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### Impact of a Virtual Social Network of Learning in Academic Performance

Jairo R. Coronado-Hernandez<sup>a</sup>, Amelec Viloría<sup>b</sup>, Jose E. Arias-Perez<sup>c</sup>, Nohora N. Mercado-Caruso<sup>d</sup>, Jenny-Paola Lis-Gutiérrez<sup>e</sup>, Mercedes Gaitán-Angulo<sup>f</sup>

<sup>a,b,d</sup>Universidad de la Costa, Barranquilla, Colombia. Email: <sup>a</sup>jcoronad18@cuc.edu.c; <sup>b</sup>aviloria7@cuc.edu.co; <sup>d</sup>amercado1@cuc.edu.co

<sup>c</sup>Universidad de Antioquia Medellín, Colombia. Email: jenrique.arias@udea.edu.co

<sup>e,f</sup>Escuela de Negocios de la Fundación Universitaria Konrad Lorenz, Bogotá, Colombia: Email: <sup>e</sup>jenny.lis@konradlorenz.edu.co;

<sup>f</sup>mercedes.gaitana@konradlorenz.edu.co

**Abstract:** This paper presents a study of how a virtual social network of learning generates a positive effect on academic performance. A control group was conducted with two courses. Each comprised of 30 students from an academic higher education program; in one course a virtual social network of learning was used and in the other the Moodle platform was used, as technological support to the learning-teaching process taught by the same teacher, for both courses. A test of difference of means was applied and it is concluded that the students who used the virtual social network of learning showed a significant difference in their academic performance in the course.

**Keyword:** Virtual social learning network, virtual learning environments, Moodle.

#### 1. INTRODUCTION

New technologies, and in particular the internet, provide teachers with interesting tools to improve the teaching-learning process. In this paper we study how the use of virtual social networks of learning impact on the academic performance of students. Internet coverage has increased worldwide and with it social networking sites, especially Facebook [1]. For [2] an online social network are virtual communities that allow people to connect and interact with each other on a particular topic or to hang out together online. Facebook is essentially a website that contains a social network where people can share photos, personal information, contact friends, chat, among others. Other similar websites are Myspace, Tuenti, Google+, but the most popular and used by college students is Facebook [3]. Having a clear picture of the use of social networks and identifying students' personal learning environments helps to organize different activities so that they spend a more effective and efficient time. In this dynamic, educators should use all kinds of opportunities to help students participate in more academic activities related to their training [1]. Within these opportunities, in the new technologies are virtual learning environments to support classroom materials and mainly to create 100% virtual classes. In [4] it is proposed that the subjects should be planned differently, so that the student assimilates the contents with a practical and creative use of them.

According to [5] a Virtual Learning Environment is a software system designed to support teaching and learning by providing assessment tools, communication, content loading, student work performance, student group management, questionnaires, tools Tracking, wikis, blogs, chats, forums, etc. via Internet. Examples of these environments are Moodle, Blackboard, Claroline, among others. According to [6] Facebook can positively affect the life of a university student. For example, students may use Facebook to contact other students about course assignments, group projects, or teachers in contact with their students regarding useful links. Now, the disadvantage that lies with Facebook is that it is too public and there are relationships outside the education that cause the student to disperse, this because of the noise generated by the sending of messages, gifts, games, chat, among other tools Of Facebook itself. In this sense, all this limits the learning of the young student in a great way to face many distractors.

## 2. MATERIALS AND METHODS

### A. PHASE I: Design of a Virtual Learning Tool

The design of the tool is part of a Social - Cognitive Pedagogical model. The main objective is the development of the fundamental competences through processes of interaction and communication; Constructed through learning, dialectics, reasoned group criticism, the link between theory and practice, and the solution of real problems that are of interest to the community, which result in subjects of social transformation. In this way, a social learning is fostered where one learns through interactions with others and through knowledge, and the know-how of others [7]. Under this approach the social network fosters a social cognitive learning where one learns by the exchange of knowledge with others and the interaction generating knowledge. It is observed that social support is given through the exchange of verbal, nonverbal messages of emotions and information to help reduce uncertainty and stress [8] in learning. In this way, the sharing of learning is encouraged, which are found not only in books but also in the internet cloud and that can be affordable to all public. At that point, pedagogical mediation plays a very important role in guaranteeing meaningful learning.

A virtual social network of learning is designed as a space where students obtain interacting information resources through didactic means to carry out activities aimed at achieving the goals and the educational purpose. In Figure 1 the interface can be observed from the perspective of the teacher. With the design of the network it is met with the four requirements that every virtual learning environment should have [9]:

- A process of interaction or communication between subjects.
- A group of tools or means of interaction.
- A series of regulated actions related to certain contents.
- An environment or space where these activities are carried out

### B. PHASE II: Controlled Experiment

In the second phase of this work a comparative analysis is carried out by means of a control group. Two courses were taken, each with 30 students of the subject of Operations Research at a University of the Caribbean region in Colombia with 30 students of Industrial Engineering and Systems. The same teacher was used, with the same contents for both courses. In one course we used the social learning network developed in Phase I and the other course we used the virtual learning platform Moodle [10]. Thus, for purposes of this study, both courses have the same experimental conditions, so that conclusions can be drawn [11], [12]. When using the social network of learning, there was an active participation of students and a good spirit to use it. Some statistics of the use of the social network of 07/09/2011 16:25 al 23/09/2011 16:25 son:

The screenshot displays the 'we-connect' platform interface. At the top, the course name 'Investigación de operaciones' and the teacher's name 'Profesor: Jairo Coronado' are visible. The course details section shows the teacher's profile, the course title 'Ingeniería Industrial', and '3 credits'. A description states it is a branch of Mathematics involving mathematical models, statistics, and algorithms for decision-making processes. A 'Compartir' (Share) section is present with social media icons. A comment from Alejandro Junior Rivera Hoyos is shown, dated 26/09/2011. On the right, the 'AGENDA DE ACTIVIDADES' (Activity Agenda) section lists two classes: 'Administración de producción y operaciones' on 08/09/2011 and 'Investigación de operaciones' on 23/09/2011.

**Figure 1: Course interface from a teacher's perspective**

- Total Comments: 228 Total links, xls, doc, pdf, youtube: 32
- Average Comments per day: 14,25
- Average links, xls, doc, pdf, youtube shared per day: 2
- Total Students: 30
- Total Friendships within the app: 59
- Total Friends requests not accepted: 24

It can be noted in the statistics that although there are 30 students in the course, the registered people are 59. The difference are students from other courses who are starting to use the tool for academic purposes, given that Facebook does not allow file sharing in shape From tweet.

### 3. RESULTS

The results show that the course that I use the virtual learning network shows a significant difference when comparing the notes of the first cut with respect to the course I use Moodle. These results are concluded by applying a test of statistical t-student sample comparison in which the hypotheses are hypothesized that the mean scores of both courses are the same or are different as shown in Figure 2. In this way, the Notes of the students who are using the Virtual Social Learning Network have better performance in the subject than those who use Moodle.

When applying the test of mean comparison hypotheses, knowing that the standard deviations are equal, the null hypothesis is rejected and it is determined that there is a difference of means, as seen in Figure 2 and in the diagram of boxes and mustache In Figure 4. The assumption that the deviations are equal is corroborated

by applying the F-test determining that the hypotheses are not rejected (Figure 3), ie the standard deviations are homogeneous.

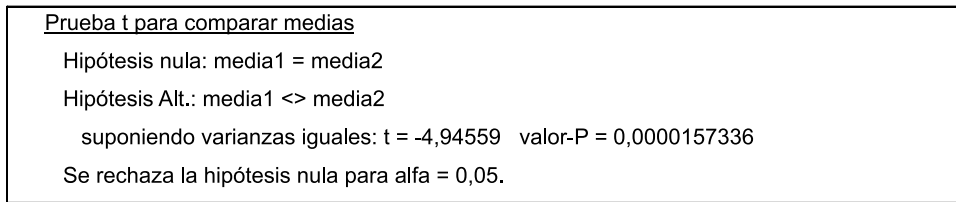


Figure 2: Comparison of means

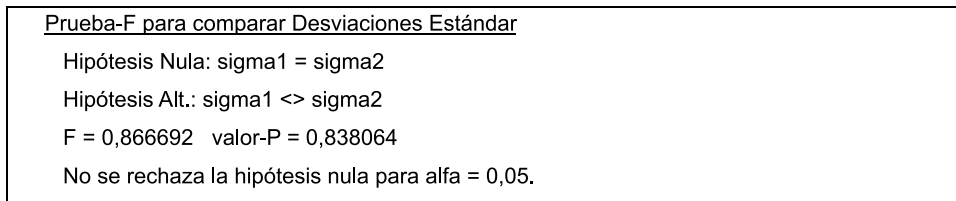


Figure 3: Comparison of standard deviations

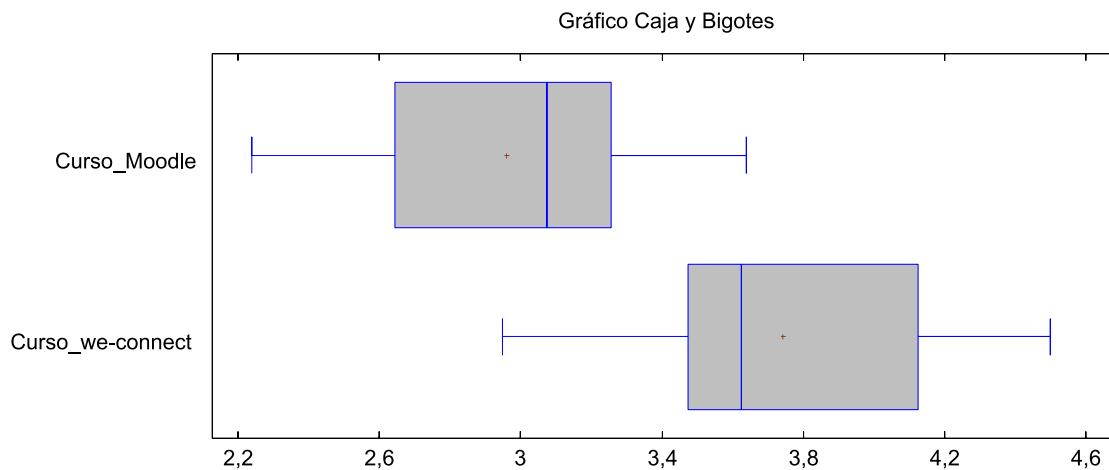


Figure 4: Box and mustache chart

It can be shown that there is a significant difference between the two Virtual Learning Environments. In this way it is possible to conclude that the Virtual Learning Environment must evolve towards an educational social network.

#### 4. CONCLUSION

This paper shows how virtual social learning networks make students better able to perform academically. This is possible thanks to the non-linear interaction of the students. When comparing the grades of the course where the virtual social network of learning was applied, a better academic performance was obtained with respect to another course in which Moodle was applied.

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