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Original article

Systematization in working with the integrative task

La sistematización en el trabajo con la tarea integradora

Sistematização no trabalho com a tarefa integrativa

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ABSTRACT

This article studies the systematization of work with the integrative task, in which the teacher and the workplace specialist integrate content, skills, habits, and values, facilitating the application of knowledge to objective reality. The objective of this study was to design a system of didactic procedures for the systematization of the integrative task for mid-level technicians specializing in Commerce at the Mártires del Moncada Polytechnic Center. To this end, theoretical, empirical, and statistical-mathematical methods were employed, such as the historical-logical method, the systems approach, modeling, analysis and synthesis, document analysis, observation, surveys, interviews, and, within descriptive statistics, percentage analysis. Furthermore, the methodological triangulation technique was used, which allowed for a diagnosis of educational reality, based on the dialectical-materialist method as the general methodological approach to scientific knowledge. The diagnostic study was conducted with a sample of 15 students majoring in Commerce, 10 professors, and three

administrators, all from the Mártires del Moncada Polytechnic Center. The results revealed greater development of professional skills among the students, based on the demands of the professional model through the teaching-learning process. Based on these results, the necessary requirements for the proper application of the proposed procedures were established. These procedures proved to be feasible, objective, and applicable in educational practice for systematizing work on the integrative task.

Keywords: integrative task; didactic procedures; systematization; technical skills.

RESUMEN

Este artículo estudia la sistematización del trabajo con la tarea integradora, en la que el profesor y el especialista de la entidad laboral integran los contenidos, habilidades, hábitos y valores, facilitando la aplicación de los conocimientos a la realidad objetiva. El objetivo de este estudio fue diseñar un sistema de procedimientos didácticos para la sistematización de la tarea integradora de los técnicos medios de la especialidad de Comercio del Centro Politécnico Mártires del Moncada. Para este fin, se emplearon métodos teóricos, empíricos y estadístico-matemáticos, tales como el histórico-lógico, el enfoque de sistema, la modelación, el análisis y síntesis, el análisis documental, la observación, la encuesta, la entrevista y, dentro de la estadística descriptiva, el análisis porcentual. Además, se utilizó la técnica de triangulación metodológica, la cual permitió diagnosticar la realidad educativa, tomando como base el método dialéctico-materialista como enfoque metodológico general del conocimiento científico. El diagnóstico se realizó con una muestra conformada por 15 estudiantes de la especialidad de Comercio, 10 profesores y tres directivos, todos del Centro Politécnico Mártires del Moncada. Los resultados revelaron un mayor desarrollo de las habilidades profesionales en los estudiantes, basado en las exigencias del modelo de profesional a través del proceso de enseñanza-aprendizaje. A partir de estos resultados, se establecieron los requerimientos necesarios para la aplicación adecuada de los procedimientos propuestos, los cuales demostraron ser factibles, objetivos y aplicables en la práctica educativa para la sistematización del trabajo con la tarea integradora.

Palabras clave: tarea integradora; procedimientos didácticos; sistematización; habilidades técnicas.

RESUMO

Este artigo estuda a sistematização do trabalho com a tarefa integrativa, na qual o professor e o especialista do local de trabalho integram conteúdo, habilidades, hábitos e valores, facilitando a aplicação do conhecimento à realidade objetiva. O objetivo deste estudo foi elaborar um sistema de procedimentos didáticos para a sistematização da tarefa integrativa para técnicos de nível médio especializados em Comércio no Centro Politécnico Mártires del Moncada. Para tanto, foram empregados métodos teóricos, empíricos e estatístico-matemáticos, como o método histórico-lógico, a abordagem sistêmica, a modelagem, a análise e síntese, a análise documental, a observação, os levantamentos, as entrevistas e, dentro da estatística descritiva, a análise percentual. Além disso, utilizou-se a técnica de triangulação metodológica, que permitiu um diagnóstico da realidade educacional, baseado no método dialético-materialista como abordagem metodológica geral do conhecimento científico. O estudo diagnóstico foi realizado com uma amostra de 15 estudantes do curso de Comércio, 10 professores e três administradores, todos do Centro Politécnico Mártires del Moncada. Os resultados revelaram maior desenvolvimento de competências profissionais entre os estudantes, com base nas exigências do modelo profissional por meio do processo de ensino-aprendizagem. A partir desses resultados, foram estabelecidos os requisitos necessários para a correta aplicação dos procedimentos propostos. Esses procedimentos mostraram-se viáveis, objetivos e aplicáveis na prática pedagógica para sistematizar o trabalho com a tarefa integrativa.

Palavras-chave: tarefa integrativa; procedimentos didáticos; sistematização; competências técnicas.

INTRODUCTION

In our country, Technical and Vocational Education (TVE) has the fundamental purpose of providing initial and ongoing training for a skilled workforce at the intermediate level, as well as training the population through integration between educational institutions and workplaces. This approach is presented as a key driver for the country's economic and social development. The integration of knowledge and skills in the teaching-learning process is crucial for developing competencies, especially given the need to train competent professionals who can meet the demands of the current context.

According to Mena and Sarracino (2020), the systematization of work in TVE is essential to ensure that students efficiently and coherently acquire both practical and theoretical skills, enabling them to face the challenges of the working world and contribute to economic and social development.

The integration between the polytechnic school, the workplace, and the community constitutes a process of interconnection, characterized by the cooperation and mutual collaboration of these subsystems. In this process, each maintains its social role, but together they contribute to the student's technical and professional training.

In this way, the polytechnic school is conceived as the educational institution that develops the training process for students in Technical and Vocational Education. The workplace, for its part, is an economic unit with its own legal personality, responsible for the production of goods or services. It is essential and most general functions are productive and social, but it also includes the educational function of its workers (through on-the-job training and general skills development) and also of the polytechnic school students who carry out their pre-professional work placements there to obtain their worker qualifications. The workplace, therefore, is increasingly becoming an educational entity in itself.

This multidimensional approach implies that two closely related processes coexist within the workplace: one productive and the other educational. Although these processes are distinct, the productive process has great educational potential, as it offers a real opportunity for the student's educational development through practical experience in a production environment.

The polytechnic school and the workplace are also located within a community, with which they maintain an ongoing cooperative relationship that contributes to the development of the student's comprehensive technical and professional culture. The community also benefits from this collaboration, as it contributes to solving local problems related to the production or services in which the student is training, thus strengthening its technical and professional culture.

To consolidate this integration process, the integrative task is considered fundamental, as established in Ministerial Resolution 119/2022, Article 53. The integrated task is a practical teaching modality implemented in the curricula of mid-level technicians. This task is carried out during the first and second years of study and aims to integrate the professional objectives and skills of the training model, as well as the specific content of the basic and technical vocational training subjects.

Several authors such as: López Morales *et al.* (2020), Muntaner Guasp *et al.* (2020), Torres Ferrales and Zamora Pérez (2021), Rodríguez Molina *et al.* (2021), Fernández Olivero and Simón Medina (2022), Peña Mantilla *et al.* (2021) and La O Sánchez (2022), highlight that working with the integrative task is a method that seeks to integrate theory and practice in order to develop professional skills in students.

Considering the above, the need to develop a system of didactic procedures for the systematization of the integrative task in the training of middle technicians specializing in Commerce at the Mártires del Moncada Polytechnic Center becomes evident.

MATERIALS AND METHODS

To achieve the proposed objective, a descriptive diagnostic study was conducted during the 2023-2024 academic year. The selected sample consisted of 15 students majoring in Commerce, 10 teachers, and three administrators, all from the Commerce program at the Mártires del Moncada Polytechnic Center. The research methodology was based on the dialectical-materialist method. A system of theoretical, empirical, and statistical-mathematical methods was employed, based on the criteria of Hernández et al. (2014), which allowed for an understanding of the current state of the integrative task being implemented by teachers at the Mártires del Moncada Polytechnic Center.

Theoretical methods

1. Historical and logical: this method was used for the study of normative documents related to systematization in the work with the integrative task.
2. Systems approach: This approach was applied throughout the research process to analyze the structural components of the integrative task. It allowed for the identification of interrelationships between the elements that comprise the educational process in the Commerce specialization, understanding the interactions between the components and the content of the professional training.
3. Modeling method: This method was used to make the necessary abstractions and to justify the program of activities of the studied process.

Empirical methods

1. Document analysis: The current strategy employed by the Polytechnic Center for systematizing work on the integrative task was examined. Guiding documents issued by the Ministry of Education, the Polytechnic Center's interest group programs, and statistical data on student interest in the Business specialization over the past five years were also reviewed. This analysis provided authentic and reliable information for the research.
2. Observation: Direct observation allowed us to verify how students develop actions related to the specialty of Commerce, according to the options provided by the school, the work entity, the family and the community.
3. Interviews with managers: Interviews were conducted with managers of the Polytechnic Center to verify the effectiveness of the systematization in working on the integrative task. These interviews provided the perspective of those responsible for managing this process at different stages of methodological work.

Statistical-mathematical methods

1. Percentage calculation: This method was used to determine the behavior of each indicator measured by the applied instruments. It allows for the interpretation, summarization, and presentation of the processed information through tables.
2. Data triangulation: all the results obtained were subjected to methodological triangulation, which allowed the information from different sources to be compared, based on the criteria issued by the managers or teachers.

RESULTS

In the context of Technical and Vocational Education (TVE), systematization emphasizes general aspects related to the integration, generalization, and transfer of content, as qualities of the systematization approach in the teaching-learning process (TLP) in TVE. However, the intention to apply these approaches to a particular specialization, in this case, the specialization of Commerce, is not specified.

Systematization is a link in the TLP, understood as an internal process stemming from the motivations, interests, and levels of knowledge and skills acquired by the learners. It also refers to the systematization of professional content as a dimension of the TLP, a process aimed at revealing

the scientific construction of sociocultural content. Furthermore, it interprets the systematization of professional tasks and projects as alternating with the process of internalizing, deepening, consolidating, updating, and applying the content of the profession.

All of the above encompasses systematization as a sequenced process, which constantly characterizes the development of knowledge, in accordance with the paths followed by technological processes in educational spaces, where the student acquires meanings and senses from culture and its enhancement.

To achieve the systematization of the integrative task as a modality of practical teaching in the Commerce specialization, the methods must contribute to the development of cognitive skills that enable the transfer, deepening, and generalization of professional content. In this sense, it is necessary to combine technological work methods with teaching-learning methods for solving diverse professional problems with increasing levels of complexity. In accordance with the above, it is proposed to contextualize problem-based learning methods within the TLP through work with the integrative task.

Problem-based methods (problem-based exposition, partial search, and heuristic conversation) form the basis of the investigative method. This method, therefore, requires a high level of creativity and is applicable to the development of inquiry-based projects and integrative assignments.

In this sense, the teacher and the specialist of the work entity can use specific procedures that enrich the investigative method and contribute to the internalization of the instructional and formative objectives corresponding to the theoretical-practical conception of the integrative task, as a modality of practical teaching in the specialty of Commerce, regardless of the professional contents covered per training cycle of year.

The integrative task is oriented and directed towards individual and group activity, from a theoretical-practical conception, through the mediation of the teacher and the specialist of the work entity, to achieve integrative learning by the student of the Commerce specialty, in order to solve professional problems.

The following teaching procedures are designed to guide the various actions of the teacher and the workplace specialist in systematizing the integrative task as a modality of practical teaching in the Commerce specialty. These procedures are coordinated exploration of socio-professional strengths

and needs, coordinated reflection on technological actions, coordinated organization of technological actions, and coordinated monitoring and verification of technological actions.

Didactic procedures for the systematization of the integrative task of the Intermediate Technician in Commerce

The proposed teaching procedures allow for the appropriate use of the investigative method in the integrative task of the TLP as a modality of practical instruction in the Commerce specialization. Furthermore, they guide students toward an active, responsible, and transformative role in solving professional problems within vocational training contexts.

These procedures are based on a logical-dialectical sequence and become didactic actions that are developed in cooperation between the teachers, specialists of the work entity and the student of the Commerce specialty.

The proper use of these didactic procedures makes it possible to systematize the integrative task gradually and comprehensively, in a permanent dialectical movement that allows understanding, explaining, interpreting and generalizing the essential aspects of this practical teaching modality in TVE.

The proposed teaching procedures are as follows:

1. Coordinated exploration of socio-professional strengths and needs

Objective: to determine the starting level of the reality of learning the professional content of the integrative task, according to the current didactic-methodological requirements, through a collaborative participation process between the teacher and the specialist of the work entity, as well as to evaluate the formative and professional potential of the student to meet the socio-professional requirements in the educational contexts of the polytechnic school-work entity, in the solution of professional problems of production, services or the teaching center.

Stage 1. Didactic projection of the integrative task

- Action 1. To diagnose the knowledge of teachers, specialists from work entities, and students related to the socio-professional content of the integrative task, as well as the interdisciplinary didactic-methodological approach used, as they progress through the stages of the TLP based

on their experiences. This will allow us to determine the methodological shortcomings for the integration and systematization of the professional content.

- Action 2. Determine the professional skills that the student possesses as a result of learning the different subjects of each training cycle.
- Action 3. Characterize the problem bank of the school and the work entity for the theoretical-practical conception of the integrative task, considering the tasks and occupations established in the model of the professional of the specialty of Commerce.
- Action 4. Determine the integrative professional content for each integrative task. The teachers of each training cycle in each year will contribute the knowledge, skills, and values that correspond to the year's objectives for the development of each team's integrative task, based on the solution of professional problems in production, services, or the educational center.
- Action 5. Relate the integrative task, professional skills, and the professional model. The integrative task must be closely related to the professional skills to be developed in each subject, as well as to the core skills for each year of study. It must also be aligned with the tasks and occupations included in the professional model for each year, to contribute to the comprehensive professional training that is the goal.
- Action 6. Provide feedback on the diagnosis. The teacher and the specialist from the workplace, during the process of working with the contents of the integrative task, will provide constant feedback on the diagnosis through an interaction process, in which both inform the student about the deficiencies and potentialities recorded.
- Action 7. Determine the hierarchical order of the knowledge, skills and professional values of the basic training subjects of the training cycles, relevant to the integrative task as a modality of practical teaching.
- Action 8. Design the schedule or activity guide. The professor and the specialist from the workplace will design the schedule of actions and operations, or activity guide, which will be essential as a working tool in any practical activity. This activity guide will be structured by topic, learning objective, logical steps or operational technique, activities to be carried out, and bibliography to be used.
- Action 9. Raise awareness and prepare teachers, workplace specialists, and students. Teachers must implement methodological approaches that promote preparation and self-preparation for the systematization of the integrative task. in the specialty of Commerce from the activities that are oriented in each year of training cycle.

2. Coordinated reflection on technological action

Objective: to guide the theoretical-practical activity, in order to raise awareness among students about their cognitive processes, mobilizing their personal resources for reflection and regulation of learning, based on the individual and collective construction of the content of basic subjects with a high practical component, such as marketing, ethical orientation, nutrition and trade technology.

Stage 2. Technological didactic orientation of the integrative task

- Action 1. Guide towards the objective of the integrative task. The teacher and the specialist from the workplace must achieve the most effective relationship between the technological demands of the integrative task and the social demands for the comprehensive training of the student.
- Action 2. To form the guiding basis of action in each student, so that they can face the solution of professional problems for each year of training cycle, becoming aware of their strengths and difficulties.
- Action 3. Promote the development of student autonomy, with actions aimed at discovering efficient study methods that allow them to learn how to learn.
- Action 4. Professionally motivate students. The teacher and the specialist from the workplace must consider the student's professional motivation, an element that allows them to improve their technical-professional training.

The coordinated reflection procedure of technological action is used by the teacher and the specialist of the work entity focused on the work in the orientation and socialization workshops of the integrative task as a modality of practical teaching and the review of independent work, where the student learns to model solutions to professional problems.

3. Coordinated organization of technological action

Objective: to logically order the execution of the basic and specific electrical-electronic content required by the integrative task, through collaborative work between the teacher and the specialist of the work entity, mediating the learning tasks to achieve the solution of diverse and complex professional problems.

Stage 3. Meaningful construction of the integrative task

- Action 1. Facilitate the meaningful construction of the integrative task as a modality of practical teaching in the Commerce specialty. The teacher and the specialist must offer levels of practical-evaluative support through a set of skills.
- Action 2. Apply professional content. Teachers and specialists at the workplace must ensure that students apply the professional content of the integrative task with a new meaning through problem-solving.
- Action 3. Increase the levels of complexity of the integrative task, to achieve higher levels of abstraction on the part of the students.
- Action 4. Consolidate the content in human capital management-elements of economics and labor legislation specific to the integrative task. The professor and the specialist from the workplace are responsible for consolidating the work with marketing as the main skill, as a guiding process that unites other disciplines that contribute to good performance and are identified by the execution of marketing elements, consumer protection, and the care of the integrity of people and the environment.
- Action 5. Systematize the professional content. The teacher and the specialist from the workplace must systematize the professional content of the integrative task through the integration, transfer and generalization of the knowledge of Commerce, specific to this task as a modality of practical teaching.

The use of the coordinated organization of technological action in the TLP of the integrative task, as part of the investigative method, encourages the student to demonstrate the logic used for the meaningful construction of the contents of Commerce, specific to the integrative task as a modality of practical teaching in the specialty of Commerce, through the arguments that explain the decision-making as a result of reflection and knowledge management.

4. Coordinated monitoring and verification of technological actions

Objective: to verify the integrative learning achieved by the students, through the conscious integration of their own knowledge, skills, values and experiences to solve diverse and complex business problems.

Stage 4. Evaluation and control

- Action 1. The evaluation must be systematic, continuous, and comprehensive. It is conducted with both professors and specialists from the workplace and with the students. It measures the student's progress in achieving their technical and professional development in accordance with the established objectives, on a regular, partial, and final basis, based on the defined indicators.
- Action 2. Systematic or partial evaluation should be carried out throughout the entire process, considering the student's prior knowledge. A summary of the daily results will be prepared each week. It is important to organize the activities according to the professional problems the Intermediate Technician in Commerce is trained to address, based on their level of complexity. In all cases, the teacher and the specialist from the workplace organize the process and determine which problems the students will face each week of the work placement period, adjusting their level of complexity according to the student's expected level of understanding and performance.
- Action 3. Partial or interim assessments will be conducted at specific stages of the process, based on criteria previously determined by the professor and the specialist. These assessments may take place at the end of study units covering specific content, upon completion of specific professional problems, or simply at the end of certain time periods. This evaluation always requires the participation of both the teacher and the specialist, as the individual results of each student will be analyzed, based on the weekly evaluations received and the overall evolution observed in the student. The evaluation is analyzed with each student, considering the criteria they have for their own progress and those they have for the progress of their classmates. The partial or interim evaluation allows us to determine the values that each dimension of the profile is taking. This makes it possible to determine the balance between the dimensions and where pedagogical influences need to be reinforced, whether cognitive, procedural, or attitudinal. Likewise, the information allows us to address problems that are generally latent.
- Action 4. The final evaluation must comprehensively assess the student's technical and professional development. Its results should align with the requirements established in the Professional Model for the Commerce specialization. Both the specialist and the professor must be present during the evaluation. It will be the result of a joint analysis of the student's progress in the partial and intermediate evaluations, as well as information from other specialists within the faculty and the student's family.

- Action 5. The final evaluation should be a comprehensive assessment of the entire job placement process, considering both strengths and weaknesses. It should be conducted jointly by the specialist from the employer and the professor. This evaluation is highly beneficial because it provides valuable feedback on the overall evaluation process.
- Action 6. Evaluate the integration of the teaching procedures provided with the productive methods used in the TLP of the integrative task. The teacher and the specialist from the workplace will evaluate the functionality of the teaching procedures (coordinated exploration of socio-professional strengths and needs, coordinated reflection on technological action, coordinated organization of technological action, and coordinated monitoring and verification of technological action) for the systematization of the integrative task in the Commerce specialty.

For the procedure (coordinated monitoring and verification of technological actions) to succeed, it is crucial that the professor and the specialist from the workplace employ productive methods and participatory techniques that allow for self-evaluation, peer evaluation, and co-evaluation. This enables the verification of compliance with all the actions planned in the process of systematizing the integrative task.

The teaching procedures presented in this article mobilize students' regulatory potential, which is enriched by their systematic application within the integrative task as a form of practical teaching. They train students in the meaningful construction of professional content throughout the various vocational training contexts; since, by learning in a meaningful and systematic way, they can also teach others how to construct professional content in the practice of their profession as a Mid-Level Technician in Commerce.

DISCUSSION

The analysis of the results shows that the systematization in the work with the integrative task in the specialty of Commerce, with the participation of teachers and specialists from the work entity, reveals a group of shortcomings in the didactic procedures for the systematization of this integrative task.

According to Torres Ferrales and Zamora Pérez (2021), an integrative task is defined as a problem-solving situation structured around an integrating axis composed of interdisciplinary problems and

tasks. Its purpose is to learn how to relate the appropriate specialized knowledge within the discipline. The result of this process is the formation of integrated knowledge, expressed in new syntheses and increasingly comprehensive understandings of the objects, phenomena, and processes of educational practice. This also impacts the behaviors and values inherent to the profession, under an interdisciplinary approach that implies a particular mode of action.

For his part, La O Sánchez (2022) considers the integrative task to be a modality of practical teaching, established in the curricular designs for mid-level technicians. It is carried out during the first and second years of study and aims to integrate the knowledge, professional skills, and specific content of the basic and specialized vocational training subjects, reflecting in an integrated way the objectives foreseen in the professional model.

The development of the integrative task has the following fundamental objectives:

a) To contribute to the formation of a general and comprehensive culture.
b) To consolidate vocational and professional guidance in students in training.
c) To deepen the professional skills of students by integrating the instructional, work and research component, based on the solution of professional problems that respond to the needs of polytechnic centers and work entities.
d) To promote the development of socio-communicative skills, active, independent and creative thinking in students in training.
e) To contribute to strengthening professional values.
f) Demonstrate, through a practical activity, mastery of the professional skills established for the year being studied.

The integrative task is responsible for integrating, within the framework of the polytechnic center and the work entities, all or part of the planned objectives, according to the selected topics and the complexity corresponding to the year of study.

The results obtained with the implementation of the didactic procedures for the systematization of the integrative task, as a modality of practical teaching in the specialty of Commerce of the Mártires del Moncada Polytechnic Center, are evidenced in the following formative impacts:

- The number of demonstrative methodological activities at different levels on the systematization of the integrative task in the specialty of Commerce was increased, through the use of didactic procedures.
- Active and conscious student participation was promoted through the systematization of the integrative task in the Commerce specialty, which favored self-regulation in the learning of general, particular and specific contents.
- The diagnostic assessment identified the main causes of the shortcomings in the systematization of the integrative task as a modality of practical instruction in the Commerce specialization. Based on this assessment, it was possible to structure a system of didactic procedures to address these deficiencies.

The teacher and the workplace specialist, by integrating didactic procedures with the production methods used in the Teaching-Learning Process (TLP) of the integrative task, as a modality of practical teaching in the Commerce specialty, fostered a greater role for the Commerce Technician. This approach promoted cognitive independence, creativity, innovation, and the development of professional skills for solving professional problems.

The implemented teaching procedures facilitated the didactic-methodological approach, both by the professor and the specialist from the workplace, for the systematization of the integrative task. This, in turn, stimulated integrative learning and helped the procedures become a didactic tool in the scientific and professional activities of those involved.

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Conflict of interest

Authors declare no conflict of interests.

Authors' contribution

The authors participated in the design and writing of the article, in the search and analysis of the information contained in the consulted bibliography.