Didactic ICT Unit Development for Teaching the Geological Ages Comparing a LMS and Social Network Approach for Ninth Grade (High School) Students

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Abstract: Nowadays, most of the virtual learning environments have been shown an individual learning model for those students who live in a specifically social context and this may generate some difficulties on its knowledge acquirement, as long as they are the result of collective social process. Some virtual environment learning models offer a dynamic Social Network grasp that promotes the communication of the participants. This tender involves the construction of a Didactic ICT unit comparing a LMS (Learning Management System) and a Social Network approach about geological ages, directed to ninth grade students at the "Institución Educativa Concejo de Sabaneta", a small municipality in Antioquia. This article centers its purpose on making a didactic unit measure for platforms as Moodle and Edmodo, against qualitative aspects as motivation, accessibility and the learning progress on scholar field.

Key words: learning virtual environment, didactic unit, LMS, social network, Moodle, Edmodo

1. Introduction

This paperwork focuses on inquire, base and implement pedagogical strategies measured by ICT's approach that provide a didactic unit structure for working around evolution concept build among geological ages; having in mind that all of this topic spreads its importance trough the possibility of showing students complex and diverse physical, chemical, and biological process across our actual status regarded to the planet. The main purpose is to reach an internalization of values as the respect for life, the care of the self, the joint responsibility of protection and the responsible use of environment resources.

With this goal in mind, it has been chosen a comparison model between Moodle and Edmodo Platform, in order to analyze in which of both virtual environment the students would accomplished a more integral work regarding aspects as motivation, activities responsibility, tasks and commitments and they attitudinal competences facing life.

2. Background

This paperwork its aim to achieve replication in academic research, it means that the idea stands on the

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relevance of ICT appropriation teaching tools. The next paragraphs will show some related background:

The approach given by Carmona (2013), presents a didactic teaching and learning strategy of metrical thought and the measure systems among the application of ICT as a methodic tool. In this work, he makes an intervention to different students of the educational institution through the application of learning based on "Erudito's" gameplay learning tools, and starting from the perspective of this work, a didactic unit it's been offered, made and checked. Nevertheless, this work presented as a problem, the temporal component needed to its execution, it means that this proposal needs more class time in order to optimize the resources, because it is not enough time to apply these terms.

Consequently, the tender of Iturriago (2011) is searching for the appropriate environments that benefit students learning process starting from ICT's, implementing it in the teaching of the nucleic acids, through a proposal that involves common tools as: multimedia, wiki, learning management systems, forums and cellphones. Despite that, in the same way of what the autor said, it is useful to remark the accessibility and availability of ICT tools to break integrative bounders among ICT's and education.

From a different side, the research of Osorio (2012) pursues the assessment of virtual tools for natural or environmental science learning in elementary education, searching for the information that enable people to appraise pedagogic and didactic tools for teaching, beginning with aspects as the use of language, sequencing and presentation of contents and material objectives. Taking this into account, virtual learning objects have been designed for evaluating the mentioned aspects. Besides that, and as a closure, the author supports that ICT's tools functionality are mainly influenced by their correct planning, but also by the student and the teacher correct use. In the same way, he argues that some quality virtual learning objectives increase the possibilities for accomplishing an educational set of goals. This proposal is focused on making all those things reality by working at educational institutes with teachers and "Edumática" specialized students, but the scope is limited for other educational institutions and natural science students.

Finally, this work is close to classroom proposal made by Martínez et al. (2013), where it is designed and applied a didactic unit about teaching geological ages to ninth grade students, as a vehicle to reach an objective, which is the sensitize of scholar harassment, using Web Quest tools and Social Networking for an interdisciplinary work. As a result, the authors have found as weaknesses of the plan, the inappropriate use of ICT, and as strength they consider it important sensitizing and broadcasting scholar harassment by students-teachers communication through computing means. The linchpin of the overture could be, in a general sense, the geological ages, but its developing may not emphasize this aspect, so it could not be consider as a relevant aspect for the didactic unit making process.

3. Proposal

3.1 General Goal

Developing a Didactic ICT Unit for teaching the geological ages comparing a LMS and social network ground in ninth grade (high school) students.

3.2 Specific Goals

Identifying methodologies and didactic strategies that allow an improvement in geological ages teaching process — Developing a didactic unit comparing a LMS and social network ground for geological ages topic — implementing a didactic unit starting from a case study of ninth grade students — Appraising the implemented

didactic unit beginning with the academic performance and the motivation of the case students, comparing the grasp settled before.

4. Methodology

The present work will be performing a qualitative research, from a case study technic based on Sandoval (1996) text which defines it, among other aspects, as an empirical inquiry that look into the contemporary phenomenon of a real context. That is the reason why this research will be following the next phases:

Chart 1 Research Phases

Phase	Objective	Activities
Didactic strategies and methodologies detection	Making a bibliography tracing of the topics regarded to the concept of geological ages and didactic strategies mediated for ICT's that facilitate learning processes.	Bibliography tracing of geological ages concept. Bibliography tracing of ICT uses on geological ages teaching process. Bibliography tracing of ICT tools that may contribute to natural science teaching.
Development of the ICT didactic unit comparing a LMS Social Network Approach	Design a learning programming unit, supported in an activities sequence with a defined period of time through ICT's, LMS, and Social Network approaches.	Construction of learning objectives that support the didactic unit. Formulation, organization and structuring of needed content in order to accomplish the didactic unit. Delimitation of the methodology used to perform the didactic unit. Formulation of evaluative strategies to obtain information on learning achieved goals from both approaches applied through the didactic unit.
Didactic Unit implementation	Implementing a didactic unit for 9th grade students, in Natural Science area.	Running the didactic unit on ninth grade students at the decided educational institution.
Appraisal of the implemented didactic unit	Check the reaches of implementing the didactic unit on the case of study students appraising each of the used approaches.	Applying the assessment tools that allow researchers to know how many of the proposed objectives were achieved.

5. ICT Tools that May Contribute to Teaching during the Proposal Process

The ICT in the educational field include many useful tools to promote, facilitate and encourage learning, depending of course on the context in which they are used, the disposal resources and the type of competitive and valuable knowledge among the students. The most common used tools are, according to Osorio (2012):

Wikis: they are all of the web sites which easy editable web pages, it means web pages where people can create, edit or erase a shared text, allowing them to promote communication, collaborative abilities, text making and collected information.

Blogs: Web site that allows posting information, having into account the constant feed-backing of readers who post new comments in response to the original post. This web site organized everything chronologically, it is completely free and it does not need advance knowledge for its programming, sharing ideas, opinions and comments.

LVO: the Learning Virtual Objects are pedagogical mediators intentionally designed for learning purposes. The LVO's must be designed having in mind criterions related to validity, didactics, usefulness, interaction, accessibility and the questions what, for what, and who is learning.

Some other tools that could be mentioned are these ones:

YouTube: according to the web site, YouTube allows millions of people to discover, watch and share

originally and personally made videos. YouTube offers a forum planned to user's connectivity, letting them to know diverse information and inspiring people around the globe. This web site could be useful for watching documentaries, tutorials and different explanations, all of them really important to learning process.

Google Tools: for example Google Docs which may be helpful to create, share and edit texts in a collaborative and simultaneous way through Gmail, Google Groups, among others.

Prezi: In accordance with Puente (2010), prezi is an online hoster and a slides editor which allows people to imbibe and re-publish them in different environments. Thus allow them to local download, running the presentations without online connection needed. Prezi is based on Flash software technology. It is basically a location on textual and graphical elements in an authentic panel that designs the slides sequences. By the other hand, it is possible to interact using the zoom to stand out some hide elements in a specific period of time. Not all the elements have the same importance. It is possible to point out that this is a good way to improve and develop student's creativity and aesthetics sense.

Social Network: In the text "Teenagers and Social Network", social network is defined as "virtual communities" or Ethernet platforms that conglomerate people and promote relations based on common interests and information. The main goal of Social Network is to establish contact with online people, building a group of contacts that reflects the significance of a social group. There are too much kind of networks in the field of art, professions, music, subjects and universities. However, in the last years, the most popular networks do not belong to any specific field. Nowadays, the most visited social network are: Facebook, MySpace and Twitter.

LMS: In the text of Carneiro et al. (2009), Segura has mentioned that the Learning Management Systems are platforms that host web pages in a server where students, teachers, and managers are connected through a web browser, having access to different services as e-mail, schedules, forums and contents. The fundamental objective of this platform is to be a type of container for subjects and didactic contents. It is organized according to different levels, showing videos, multimedia material, searching, common questions, contents and programming for midterms, online teachers, and the possibility of creating tools: sending and keeping storage of the files for students and teachers paperwork.

ICT learning seedbed proposal (Semilleros TIC, 2013), represents a space for discussing topics regarded to information, communication and technology. This initiative was possible by teacher's innovation seedbeds at educational institution in Bogotá district. Each one of them has the goal of generate in the long term field pedagogic dynamics for educational processes that includes the ICT's discussion on educational sphere. Searching on the web site tools, virtual projects in class time, and other informational spaces have been published.

6. Expected Results

Currently, the proposal is running for a group of 45 students from the Educational Institution under study, they are attending to the ninth year of studies. Around 20 students are participating into the introductory activities, on the Moodle platform, related to the topic of geological ages. The rest of them are working on Edmodo platform. Through preliminary surveys, it has been seen that students feel appreciation for virtual environment work; they have not had any difficulties to login, access information or with any other online activities.

At the end of the process, and having in mind the results, it is important to determine if the ICT's academic process generated any improvements on students learning process, their motivation about academic training and their attitude to academy. On the other hand, it is expected to know which of both environments generate better

results, if the Moodle LMS or the Edmodo Social Network.

References

Carmona R. (2013). Design and implementation of a didactic unit for teaching and learning of the theme metric thought and measurement system, through the usage of the ICT's: Case study in sixth grade students from the educative institution Inem José Felix de Restrepo from Medellín city. National University from Colombia, science school, Medellín, Colombia.Maestry final essay presented as a partial requirement to get Master's degree in exact and natural science teaching.

Institute for educative research and pedagogical development, ICT's club, available online at: http://www.semilleros.net.

Iturriago V. (2011). Implementation of the ICT's in teaching of   nucleic acids in 10-3 grade students from educative institution Jose Miguel de Restrepo y Puerta. Maestryin exact and natural science teaching, science school, National University from Colombia, head office Medellín, Colombia. Maestry final essay presented as a partial requirement to get Master's degree in exact and natural science teaching.

Martínez Y. et al. (2013). "How to teach geological ages to a ninth grade young students from Andres Bello school from Antioquia county? Issue: aggression, intimidation to students, teachers, cybernetically and fisically. Minuto de Dios University, pedagogic school, seminar of pedagogical tools for natural science", available online at: http://es.calameo.com/read/0023672391a115ad0b293

Murdochowicz R. et al. (2010). "The teenagers and social networks", National Education Ministry, Argentine, available online at: http://www.me.gov.ar/escuelaymedios/material/redes.pdf

Osorio L. (2012). "Virtual tools assessment for natural science teaching in high school", National University from Colombia, Exact and Natural Science School, Manizales, Colombia.

Puente Á (2010). "Tutorial about Prezzi", available online at: http://issuu.com/angelpuente/docs/prezi_tutorial_nueva_version.

Sandoval C. (1996). Qualitative research.Colombian Institute for the promotion of the higher education, ICFES. Bogotá, Colombia.

Segura M. "Educative platform and teachers network.ICT's challenges for educative change", Iberoamerican States Organization for the Education, the Science and the Culture (OEI), Santillana Foundation, available online at: http://www.oei.es/noticias/spip.php?article9240.