

## Virtual Environments of Educational Administration to Enhance the Teaching-Learning Process

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### Abstract

Information and Communication Technologies offer through communication, they open a range of possibilities of use that can be located in different areas of education. The proper use of virtual environments of Company Resource Planning or virtual environments of school administration, assume the function of managing the different dimensions of schooling, such as: general organization, teaching-learning, counseling, student participation and community safety. school. The objective of this study was to analyze the importance of virtual environments to enhance the teaching-learning process, showing some of the main characteristics and functionalities of these tools most used in educational activities. The method used was the bibliographic review, the descriptive and inductive with a qualitative approach. The criteria of experts who evaluated the efficiency and effectiveness, as well as the adaptability of these environments to the organizational processes of educational institutions and the development of the teaching-learning process, were analyzed. The results demonstrate a high degree of functionality both in its structure and in the contextualization of three learning platforms, Moodle, Dockeos and Chamilo.

**Keywords:** virtual environments; Education Management; information management; teaching learning.

### Introduction

Often in school administration there are two vitally important topics "educational quality standards and virtual administration environments" which energize and allow the teaching-learning process to advance and adapt to the immediate needs of the educational community. On the one hand, educational quality standards through systematized processes evaluate the quality of education and propose improvements. Virtual school administration environments or also called enterprise resource planning systems offer to streamline this entire process, simplify it and more, but how can we ensure that a virtual administration environment is efficient in this process? Is there a virtual administration environment effective for this process of vital importance in the education of an educational institution? The Ecuadorian state in its constitution, article 15 details that "environmentally clean technologies will be implemented", while, in the same supreme letter, article 16, numeral 4 indicates that "universal access to technology will be provided", mentioning twenty-three times the word "technology" and also limiting that it is the duty of the Ecuadorian state.

In addition to this, it is important to note that in the market there are various virtual administration environments or enterprise resource planning systems that promise to solve the implementation of educational standards and administration to enhance the teaching process, but what he mentions must be taken into account Muñoz, J. (2020) citing (Expósito et al., 2017), noting that the students who currently make up the classrooms have very particular learning styles where they undoubtedly use technology, requiring a methodological change and the use of technologies for Learning and Knowledge, or also called (TAC) and it is important to understand that it is necessary to have a platform that provides organization, compilation and summary of the processes, that grants didactic sequencing giving freedom to the teaching-learning process, with globalized information and evaluation of education.

In Ecuador, several institutions are currently using these tools in the teaching-learning process, at different levels of teaching in process during COVID-19 (Bravo, Yáñez & Rodríguez, 2020), in addition to gamification processes (Loor, San Andrés & Rodríguez, 2020).

### **Materials and methods**

The methods used for the development of the study were: bibliographic review, trying to create a comparison between theories of reliable information through the exhaustive review of articles, books, theses and pertinent legal regulations and guidelines issued by the Ministry of Education Ecuador, which they mention the theme raised.

In addition, the descriptive and inductive method with a qualitative approach was used, which allowed us to understand the use and benefits of virtual school administration environments and how they enhance the teaching-learning process.

### **Analysis and discussion of the results**

To begin with, it must be understood that it is an educational institution of Basic General Education (EGB) and its operation, thus, from the bases determine the existing educational needs and, in the future, we can reach the solution of it. For Martínez, L. (2012), an educational institution is considered to be “organizations that are dedicated to meeting the needs of intellectuality in the human being, community or social group, promoting the teaching of learning in a physical, scientific or technological context”. In relation to this, it can also be mentioned that the objective of the school administration is to manage oversight processes that allow the processes carried out to carry a correct development and therefore enhance the teaching-learning process.

This same educational institution in its processes maintains a structure or flow diagram that allows us to see the hierarchy and determine the procedures in the specificity of educational work in its three general areas of management as observed in table 1.

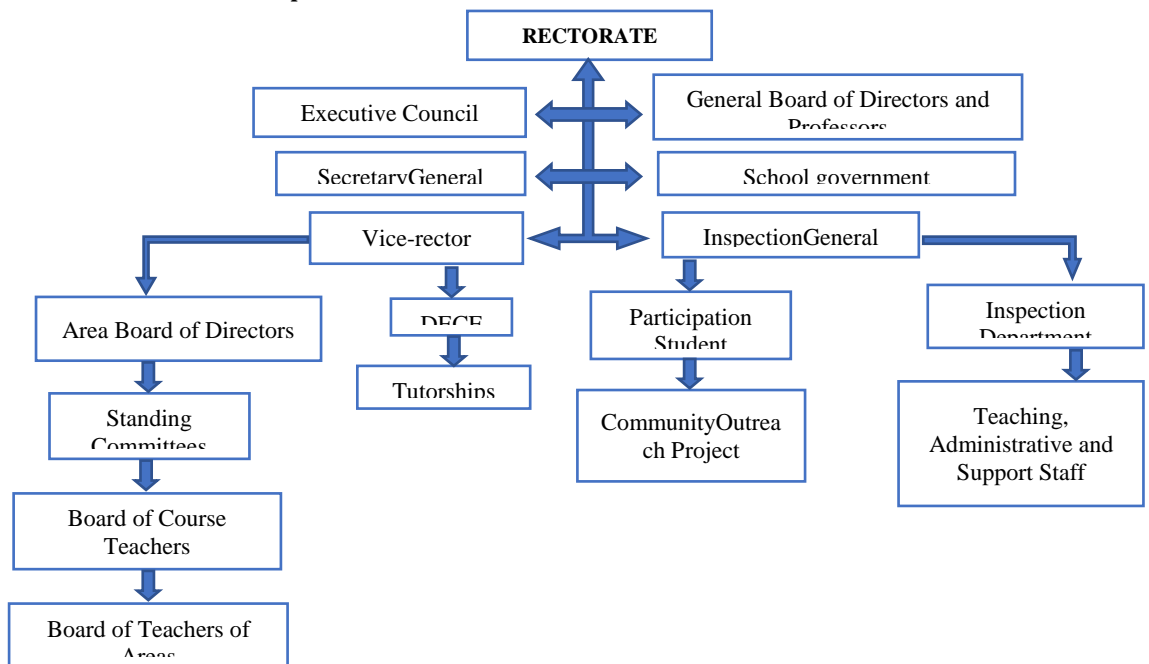
**Table 1. Standards of Educational Quality**

Standards of School Management	They refer to the management processes and institutional practices that contribute to the proper functioning of the institution. In addition, they favor the professional development of the people who make up the educational institution, allowing it to approach its ideal operation.
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Professional Management Standards	Describe the actions necessary to optimize management work and refer to administrative management, pedagogical management, coexistence and school safety; to ensure their effective influence on quality learning of all the students of the educational institutions under their charge.
Professional Teacher Management Standards	They allow to establish the characteristics and practices of a quality teacher. These practices cover disciplinary, pedagogical and professional ethics aspects, which the teaching staff must show in order to develop a quality teaching-learning process.

Fountain:Ministry of Education. (2017). Implementation Manual of the Educational Quality Standards. Public Media EP. ISBN: 978-9942-22234-3

The educational quality standards are parameters of expected achievements, their objective is to guide, support and monitor the action of the groups of actors that make up the National Education System for their continuous improvement. They are distributed in learning standards, school management, professional performance. The Ecuadorian Ministry of Education in the instructions for the implementation of the educational quality standards refers to the standards of school management and professional managerial and teaching performance. At the same time, it issues the dimensions and components that must be executed for the correct implementation and evaluation of institutional education. In this sense, the hierarchy should be considered as an important part since it determines how the institutional procedures manual should be developed, which subsequently affects the teaching-learning process of the students in many ways, as shown in figure 1 the institutional organization chart. In this figure, the basic hierarchical aspects of an educational institution are detailed, which are then converted into procedures.



**Figure 1. Institutional Organization Chart**  
 Source: Ministry of Education Ecuador

As a result of this basic structure other broader schemes arise, according to the institutional approach according to the reality of the educational environment and its academic offer as specified in the (National Education Curriculum, 2016). (Pons-Escat, 2015) mentions that "Although each school has a different operation, they all share a series of characteristics that allow them to develop a vertical that they can use to carry out their internal management" therefore we must take into account that "the function of the administration in an educational institution would be to plan, design, and implement an efficient and effective system for the achievement of teaching-learning in a social environment in which the service is delivered, so that it responds to the needs of the students and of society, that is, take responsibility for the results of this system ", Martínez, L. (2012).

Technology, computer systems and their communication services have become a basic need of the human being in their different fields, one of these is the educational field or educational field, which has had to evolve in its educational strategies and means applied in the teaching-learning process to adapt to the synaptic evolutionary level of the student who fits perfectly with generational technological and industrial changes. Now, based on this educational structure, it is advisable to analyze the different virtual environments for free software school administration.

Information systems are "that set of interrelated components that capture, store, process and distribute information to support decision making, control, analysis and vision of the organization" (Laudon, 2008). information or business resource planning systems among its many definitions stands out the definition of (McGaughey, 2009) mentioning that they are "an information system that integrates business processes, with the aim of creating value and reducing costs, making the Correct information is available to the right people and at the right time to help them make decisions in the management of resources in a productive and proactive way. It is made up of several multi-module software packages that serve and support multiple functions in the company".

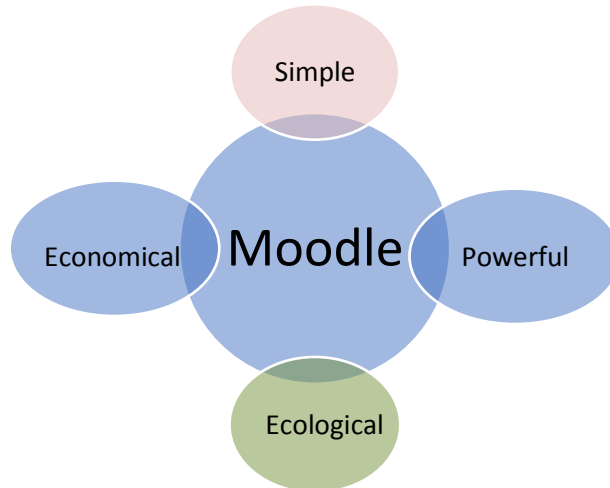
On the other hand, and much more successful we can mention (Laudon, 2008) defining the business resource system s as "information systems that integrate key business processes in such a way that information can flow freely between the different parts of the firm, thereby improving coordination, efficiency and the decision-making process."

In the market there is a great variety of free software that offers to cover this need of the educational system, (Stallman, 2002) defines free software as the software in which the user has the freedom to execute, copy, distribute, study, modify and improve the software, being a great advantage to have access to the source code and to be able to make improvements in its specificity. Other very important advantages as mentioned (Oltra et al. 2011) is that "of free software compared to the owner, its cost is the most relevant factor".

The purpose of software applied to education should be an education with expanded information, improving spaces and community interaction in the process, (Hanna, 2000) mentions that "The challenge is not to rebuild the master class system, nor achieve a totally independent learning via the web. What the universities have to do is build a new learning environment." In this sense, we can assume the institution in its management as a dynamic body for the culturization of its educational community.

## Moodle

Let's start by detailing one of the most used platforms in educational management, being a participant not only in the basic educational context, but it is applied in university educational management due to its great performance and versatility, in this I mean "Moodle"(Ros, 2008) defines it with the following characteristics of figure 2.



**Figure 2. Performance and versatility characteristics**  
**Source: Ros, I. (2008). Moodle, the platform for teaching and school organization.**

The Moodle, "Allows the management of the subject, and there are many uses, from uploading the most diverse multimedia content (notes, videos, images ...) to being able to evaluate the different tasks of our students or take online exams. It is essential for creating "learning objects" or "teaching units" and for promoting self-learning and cooperative learning. It is also the ideal tool to manage the organization of educational communities and allow communication and networking between its different members and with other centers. Being especially useful for the integration and implementation of curricula, communication with families and their use in the extracurricular environment"(Ros, 2008).

The great potential of this platform is defined in the environmentalism mentioned (Ros, 2008), e-learning, simple and powerful in addition to its efficiency and effectiveness in helping the management of educational centers, thus defining its main characteristics shown in the table 2.

**Table 2. Characteristics Moodle**

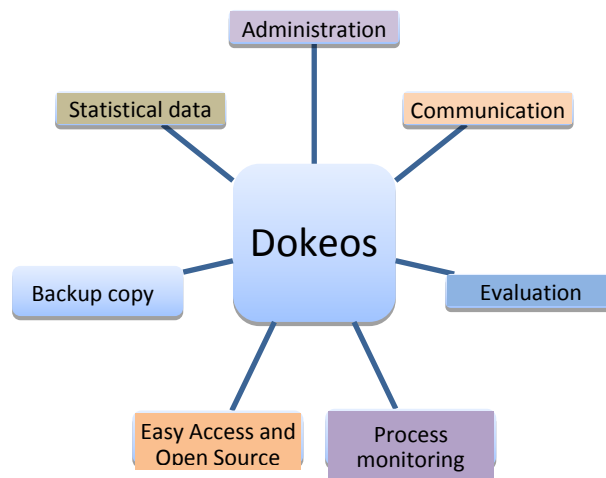
MOODLE	
Ecological It	allows the student to have complete information with digital files and easily stored, in addition to being inclusive, allowing easy access to people with educational needs such as: deaf mute, blind.
E-learning	Allows the teaching-learning process to be handled in synchronous or asynchronous mode
Simple and powerful	It offers us a lot of advantages in online classes, or completing face-to-face learning and virtual student tutorials, in addition to being simple to handle.

Useful in Free and easy tool, enables comprehensive transversal and educational longitudinal curricular development, facilitates common planning and teamwork for the curricular development of each area and classroom curricular development, allows teachers to manage their course in modality synchronous or asynchronous, organizing its contents, tasks or evaluations, favors the participation and involvement of students and their families.

Source: Ros, I. (2008). Moodle, the platform for teaching and school organization

### Dokeos

Another of the well-established platforms in its structure and search for users for its quality in efficiency and effectiveness is the platform “Dokeos” which (Lizárraga and Colado, 2015) mentions its origin noting that “The Dokeos system is developed by an international group of professors and computer scientists scattered throughout the world. The Université Catholique de Louvain encouraged the Institut de Pédagogie Universitaire et des Multimedia’s to develop and distribute this platform. The system, therefore, has countless implementations around the world and thousands of students who use its functionalities (Universidad Santiago de Cali, 2005), in turn, it is vitally important to mention its main characteristics in terms of function detailed in Figure 3.



**Figure 3. Main characteristics of the Dokeos Platform**

Source: Lizárraga, RE, &Colado, AZ (2015). Comparative analysis of Moodle and Dokeos virtual educational platforms.

Table 3 shows the general functions of the Dokeos platform.

**Table 3. General functions Dokeos platform**

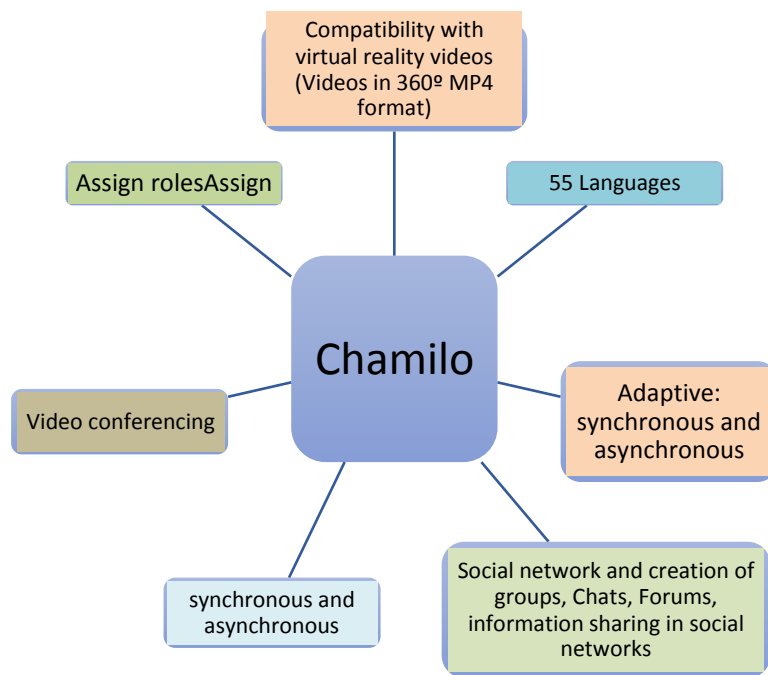
DOKEOS	
Admin	User administration, courses, multisite.
Social	Students can learn from others how to create videoconferences
Docum	Word, Pdf, Pptx, Flash, virtual library
Report	Track progress, times and grades in addition to generating certificates

Scorm	Content entry, Articulate, Captivate, Certify the results
Author	Quick online templates for rapid content development
Scenarios	Learning structure by chapters, weeks or activities as well as construction of case studies.
Exercises	29 online activity templates plus images for medical delineation.
Podcasts	Publish audio in addition to recording your voice online
Mind Maps	maps can be created and imported.
Mind	

Source: Lizárraga, RE, &Colado, AZ (2015). *Comparative analysis of Moodle and Dokeos virtual educational platforms.*

### Chamilo

Chamilo LMS, is a free GNU license platform, open source, modifies and creates complementary elements that allow to adapt this platform to specific needs of e-learning projects. Among its main characteristics are detailed in figure 4.



**Figure 4. Main Characteristics Chamilo LMS**

Source: E-learning & Collaboration Software, 2020, Chamilo LMS and the Association  
 The dynamism that Chamilo presents, stands out for its particularities and ease of functionality, (Cruz, 2018) citing (Rodríguez, 2016) lists in a simplified way five didactic tools of the platform (Content creation tools, Communication, interaction and cooperative work tools, Administration tools, Evaluation and monitoring tools and Technical support tools in line) but each of the benefits provided by Chamilo in its use must be considered in detail, which are detailed in table 4.

**Table 4. Tools and Benefits in the use of “Chamilo”**

CHAMILO	
Characteristics	Import or create documents (audio, video, images) and publish them.
	Build exercises and exams with automatic grading and feedback if required
	Create or import content (SCORM and AICC)
	Configure the delivery of virtual works
	Describe the course components through the description section
	Communicate through the forum or chat
	Post announcements
	Add links.
	Create work groups or laboratory groups
	Establish a virtual classroom (through the videoconference extension)
	Manage qualifications, certifications and competencies in the evaluation tool
	Create surveys
	Add a wiki to collaboratively create documents
	Use a glossary
	Use an agenda
	Manage a project (through the blog tool)
Track students in courses	
Record attendance	
Create a class diary (course progress)	

Source: Chamilo, (E-learning & Collaboration Software, 2020)

Virtual learning environments energize and They operationalize the teaching process, becoming a simple but effective means of communication (Belloch, 2012) citing (Boneu, 2007) mentions four basic and indispensable characteristics of the VLE, which we can observe in table 5.

**Table 5. Characteristics Virtual Learning Environments**

VIRTUAL LEARNING ENVIRONMENTS	
Interactivity	Awareness to the person who is directly responsible for their educational training
Flexibility	E-learning adapts easily to the organization interested in its use, whether in organizational structure or curricula
Scalability It	works in the same way with few or many users.
Standardization	Allows the import and export of courses in SCORM formats.

Source: Belloch, C. (2012). Virtual learning environments.

In relation to this we can note the versatility of virtual environments or educational administration, its easy handling and adaptability in educational business management, however, it is important to remember that the curricular guidelines must have their strategies and their plan manually for the full educational development. In other words,



the EVA and ERP fulfill the function of keeping both the sender and the receiver communicated in a very dynamic and educational way, mentioning in another way is the "medium" within the PEA.

To what has been said, we must add what is established in article 347 of the Constitution of the Republic of Ecuador, in numeral 1 and 8, the Organic Law of Intercultural Education in its article 3 and 5, and Agreement No. MINEDUC-ME -2016-00015-A, which in summary establish guidelines and normative bases for the use of TACs in education, which does not happen and therefore Ecuadorian education continues to produce low levels of academic performance.

Proof of what has been said are the results of the program for the international evaluation of students for development (pisa-d), developed by the national institute for educational evaluation (ineval) in 2018, where it was identified that 50% of students did not, they do not even achieve level two in reading, 70% do not achieve basic mastery of mathematics and 52.7% do not achieve either in science (<http://evaluación.evaluacion.gob.ec/bi/resultados-pisa/>).

The digital revolution focuses on the development of robotics, artificial intelligence, blockchain, nanotechnology, quantum computing, biotechnology, internet of things, 3d and 4d printing. Starting from that context, as teachers and administrators of education, we must seek the necessary mechanisms to activate skills in students and enhance them to the point that they are useful to our society to a great extent.

Education in its generality needs to homologate the evolutionary development of the student in its different stages to achieve a significant advance not only in apprehension within the teaching-learning process but also to ensure that students are the ones who build the process and propose alternatives, in a parallelization education and the productive sectors of interest in the country, becoming organic in the process, to achieve firm foundations that keep the processes in constant innovation.

The educational administration environments provide a benefit to the system, providing globalized information, continuous education and dynamism in the process, through research through an education with a technological, practical and environmentally friendly approach, with the necessary equipment in all aspects that allow work experience, productivity and innovation from instruction, mentioning the right words of (Lev Vygotsky, 1982) that understands human development as a "gradual learning process where the human being plays an active role" we must double efforts, strategies and means to achieve that the country's education is at a level of global competitiveness, where a generational link is achieved between education, industry and technology.

## **Conclusion**

The results obtained showed the benefit that school administration environments provide, with an emphasis on optimizing time, promoting intellectuality and professionalism in human talent and providing real-time information on student participation and management of general information to the entire educational community.

It was possible to conclude through the bibliographic review, the importance, creation and use of virtual environments of school administration, since they give sustainability

to the academic management process to relapse into the teaching-learning process and ensure educational quality in the school system.

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