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Distance Learning in Postgraduate Education for Mining and Energy Business Managers in the Cuban Context

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Abstract: Postgraduate education is based on the student being an adult with a certain professional motivation, responsible and capable of making decisions, who assigns a value to what he studies and tries to apply in a pertinent way to his social environment, where the success of his study is based on self-management of learning and the development of the capacity for autonomy. Distance learning is conceived today as a response of contemporary society to the growing social demands of education, as well as the conceptions around the objectives and scope of the educational phenomenon, as the scenarios in which this takes place in the called the information age. In Cuba, distance education is part of the educational strategy; it has been an effective response to carry out higher level studies. All knowledge is influenced by the conditions of the environment where it is created and developed. In the online environment, this complexity grows as learning and knowledge building are mediated differently. As online professors build relationships between students and engage in unconventional but authentic instruction, they must be aware of the ways context as a deeply informative part of understanding educational outcomes. This paper offers the Cuban experiences in mining and energy sector using distance learning for postgraduate education of enterprise managers.

Keywords: Distance, Learning, Postgraduate Education, Enterprise Managers

1. Introduction

The importance of postgraduate education is based, on one hand, on the historical evidence of the centrality of education, research and collective learning in development processes; and on the other, in the need for education throughout life, supported by self-management of learning and socialization in the construction of knowledge.

The incorporation of information and communications technologies (ICTs) has meant an option for educational spaces and the efforts of countries and institutions are geared towards the generation and implementation of initiatives involving the maximum use of technologies in pedagogical processes. In the specific case of Cuba, educational institutions and companies have technological resources, access to the Internet, technology, even when it is not fully mastered, it´s increasingly easy to use. According to the report of the National Office of Statistics and Information -which includes the numbers for 2019-, 7.1 million Cubans are already connected to the internet, represents 63% of the country's population. [1]

Therefore, education using the distance education modality, with the use of information and communication technologies (ICT), becomes a viable economic and pedagogical alternative for the postgraduate improvement of company directors in the mining-energy sector. It is difficult and more expensive to use face to face teaching for workers who are 24 hours a day laboring and have a dispersed location throughout the country.

This article provides the Cuban experiences in the mining-energy sector using distance education for postgraduate improvement of company directors.

2. Postgraduate Education for Business Managers in Cuba

Distance Education in postgraduate education with the use of ICT is based on a legal framework, which is supported by the State, and it is contemplated in the General Education Law, from which the regulations, decrees and provisions are derived. They set the guidelines and specific instructions that determine this educational modality.

The professional improvement of managers in Cuba is a function of the Ministry of Higher Education and it is implemented through a National Strategy for Preparation and Improvement. This one collects all the elements that must appear in terms of improvement for managers, considering aspects of both theory and practice.

In the Regulation of Postgraduate Education of the Republic of Cuba of the Ministry of Higher Education, it is assumed as postgraduate both: academic training activities and professional improvement. In other words, postgraduate education in Cuba is made up of two aspects of work: professional improvement and postgraduate academic training. [2]

The objective of professional improvement is the permanent training and systematic updating of university graduates, the improvement of the performance of their professional and academic activities, as well as the enrichment of their cultural heritage in correspondence with advances in science, technology, art and the socio-economic needs of the country.

The main organizational forms of professional improvement are the course, training and diploma course. Flexibility in the adoption of organizational forms and the rigor of the quality of the offers are the essential characteristics of postgraduate education. Postgraduate activities are carried out in different modalities of dedication: full-time or part-time and with different degrees of attendance: Face to face, e-learning or distance learning.

The Rules and Procedures for Postgraduate Management, of the Directorate of Postgraduate Education of the Ministry of Higher Education of the Republic of Cuba in Article 2 (c) of the office on Organizational Forms and Modalities defines the degree of participation of the faculty in the remote modality where face-to-face meetings with the faculty do not occur or are very scarce and are generally devoted to evaluation sessions and individual or collective consultations. The individual activity and self-management of learning, in this variant, reach their maximum expression. These activities can be carried out through virtual forums. [3]

Although there is a national strategy for the managers' improvement, it must be tailored to each of the sectors or branches of industry or services in each Agency of the Central Administration of the State through the Preparation Systems. For this purpose, there are 20 business schools and 107 training centers in the country, of which 94 are authorized to develop professional postgraduate improvement.

Business schools are educational institutions subordinate to the heads of state bodies, agencies of the Central Administration of the State, national entities, Higher Business Management Organizations, their main mission is to prepare managers, officials and other specialists who require this preparation for their functions and development prospects.

In the mining-energy sector in Cuba, the School of Energy and Mining is the rector of management courses and has the mission of preparing managers that cover the mining and energy industries. The school has faced new teaching challenges by adapting the study programs to virtual teaching-learning environments that correspond to the work and professional reality of managers.

3. Distance Learning at the School of Energy and Mining

The School of Energy and Mining has always focused its study programs on updating, managers of the mining-energy sector, on the contents that allow them better performance. The current situation of the country entails new teaching challenges to ensure that the curriculum corresponds to the working and professional reality of the managers.

Since the foundation of the Higher School of Basic Industry, now the School of Energy and Mining, more than 30 years ago, the pedagogical process has always been supported into traditional training methods, temporal and technological distance exposed the need for an educational change in methodologies that caused contradictions and reactions in teachers with deep roots in communication and management styles, resulted in the use of traditional means of teaching.

For the introduction of distance education, it was necessary to encourage leaders and teachers, to recognize the real status of not only structural transformations but also the implication in personal improvement when entering into the study of the educational potentialities of ICT, especially in virtual teaching-learning environments.

In 2003, a pedagogical experience was carried out for the first time with elements that brought it closer to distance education. It was about training a group of trainers in the subject "Integrated Project Management", who would ultimately develop the same work within the business system of the Basic Industry, current Ministry of Energy and Mining. For this, the teachers were provided with a compact disc and six video cassettes that contained all the information necessary to develop the Integrated Project Management course. Subsequently, in 2004, the school taught a nationwide course for Supervisors in which organizational elements similar to those of the previous year were used and it was possible to deliver each student a compact disk and a book in printed format, with the aim of obtaining directly the content to be received.

Distance education can be carried out in Virtual Teaching-Learning Environments and these are defined by many authors as a teaching-learning process or activity that takes place outside of a physical, temporary space and through the Internet and they offer a variety of means and resources to support teaching, they do not establish didactic models and strategies, but they do provide a new pedagogical vision that is enriched with the use of these technologies. [4]

In late 2008 and early 2009 the School of Energy and Mining began working on the implementation of a virtual teaching-learning environment for distance learning, e-learning, with the collaboration in the University Basque Country together the two institutions developed a process of staff preparation and it was implemented the use of the Moodle Platform for distance education, developing a

methodological strategy of its own to carry out this teaching-learning modality by creating a virtual classroom for this purpose that includes a space for the training of teachers and students.

Currently several types of e-learning are recognized, depending on the degree of presence or even the devices used to benefit from this teaching process. The most important are the following:

1. B-Learning (Blended Learning) learning that is done by mixing traditional learning with different information and communication technologies communication. [5]

2. M-Learning. Use of mobile devices in the processes learning. [6]

3. U-Learning (Ubiquitous Learning). Accessible at any time and place, it is not limited to the training received via computer or mobile phone, this concept transcends them and incorporates any technological means that allows information to be received and enables its incorporation and assimilation to people (videoconferences, augmented reality). [7]

The school of Energy and Mining training plan contains multidisciplinary programs of courses in the distance mode using the b-learning model and u-learning to improve the preparation of the business managers in the mining-energy sector they all take in account the foundations and principles that are referred below.

The use of a virtual classroom platform to support traditional teaching involves the design and development of different and complementary teaching strategies. The virtual classroom tools available are not useful if they are not pedagogically structured, so that students have clarity and can actively participate in scheduled activities. For this reason, it is not a question of implementing a technology because it has to be implemented, but as a necessary support and strategic complementation that will ultimately become a permanent ally for the teacher in the development of his disciplines.

Dissimilar are the bibliographical sources that recognize the existence of seven theories related to distance education. In each one, its promoters propose a different vision of the pedagogical process and sometimes they complement each other. They are:

Theory of distance education and industrial process. [8]

Independent study theory. [9]

Theory of transactional distance and the autonomy of the learner. [10]

Theory of the reintegration of teaching and learning acts. [11]

Theory of the three dimensions. [12]

Theory of guided didactic conversation or interaction and communication. [13]

Theory of communication and control of the student. [14]

In recent years, Spanish academics present a new theoretical proposal on distance education. This one integrates several postulates contributions made on collaborative learning with the use of the computer, a group of characteristics that identify and make distance education unique. It´s defined as "a technological system of mass and two-way communication, which replaces personal interaction in the classroom of teacher and student as a preferred means of teaching, by the systematic and joint action of various teaching resources and the support of a tutorial organization, which provide the autonomous learning of the student". This approach, worked since the 1980s and 1990s, leads to the Theory of Mid-Didactic Dialogue. [15]

It is consistent with the authors who consider distance education as a didactic dialogue mediated by the teacher (institution) and the student who, located in a different space, learns independently and also collaboratively. [16]. Dialogue as the basis of quality distance education analyzed from different dichotomies, dialogues: real-simulated, synchronous-asynchronous, vertical-horizontal, unidirectional -multidirectional, structured–flexible. Learning occupies the central position and the other components are viewed from the perspective of the learning that is intended.

With this assumption now the student is a protagonist of their learning. Participants are sought to relate and apply the content learned to their immediate professional reality through the development of the different activities presented.

For his part, the teacher is considered a facilitator, mentor and advisor who provides opportunities and facilitates educational experiences in the physical, intellectual, and spiritual fields. The teacher uses the guided didactic conversation as a fundamental characteristic of the didactic materials and distance training programs as a competent professional, possessing a theoretical and practical update that allows them to prepare their students so that they can be inserted in real and existing professional context.

The classical pedagogical principles that have cemented education for decades and even centuries are still in force in the digital age.

The pedagogical process of distance education is understood as the conscious, organized and directed processes to the formation of the student's personality in semi-presence or non-presence socio-historical cultural contexts, through the use of information and communication technologies, frankly Active, reciprocal and multilateral social relationship with the teacher / tutor, their peers and the environment, to exchange and build, independently, collectively and creatively, those knowledge that have a social-personal value and thus meet the objectives set by the society, institution, group and individual. [17]

The distinctive elements of this definition makes possible to state that the principles of distance education in the educational context of the School of Energy and Mining are as follows:

Principle of the unity of the scientific and ideological character of the pedagogical process.

Principle of linking education with life, social environment and work, in the process of personality education.

Principle of the unity of the instructive, the educational and the developer, in the process of personality education.

Principle of the unity of the affective and the cognitive, in the process of personality education.

Principle of the collective and individual character of education and respect for the student's personality.

Principle of unity between activity, communication and personality. [18]

Distance education should be a promoter of diverse learning activities that lead to autonomy and self-development of learning in students. For this purpose, in the School of Energy and Mining there is a Web page where the lines of work of the entity and the training actions are stated. The Moodle (Modular Object Oriented Dynamic Learning) platform is inserted in the web page. Companies in the mining-energy sector have access, the contents of the courses are issued, information is exchanged with the students, in addition to allowing access to bibliographic material to support teaching, motivating the use of the technological resources available as a didactic complement that allows to improve the practices and the qualification of the learning processes.

Four types of users are involved in the School of Energy and Mining when using the Moodle platform: administrator, teacher, student and guest. Each plays a different role in editing and developing a course.

Administrator: these have all the permissions on the site, in all courses.

Teacher: three types are defined: course creators, with edit permission and without edit permission.

Students: They can access the course in which they are enrolled, study the lessons, answer tasks, questionnaires, surveys and other scheduled activities.

Guests: They have a minimum of privileges, generally they cannot write within the course.

The learning that occurs in Energy and Mining school is closely linked to job performance, since they satisfy specific needs, so the conception of distance education must respect these particularities, as well as having a specific audience of the sector and culture of the organization, and in turn contribute in to.

Currently, 80% of training actions are carried out in the distance modality in the School of Energy and Mining, in which economic, managerial, English language, and information technologies are dealt with. The educational process is developed as a system integrating the different means of teaching and whose main axis is the study guide, demanding the use of qualitatively superior teaching aids and, on the other hand, the increasing development of the skills of teachers and students. Students, which in turn has an impact on the quality of the process that are aimed at providing managers with knowledge, tools and techniques to improve their business management performance.

4. Significant Progress and Challenges in the Implementation of Distance Education

Using distance education in the School of Energy and Mining, has resulted:

In the progressive loss of the misgivings of teachers towards the use of the Moodle platform.

The presentation of content in various formats, multiplying the amount exploitable online resources,

Change of based on content approach more focused on learning skills,

Possibility of professional improvement achieved by students, who in addition to assimilating the content concerning the specific topics of the courses are able to learn how to work in virtual teaching-learning environments, Moodle platform, managing to incorporate it into their cultural heritage.

The most significant challenges are given because some cultural barriers still have to be overcome in terms of attachment to the traditional way of conceiving the educational process, more knowledge of teachers is needed in the techniques and strategies of evaluation in this modality, the use of Moodle's resources such as glossaries and wiki, the infrastructure must be strengthened to improve internet coverage and increase the number of training actions and student participation.

5. Conclusions

The foregoing refers to the fact that using the distance learning in the School of Energy and Mining with the use of the Moodle platform has made possible to pass graduate studies for directors of the mining-energy sector, reducing travel times and costs, allowing to combine improvement work without negative implications for working life.

The virtual classroom of the School of Energy and Mining with the possibility of using chat, the forum for interpersonal communication, the creation of online exercises has allowed the interaction of managers of the sector with common interests to share knowledge and ideas, promoting debate and group work, influencing the development of professional skills.

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