ANALYSIS OF THE USE OF INFORMATION, COMMUNICATION AND COLLABORATION TECHNOLOGIES THROUGH A TEACHER TRAINING PROGRAM AND THEIR INFLUENCE ON THE TEACHING-LEARNING PROCESS

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Abstract

Currently is a necessity to adapt the teaching forms to new generations in order to ensure quality in education and produce human resources competent and able to resolve any situation that arises during their professional performance. The incorporation of new technologies such as Blackboard, ANGEL 6.2 and eCollege platforms, or blogs and multimedia material among others, could help achieve this purpose. This tools are able to cover the needs of students and teachers because they are easy to use and offers a clear and homogeneous navigability in all its. At the Autonomous University of Baja California (UABC, Universidad Autónoma de Baja California) is specially using the Blackboard platform, this, contributes learning through communication and collaboration, it is also a potential tool to promote the scientific, economic and cultural country growth. Although it does not require knowledge of programming or graphic design since it has a friendly environment, the platform implementation as a teaching tool implies that teachers develop special skills using Information, Communication and Collaboration Technologies (ICCT) and their classroom incorporation should be done progressively, is also necessary to design a comprehensive system of evaluation to ensure the continued platform use and promotion and dissemination of the ICCT resource usage to improve the teaching-learning process and change the way to teach in which case teacher motivation roles an important point. Particularly in the Center of Engineering and Technology (CITEC, Centro de Ingeniería y Tecnología) have been created and special program to train all UABC teachers provided by two strategic programs of academic support PEAA (Programa Estratégico de Apoyo Académico) and CEA (Centro de Educación Abierta) both programs are aimed to prepare teachers using ICCT resources to improve their productivity in addition to supporting its own acquisition of knowledge about subjects on pedagogy and contribute their own professional development. However some interesting points have been observed by using field research, e.g. the engineering teacher interest response to those programs oscillates between 30 and 35% the majority consider this courses as a waste of time. In this work we present an important tool (Software) to analyze and measure de incorporation grade of the ICCT on the classroom and improve the teaching-learning process, this software consider if the teacher has taken training using ICCT and throw an index that show how the use of ICCT influence over the teacher evaluation on the student opinion. We consider this is a useful tool to record teacher performance and they take important decisions on its own formation.

Keywords: ICCT, Teacher training program, Blackboard, teaching learning process.

1 INTRODUCTION

The search for new teaching methodologies that ensure meaningful learning in higher education students, and including the rapid growth that have taken *Information, Communication and Collaboration Technologies* (ICCT) have set the standard for the constant pursuit of higher education institutions of new ways to improve their teachers practice and adapt them to new generations. Interestingly, this problem related to how to teach? And possible resources to solve it, is not a current education system problem it has being also present in the educational reforms of the various countries of the world long time ago [1].

The teacher's training process should be through an effective model that covers several topics, it must provide to teachers pedagogical and psychological tools to ensure and assertive communication on classroom, they must be able to elaborate teaching materials (e.g. videos, group dynamics, blogs, etc), also they have to keep up on technology advance, for example the use of virtual platforms to improve the communication and collaboration that ensures competent human resources, leading to a big challenge because it means that the teacher should be motivated, besides having extra time to do

so. For some years the Autonomous University of Baja California (UABC) has been providing teacher's training programs on the ICCT use to their professors, however to our knowledge there has been no analysis of how effective this training has been, the purpose of this paper is to determine the degree of incorporation of ICCT particularly in classrooms of the Center for Engineering and Technology (CITEC) of the UABC.

1.1 Information, Communication and Collaboration Technologies

Due to the current global trend that promotes the incorporation of Information Technology, Communication and Collaboration (ICCT) on teaching-learning processes, México goverment has set objectives and strategies at the National Development Plan (PND, Plan Nacional de Desarrollo) 2007-2012 [2] in order to join the technological impulse. One of this objectives is: *To promote the development and use of new technologies in education to support the inclusion of students in the knowledge society and expand their life skills* [2]; This initiative opens opportunities to higher education institutions to raise technological approach projects with models attached to their educational and institutional development; The PDN objective described above include technology strategies such as *The promotion of teachers training on access and use of new technologies and materials ... and also the promotion of access to different education system campuses throughout technology platforms.*

The Autonomous University of Baja California (UABC) sets initiatives within its Institutional Development Plan 2011-2015 (PDI), where highlights the importance of incorporating ICCT in the transmission of knowledge and innovation in educational processes. Management of information technology in the UABC is regulated by the Open Learning Centre (CEA) which was created in 2006, with the aim of "providing institutional services as management of online courses*, providing advice, training and additional services of information technology for teaching educational programs requiring by the UABC "* [3] therefore training services, upgrade, consultancy, dissemination of information technology management is under the CEA; for each Academic Unit UABC creates a CEA Coordination and in turn the CEA Coordinators working in a collaborative network of various technological projects for its inclusion on the University.

Nodaways as a campus of UABC the Engineering and Technology centre presents the higher classroom incorporation of ICCT index, including high rates of teacher training and upgrading in technology, above meets the needs of new teaching practices to be consistent on strengthening the graduate labor skills of a competitive market in technology. In CITEC is considered immediate the classroom integration and technology adoption, this, in order to reduce the currently present digital gap especially between teacher-student by factors such as age, discipline, lack of motivation, lack of training, culture, resistance to change, among other.

Candolfi, Avitia, & Oviedo [4], ensure that: It is teacher's responsibility to integrate in the teaching-learning process activities and tools that meet the requirements required by labor sector*. These new skills include the ICCT incorporation, that even the new generations of students adopt it so naturally,* then highlighting the importance of teacher training in ICCT, to not affect the generation gap in students skills development that leads to decreased quality of educational processes.

1.2 Teacher training in México

The Autonomous University of Baja California offers top-level educational services to a large percentage of the student community in the state of Baja California in México, and because of the wide variety of educational programs that offers, the academic staff is made up of professionals with extensive experience in their areas of expertise, but most with little teaching experience, because of this and in order to follow the National Development Plan where is proposed as a strategy to Enhanced teachers training, promoting its direct link with the priorities, objectives and educational tools at all levels [2] has created a department dedicated exclusively to the pedagogical teachers training, *Flexible Training and Professor Development Program* aims to strengthen the professionalism, training and updating of the UABC academic staff, in the theoretical, methodological and technical related to teaching issues. The program is flexible because it offers a dynamic structure that allows to adjust the interests of each teacher [5]. This program is divided into several dimensions, one of them is the educational model, the objective of this dimension is to present how is conformed the competency educational model, which is the teaching model that is being implemented in the UABC in a few years. Another important dimension is "Basic competencies for university teaching" which seeks to develop educational and pshicological tools to improve their performance in class and

of great interest to this work is the dimension in information, communication and collaboration technologies (TICC), this dimension seeks to prepare college staff using ICCT as elaboration of teaching materials, other communication media as blogs and web page and particularly the use of Blackboard virtual platform among other.

2 METHODOLOGY

2.1 Data adquisition

The teacher training deparment of CITEC organizes the delivery of training courses in the use of TICC leaning with expert instructors who are part of the UABC's Open Learning Centre (CEA), Also is responsible for conducting outreach to invite full-time professors (FTP) to participate in them, and electronically records, the number of teachers who have been trained in this area. The training courses are directed from a basic-intermediate-advanced level, addressing various skills such as the use and application of classroom ICCT, learning modalities, instructional design of online courses, driving courses online, learning evaluation supported on ICCT, information resources and teaching utilities to name a few. Figure1. Describes the percentage of trained professors and missing training on this topic; results shows that 87.2% of 47 professors under revision have been trained.

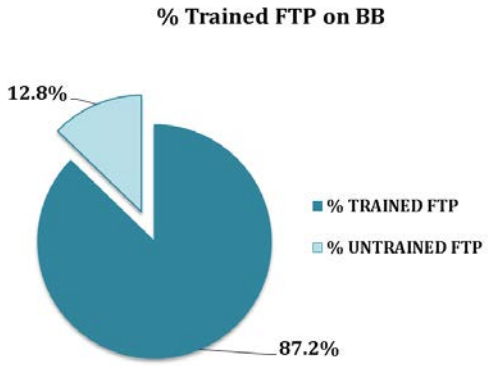


Figure 1. *Shows the percentage of full-time teachers who have been trained in the use of ICCT.*

To follow the grade o ICCT classroom incorporation after receiving teacher training, the Open Learning Centre coordination of CITEC, monitors the amount of current assets and tools used in the Blackboard platform. The results obtained from this data is shown in figure 2.

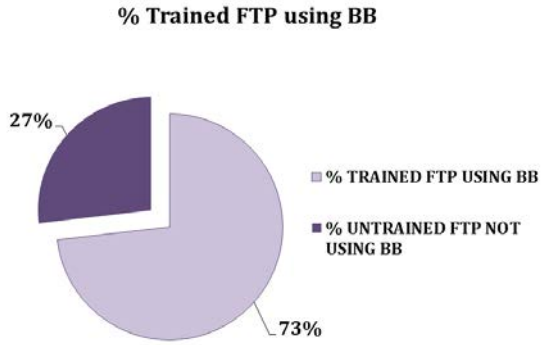


Figure 2*. Show percentage of trained Full Time Professors (FTP) using ICCT as support tool on their classes, as recorded CEA coordination of CITEC.*

To visualize the ICCT incorporation under student opinion, UABC is applying a semester teaching evaluation survey where the value of using ICCT is one of the most important. In the survey conducted in the 2012-1 cycle, actually found that 73% of trained teachers use the blackboard platform as

support tool on their educational practices, as well had been reported by the CEA. Here are the questions integrated in the survey with the technological approach:

1. **¿Teacher uses ICCT in the classroom?**
2. **¿Teacher uses supporting teaching materials?**

Results obtained from this survey are shown on figures 3 and 4 respectively.

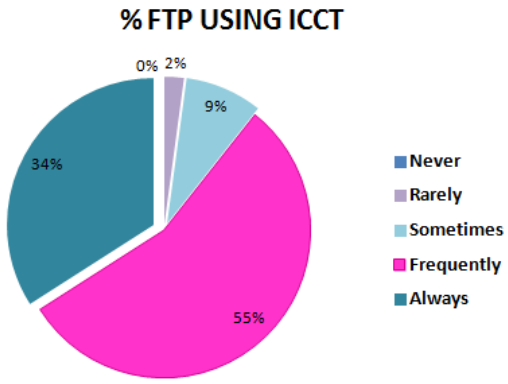


Figure 3. Show percentage *of FTP using ICCT as supporting tool on their classes.*

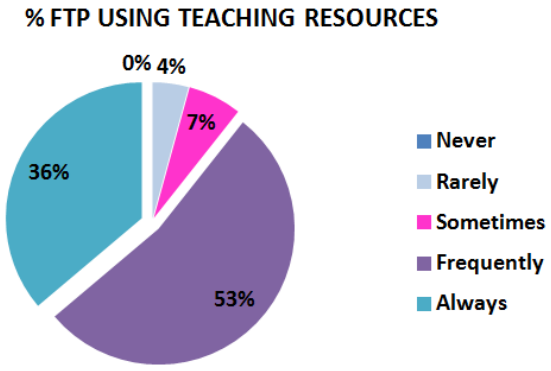


Figure 4. Shows percentage of FTP using teaching materials *as supporting tool on their classes.*

Figures 3 and shows that most of students say that full-time professors use ICCT tools or others digital materials, however there is a small percentage oscillating between 2 and 9% that is not using ICCT in their teaching practice.

2.2 Statistical tool

In order to monitor the use of technological tools in teaching learning processes, using semaphore technique, has been created a indexes program based on "Microsoft excel software" allowing to teacher program coordinator to follow up each professor on this issue and address them in a more objective and relevant way according to their needs. This program requires information as: 1) Total number of professors, 2) Students opinion in the use of TICCS and use of technological learning resources, which are obtained using a "Likert" scale (never, rarely, sometimes, frequenly and always) and finally 3) Name of offered courses. Basically this simple tool compiles all information presented on section 2.1 and gives a particular view of each teacher under training process. Figure 5 shows a windows of how this tool looks to user.

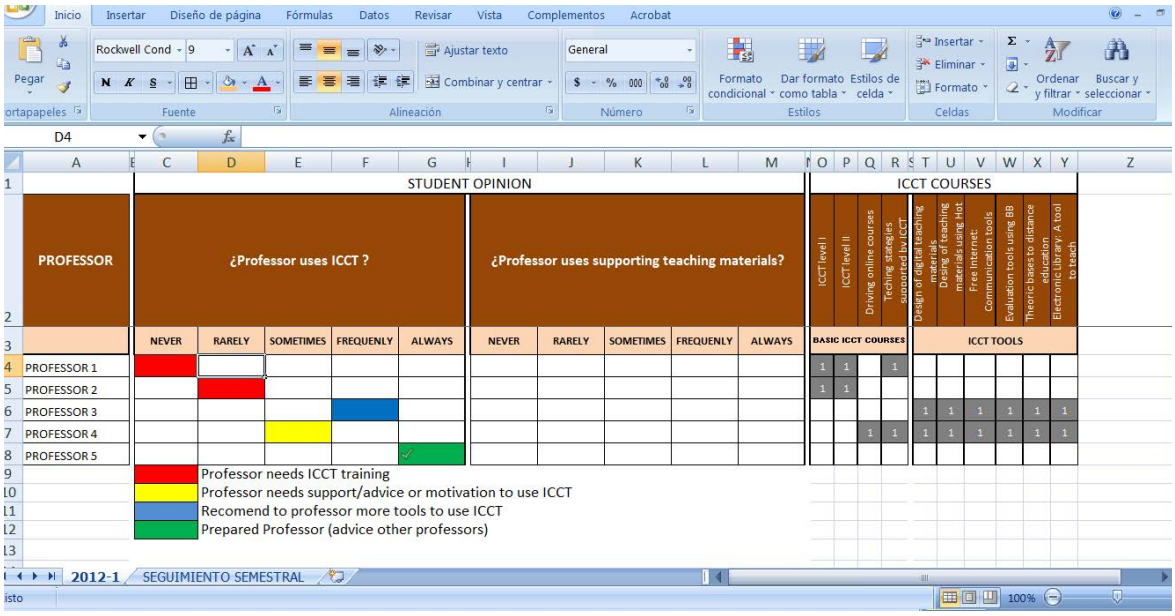


Figure 5. Statistical tool to monitor teacher training *program* performance.

2.2.1 Operability

- When professor has obtained obtain a "Never" or "Rarely" grade, will turn on a "Red light" meaning that professor has to take the 3 grayed courses showed on the right side of figure 5.
- When professor has obtained a "sometimes" will turn on a "Yellow light" meaning that professor has to take al least 1 of the grayed courses showed on the right side of figure 5 or that he maybe needs advice or motivation to use ICCT resources.
- When professor has obtained a "Frequently" will turn on a "blue light" meaning that professor is really close to achieve the goal, es a good results but could recommend to take some course to motivate him.
- When professors have obtained a "Frequently" will turn on a "blue light" meaning that professors are really close to achieve the goal, is a good results but could recommend to take some course to motivate them.
- When professors have obtained a "Always" will turn on a "red" meaning that professors have achieve the goal and they could help other professors to achieve their own goals.

3 DISCUSSION AND ANALYSIS

According to graphs presented on section 2.1 can be conclude that the majority of professor from CITEC use ICCT on their teaching strategies to improve their way to teach. Regarding the opinion and perception of students, figure 3 shows that 34% of professors *"always"* incorporate the ICCT use on classroom against 55% of professors that *"frequently";* Therefore it is possible to deduce that 89% of teachers is taking advantage of the training track through the inclusion of technology in their courses; In addition to adopting the use of Blackboard Virtual Platform also using digital tools and support materials, result students say that 53% of teachers "always" use digital support materials and 36% of teachers do it *"frequently"*, also remarking that 100% of teachers on at least one occasion during the semester uses digital teaching materials, as well shown in Figure 4.

In the graphs of Figures 3 and 4 is also shown that most students say that teachers incorporate ICCT or other digital material support into their, but there are a percentage ranging between 2% and 9% that is not yet despite they have receive training. So it is important to propose a support tool for each of the teachers, so they can make decisions about their training. The statistical tool shown on section 2.2 has been an important tool to teacher training coordinator of CITEC to make decision about the course offerings for each scholar period.

4 CONCLUSIONS

Results show that 87.2% of the 47 teachers have been trained, which indicates a high average considering that CITEC is a newly established center (3 years) and that semester after semester are new incoming teachers to the faculty. In addition to this we can deduce that incorporating classroom ICCT is almost immediately to the teacher training according to figures from CEA analysis, because 73% of teachers in training ICCT use their teaching. From the results it is imminent the importance of teacher training for the promotion and incorporation of ICCT classroom, creating innovative collaboration scenarios student-student, student-teacher, wherein the generation gap is not a negative indicator and effective knowledge transmission is insured, highlights that with proper planning and gradual training structure, is simpler and convenient for the teacher to venture into technology issues support and mentoring proportionate by expert instructors in the area, and also a constant accompaniment which is reflected in the positive opinion and skills of students.

REFERENCES

[1] Hernández, L., Hernández, C. (2011). Hacia un modelo dinámico y eficiente de formación del profesorado. REIFOP, 14 (1), 53-66.

[2] Sistema Nacional de Planeación Democrática, http://pnd.presidencia.gob.mx/

[3] Universidad Autónoma de Baja California, http://sriagral.uabc.mx/Externos/Acuerdos/Rector/21.pdf

[4] Candolfi, N., Avitia, P., & Oviedo, E. (2011). ¿Innovación en arquitectura?, una respuesta en la aplicación de las TICC's en el nivel académico y profesional. III Tercer Taller Internacional de Educación a Distancia; III Congreso Cubano de Desarrollo Local .

[5] Universidad Autónoma de Baja California, http://www.uabc.mx/formacionbasica/fdocente.htm