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Sistema de acciones para la elaboración de tareas docentes integradoras en asignaturas técnicas
System of actions for designing integrative teaching tasks in technical subjects

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Resumen: Las insuficiencias que se revelan en las asignaturas técnicas para elaborar tareas docentes integradoras permitió considerar pertinente un sistema de acciones que garantice la preparación de los profesores en este sentido, elevar el nivel de aprendizaje de los estudiantes, y su mejor desempeño durante la práctica laboral. Se presenta un modelo de tarea docente integradora basado en los principios de profesionalización, fundamentalización y sistematización de la Enseñanza Técnica Profesional.

Palabras clave: Tareas docentes; Tareas docentes integradoras; Aprendizaje; Habilidades profesionales

Abstract: The inadequacies manifested when designing integrative educational tasks in the technical subjects, made pertinent the design of a group of methodological actions that guarantee the teachers preparation. In that way, the actions facilitate to enhance the level of the students' learning, allowing them to solve tasks with an integrative bond with the activities carried out during their working practice. This paper proposes a model of integrative educational tasks which pursuits professionalism and systematizing the principles of the Professional Technical Teaching.

Keywords: Teaching task; Integrative educational tasks; Learning; Professional skills

Introduction

At present, there are diverse demands to the University in the educational field, linked to the training of competent professionals to face the obsolete traditional paradigm of teaching that still maintains its legacy in most educational institutions at international level.

In relation to this subject in Cuba, valuable studies have been carried out that show that the pedagogic preparation and improvement of scientific and technical skills of all the teaching staff is today a task of first order.

Hence, when referring to the design of educational tasks with an integrative character, we have to speak and reflect on the great practical value they provide, due to their applicability and influence in the life of men, because we face at every moment situations where their use is necessary.

Therefore, this paper proposes a system of actions based on the preparation of teachers to design integrative teaching tasks in technical subjects of the agricultural specialty of the Agro-forestry Faculty at the University of Guantánamo, that facilitate learning.

Development

Systematically guided educational activity ensures in a more solidly way the education and development of the individual; hence the essence of the educational process must be aimed at achieving a conception of the world on the solid basis of scientific knowledge and its transformation in positive moral conditions and motives of a good conduct.

Knowledge must be supported and assimilated in the practice of the social activity of the learner, who must learn to act according to the interests of the group to which he belongs and at the same time to set as goals those objectives that education has, according to social needs.

The educational process carried out in the educational institution is characterized by a dynamic and complex set of systematic activities through which the action of educators and students is interrelated, aimed both at the education of the group and each individual member (Báxter, 2002).

A number of researchers have addressed the theme of integrative teaching tasks, including: Rico (1989), Fiallo (1996), Clairat (2000), Mañalich (2001), Sagó (2001), Abreu (2004), Addine (2006), Mingui (2006), Vargas (2009); and particularly in the agricultural specialties are: Lugo (2004), Delfino (2009), Castro (2009), among others, but there is still a need to overcome the fragmented treatment of content to meet the current needs of students of the agricultural majors.

Addine and García (2006), in their work, assume the task of integrating as a problem situation structured from the integrating axis made up of interdisciplinary problems and tasks (p.15), since it has points of coincidences with the definition of integrative teaching tasks assumed by the authors of this work.

In order to achieve this, it is necessary to increase communication, interaction and projection through flexible and integrative curricula that respond to the demands of the new model for higher education in order to achieve a more active role of the student in the learning process.

Therefore, the Vargas (2009) criterion is assumed, when it states:

> Integrative teaching task is that activity structured by an integrating node, which guides through systematization, the establishment of previous relationships, concomitants or perspectives between the contents acquired in the same or different contexts of learning strategies and styles of integrative thoughts, that allow you to learn to know, learn to do, learn to live together and learn to be. (P.30)

Technical and Professional Education, in the context of Guantánamo, increasingly requires that teachers master a set of knowledge and skills that allow them to contribute significantly to the training of professionals in charge of directing the teaching-learning process in the Poly-technical Agricultural Institutes. In correspondence with this, the following system of actions is proposed in terms of the preparation of teachers for the design of integrative teaching tasks in the technical subject:

1. Determining the potential of teachers to be able to implement integrative teaching tasks.
2. Evaluation of the level of mastery by teachers of the content of the technical subjects program, as regards: professional problem solving, objective, content, knowledge of the general and specific skills of the subject, methods, procedures, ways of control and evaluation.
3. Diagnosis of the potentialities of the contents of the technical subjects that the students receive each year of study, that allow to create integrative teaching tasks.
4. Diagnosis of the potential of students to assume the process of teaching learning based on integrative teaching tasks.
5. Design of the methodological treatment of the units of the program from the integrative teaching tasks.
6. Determination of the cognitive nodes that will be the object of the integration process.
7. Design of the integrative teaching tasks that will be applied.
8. Development of classes with an integrative approach based on a developmental intentionality.

The authors assume that the following activities should be considered in the implementation stage of integrative teaching tasks:

- Previous Orientation
- Performing the task
- Control

In the orientation phase the teacher must explain the importance and usefulness of integrating teaching tasks, analyze the limitations and strengths that the student has in order to solve it. From that moment he becomes a consultant and ensures that the students take active part in the activity.

The teacher has to guide his students towards the consultation of enough bibliographies that will be used by the students in the research process. It should emphasize cognitive independence as a quality of personality, which presupposes the mastery of knowledge, habits and abilities, and the relationships of individuals as part of the process of activity, its results and its conditions. It will be thoroughly explained what is going to be done, how it will be done and with what resources, and why, and when they will accomplish the integrating teaching tasks.

Guidance is viewed as an essential moment, called to guarantee the student's understanding of what he will do before the completion of integrative teaching tasks. As part of this moment, the following analysis should be made:

• Determining familiarity with the task (what is new, what is already known)

• Conditions of the task, data and information about it.

• Procedures to solve it and at what time to use them.

In the accomplishment of the integrating teaching tasks, the work of the students must prevail under the direction of a teacher who facilitates the cognitive independence, motivates the students for its solution, propitiates the process of assimilation of the knowledge that is intrinsically creating an unlimited desire for knowledge and mastering new and deeper knowledge.

The teacher must be in the control, and direct the process and not just assess the results. Knowledge, procedures and values must be considered, and at the same time encouraged the idea that the activity in it, is a way to acquire new knowledge and appropriate procedures to think.

Likewise, it must achieve the stimulation of the meta-cognitive, reflexive, critical and self-valued processes of students' performance, related to the effectiveness of integration levels through the use of integrative tasks. Finally, the evaluation will be carried out on an individual basis, following the pooling of the responses to the tasks and in accordance with the quality of the tasks, as established in Ministerial Resolution 120/2009.

On the other hand, in the control activity, different modalities must be conjugated, such as self-assessment, which will allow students to express the level of preparedness to solve the tasks; the co-evaluation that will allow them to evaluate on the level of preparation and participation of their peers in the answers to the tasks; and in cooperative learning, through which they will

recognize if the help of their peers and of the tutors was necessary during the process of solution of the tasks.

For the accomplishment of the integrating teaching tasks in the technical subjects of the agricultural specialty (by teachers and students), the following system of actions is proposed:

- Approach the tasks to be performed.
- Accuracy of the system of knowledge and skills necessary for the solution of tasks.
- Design by the students of proposals to respond to the tasks presented.
- Pondering and analysis of possible responses to the tasks.
- Presentation of conclusions by the teacher.

This system is illustrated with an integrative teaching task model in the technical subject Soil Science, of the agricultural specialty.

Task No. 1

Objective: to evaluate the importance of the agricultural soils of Cuba, based on their physical, chemical and biological properties, which makes possible the agricultural development, protection and conservation of the environment in the territory of Guantanamo.

Method: independent work

Location in the program Soil Science: Themes 1, 2 and 3

Technical subjects that integrates: Phyto-technology I and II, Irrigation and Topography

Cuba is located in the tropical zone, where the climatic factors act intensely on the soils, what makes them have great differences with those of other zones of the world; therefore their characteristics and properties are different.

1. List the main physical - chemical and biological properties of Cuban agricultural soils.
2. Refer to the types of structures that can be found in the different horizons that make up a soil profile and which one is considered optimal in the vegetal layer to establish the agricultural crops.
3. What conditions must the soil present in terms of moisture content in order to establish agricultural crops?
4. The color of the soil provides important information from the agricultural point of view. Explain how important it is for the agronomist to know the color of the soil.

5. Maisí and Yateras municipalities are characterized by red, brown and black soils, which would you choose to obtain good agricultural yields, why?
6. List the soils that predominate in the agricultural enterprise and the crops in order of priority that are established in these soils that determine the productive potential of your municipality of residence.
7. Make an assessment of the irrigation techniques that can be used in the predominant soils in your municipality of residence, taking into consideration the topography of the land.
8. Design a technical vocabulary, with not less than 10 words, for the treatment of these contents.
9. Value the importance of studying these contents for the agricultural development of the country and for you as a future teacher.
10. Evaluate the correspondence of these contents with those of the technical subjects taught in the polytechnic where you practice work, and specify its position in the units of the program.
11. Propose possible teaching aids to use when addressing these contents.

Methodological guidelines

In order to fulfill the integrative teaching tasks, an integrative seminar is recommended at the end of the study of these units of the program. To do this, the teacher must distribute the tasks by teams; making the heads of each team responsible in assigning tasks depending on the individual possibilities of each student and taking into account the results of the learning diagnosis.

Finally, students must submit a report that shows the answers to each task, during the debate students must demonstrate preparation in these contents.

In addition, the teacher should guide the basic bibliography: Career CD; Soils and Agro-chemistry, by Juan Pastor Morales, Compendium of Agronomy for the second year II; Technical instructions for crops; Brochures on integrated soil management; Materials in videos, among others.

Results obtained with the system of actions

The proposed system of actions made possible a better preparation of teachers in the design of integrative teaching tasks. This was evidenced in the classroom controls and in the different activities developed in the methodological work of the department, such as methodological workshops with the themes: theoretical foundations on integrative teaching tasks, the professional model of the agricultural career and the educational process plan, determination of the cognitive nodes objects of integration in technical subjects, in which the professional problem was selected as essential.

It was also achieved that students mastered the professional problem that solve the tasks oriented in the topics addressed, and in this way a greater mastery in the integration of contents of several subjects received in the academic year, as well as a better development of professional skills to accomplish each academic year.

Conclusions

In technical and vocational education, agricultural specialty, it is necessary to implement the system of actions to solve problems that arise in the pedagogical work.

Adequate preparation of teachers for the design of teaching tasks with an integrative conception and for systematizing the contents of the technical subjects of the agricultural specialty is the prospective result.

The integrating teaching task allows deepening of the technical and methodological knowledge as well as the development of professional skills in the students.

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