according to their interests; This provided a space for them to investigate autonomously, make decisions, analyze information on their own, show a more proactive behavior towards their learning process and responsibility in the application of the different topics in the project, assuming a leading role in their learning process, demonstrating competencies such as proactivity, leadership and criticality constantly during the development of the course.

Regarding the application of the strategy in the development of the subject, it facilitated the transversalization of the contents, since it allowed the integration of ICT elements to the teaching-learning process not only in the disciplinary aspect, but also in the use and appropriation of these tools. Through the application of marketing theory in a real context, a significant learning environment was generated that allowed globalizing and integrating learning from their technical training related to other subjects of the training area.

The implementation of the PBL strategy in the subject facilitated the acquisition by students of competencies such as teamwork, development of communication skills, ability to plan and organize their work and time, collaborative work and problem-solving skills. These competencies constitute behavioral traits that were identified as ideal for the achievement of the teaching and learning objectives.

In spite of the changes that had to be incorporated in the development of the course, derived from the health emergency, the implementation of the PBL strategy was not greatly affected, since the strategy allows methodological adjustments to be made and the students, through their autonomous work, assumed a leading role in the process and adapted to the new working conditions of the course by moving from a physical classroom methodology to a classroom methodology mediated by ICT.

4. conclusions

Finally, it is worth mentioning that despite not being able to reapply the learning patterns characterization instrument to determine technically whether the students maintained and mobilized themselves in the MD and AD patterns. The results obtained in terms of

compliance with the evaluation criteria defined and agreed upon in the rubrics, do show the existence and improvement of behavioral traits associated with the components of these learning patterns such as: construction and use of knowledge, motivational orientation based on personal interest and vocation, self-regulated and external processes with the guidance of the teacher, and elaborate, structured, critical and concrete processing strategies of the student.

The above shows that the didactic and evaluative strategy of PROJECT-BASED LEARNING implemented in the development of the marketing fundamentals course represents an adequate strategy with great potential for the achievement of the teaching-learning objectives, developing a comprehensive training process that combines **knowledge**, **know-how** and **know-how to be**, typical of the pedagogical model of the IES CINOC.

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