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With Tools and Strategies Teachers Use in Online Courses: A Mexican Public University Case

Lewis McAnally-Salas, Erika Judith Espinosa-Gómez, Gilles Lavigne
Universidad Autónoma de Baja California, México

The rapid development of ICT (information technology and communication) in the last two decades has changed society substantially as a whole. For higher education institutions, the external environment pressure to incorporate ICT in their educational and administrative processes has forced them to invest in resources for infrastructure and training. In addition, teachers have found that they can use technology in their teaching, but lack of full knowledge of how to use it effectively from a pedagogical point of view. The incorporation of new education modalities depends largely on the contextual variables prevailing in the institution and teachers. In UABC (Autonomous University of Baja California), the early days of online education go back to 1996, so the study period was from 1996 to 2009. An online survey was designed to find out the teachers' backgrounds and involvement in online education, their experience as online teachers, and the tools and practices used. Of 97 teachers who were identified with some experience in online teaching, 70% responded to the survey (68). It was found that the highest percentage (33%) of teachers who responded the survey started teaching online between 2003 and 2006. 56% of teachers have been teaching between one and five online courses. On the other hand, most teachers recognized that 30%-79% of the content of their courses were online based. The most popular learning management system used is moodle followed by blackboard in teachers' preference. In general, teachers expressed using the three main communication tools of online education: forums, chat and e-mail, favoring the use of e-mail. The communication strategies teachers often use in their courses promoted student-student and student-teacher interaction. In their evaluation strategies, most said that they used self-assessment, rubrics and to a lesser extent online exams and co-evaluation. The results show that most teachers who have been involved in online education in UABC campus have expressed having similar practices, which should not be surprising in a relatively small community where it is easier to standardize successful practices.

Keywords: online teaching, teaching strategies, teachers' practices

Introduction

The rapid development that ICT (information and communication technology) in recent decades has substantially changed society as a whole. Following this development, authors such as Dolence and Norris (1995) talked about the transition from the industrial to the information age. Also, agencies like the World Bank (2002a; 2002b) and OECD (1996) posed a new knowledge-based economy that demand HEIs (higher

Lewis McAnally-Salas, Ph.D., Instituto de Investigación y Desarrollo Educativo, Universidad Autónoma de Baja California.
Erika Judith Espinosa-Gómez, Instituto de Investigación y Desarrollo Educativo, Universidad Autónoma de Baja California.
Gilles Lavigne, Instituto de Investigación y Desarrollo Educativo, Universidad Autónoma de Baja California.

education institutions) a paradigm shift in the teaching-learning processes and change that is fostered by Mexican national organisms, such as the SEP (Secretary of Public Education, 2001) and the ANUIES (National Association of Universities and Higher Education Institutions, 2000).

For the HEIs, the pressure of external environment to incorporate ICT in their educational and administrative processes has made them invest large quantities of resources in infrastructure which were not always used in the best way (McAnally-Salas, 2007). Moreover, teachers have found that they could use technology in their teaching, but lack of full knowledge of how to use it from the pedagogy standpoint.

In this context of technological growth, the Internet is a disruptive technology that has rapidly changed everyday life in HEIs. Precisely, this ubiquity of the Internet opens the possibility of improving teaching practices to the point that facilitates the transition to focus the educational process on learning. While initially, the tools of the Web found their natural application in distance education as a way of overcoming the limitations of interaction of traditional models, their use is not restricted to this type of education (McLoughlin, 2000). We can generally say that in Mexico, as in the world, incorporating Internet in higher education does not have a long tradition, therefore, it prefers the insertion and experimentation of distance education as complementary support (Mahony & Wozniak, 2005). This insertion involves the setting of online syllabus, alternating face-to-face sessions with online activities (Belanger & Jordan, 2000; W. Horton & K. Horton, 2003) or completing online courses.

It is common that the incorporation of ICT in teaching practices and instructional design of courses by teachers has been somewhat spontaneous, lacking institutional backing, the official knowledge or recognition. For Bates (1997), the incursion of teachers in online education was carried out through the approach of the “Lone Ranger and Toro”. Bates defined it in this way because the teacher on his/her own initiative involved in designing Web-page to distribute the contents of his/her ongoing course with the help of one of his/her students who have computer skills. Even today, despite of the proliferation of tools for easy integration and extensive use, this practice is still considered as innovative. Innovative players of the community usually make these changes, as Rogers (1995) suggested. Elgort (2005) confirmed this situation in a study involving the adoption of online education in Australian, New Zealand and UK universities. If the results achieved by innovative teachers are good, they will often be the spearhead to propose larger projects. The awareness of the achievements in the implementation of these technologies by academic or related institutions attracts the interest of the authorities responsible for the HEIs. One strategy used to “institutionalize” the practice is by incorporating specific technology platforms for this purpose.

The adoption of new educational methods depends largely on contextual variables of the institution, and for teachers and higher education institutions, venturing into online education has become something that is apparently easy to be helped by the development and availability of so-called LMS (learning management systems) or virtual schools. These technology platforms are available commercially, such as WebCT ®, Blackboard ®, Virtual-U ®, Learning Space ®, and more recently as a free open source platform, like claroline, moodle, courseInfo, among many others. These systems claim that they have an advantage: Their use is so simple that a teacher with minimal training can use them. On the other hand, it is pointed out that the easiness of uploading the course contents to the Internet in a technology platform can become a serious disadvantage. It can create the illusion that the indiscriminate content transfer of a course, which is designed to be taught face-to-face to a Web serve, makes an online course (Elgort, 2005; Phillips, 2005).

McAnally-Salas and Organista (2007) indicated that online education is a complex process that easily

causes confusion among its users for the wide range of choices and perceptions of teachers and authorities of the HEIs. Clearly, the concept of online education has to be constructed by actors in discussion process about its forms and its foundations. This lack of agreement on the nature of online education between the university authorities and involved academics could explain the perception among scholars of what Van der Klink and Jochems (2004, p. 151) called as "high-level ambitions with poor instrumentation". Traditionally, at institutional level, training of teachers is organized by some form of department or training center that trains teachers to incorporate online learning into their instructional practices.

For Rosenberg (2001), online learning and knowledge management implied a certain level of institutional change, because the traditional structures of training were unable to meet the demands of innovative processes in the organization—a situation documented by McAnally-Salas (2007) for UABC (Autonomous University of Baja California). To incorporate innovative processes in any social structure is a complex process that, for its success, needs to understand how the dissemination and adoption of innovations processes occur. For Rogers (1995), the diffusion of innovations is a communication process that seeks its adoption or sustainability in a social or institutional context.

Thus, for online education, the form and scope that innovation takes to integrate teaching practices, has to do with formal and informal processes that occur within the organization. These are often undertaken under a simplistic cause-and-effect approach, where relationships are perceived as linear such as need/problem > acquisition of "innovative solution" > training/development > adoption of innovation > satisfaction of need/problem solution. Added to this, online education at UABC has had a very irregular development due to in-consistent policies between administrative periods, resulting in a range of group and institutional initiatives. These make it difficult to know what the real diffusion of online education in the UABC was. It should be noted that in the Ensenada Campus of UABC, the first online education projects were implemented. This situation makes it a research area of particular interest to know the level of online education adoption in campus.

We believe that identifying and understanding the current diffusion status of online education allow us to suggest policies and strategies conducive to the best educational practices demanded by the knowledge society, being online education one of the most promising methods.

The objective of this work is to know what are the tools and strategies used by the professors involved in online teaching in the Ensenada Campus of the UABC, Mexico, during a 13-year period.

Method

UABC Context

The UABC is a public institution distributed on four main campuses: Ensenada, Mexicali, Tijuana and Tecate, serving over 40,000 students. It is an institution with an organizational structure that corresponds to a typical vertical bureaucratic mechanistic form. Its structure and hierarchical division corresponds to a scientific management organization, according to the classical management theory as proposed by Morgan (1996) and Hatch (1997). It is on the Mexicali campus where decision-making process of the university takes place.

(1) Period 1995-1998: The beginning of online education at UABC aroused from isolated individual initiatives that can be traced to mid-1996. In 1998, the promotion and information began between academics about the use of electronic tools for learning and online education mainly in the Ensenada Campus of UABC;

(2) Period 1999-2002: During this period, distance education received particular attention from the central administration of UABC, considering it as a strategic program. In early 1999, a corporate initiative involving

academics started the development of the model for open and distance education of the UABC. For its implementation, a greater emphasis in the technological dimension was given when compared to the pedagogic dimension and both were often disarticulated. In this period, the UABC contracted the first commercial technology platform for online courses (Virtual-U ®) used in UABC. In the interest of not depending on external platforms that required licenses agreement, in 2000, UABC began the development of its own LMS called as UABC-Virtual;

(3) Period 2003-2006: During most time of this period, the initiatives of the prior period were not continued, and this was in fact a period of institutional stagnation and the initiatives that continued were the ones from the teachers who started using Sakai and moodle to support their courses. However, at the end of this period, a CEA (Center for Open Education) (by its capitals in Spanish) formed in the Mexicali campus, which developed its initiatives around the blackboard platform;

(4) Period 2007-2009: During this period, institutional initiatives aroused from the CEA, which sought to institutionalize its efforts in training teachers to integrate technology into their teaching practices, and sought to institutionalize the use of blackboard, in detriment of the other platforms used. The CEA, has made constant efforts to provide greater independence to the other campus by placing CEA initiatives coordinators and training teachers, but it had relative success, because in practice, CEA operates in a centralized fashion. In parallel, many teachers continue to use moodle for the relative advantages they conferred.

Survey

An online survey was designed to find out the teachers' background and involvement in online education, their experience as online teachers, and the teachers' tools and practices used. The survey was designed with four objectives in mind: (1) to know the background of teachers involved in online education; (2) to be used in such a way that with a "snow ball" strategy, the answers from the first group of teachers allow the identification to other teachers involved in online teaching; (3) to identify their social networks related with their involvement in online teaching, technical and pedagogical support; and (4) to know the beliefs and practices that each academic has about online education.

The survey was designed using Lime Survey and was distributed via the Web. The survey was online for eight weeks and with an interval of 15 days, and a reminder was sent to those that did not responded at first.

Results and Discussion

Initially, 30 teachers were invited to participate, by using a snow ball strategy, the number of identified teachers increased to 97. In total, 68 valid surveys were obtained, which corresponds to 70% of the total requests.

The Beginning of Online Teaching

The registered periods analyzed in this research go from 1996 to 2009 for 55 teachers. The intention of this research was to cover full administrative periods (of four years each), in order to correlate contextual organizational issues with online teaching in UABC. Despite of this, the first period analyzed covered only two years and the fourth period lasted three years. This is because 1996 is the year when the first actions around online teaching were registered at UABC. For this reason, it is considered that the initial year and the last period ran from 2007 to 2009.

As shown in Figure 1, most of the teachers who responded involved in online education during the third period, from 2003 to 2006, which equates to 33%. In the same figure, it can be noted that from 1996 to 2007,

there was an increase in the percentage of teachers ranging from 18%, 24% and 33%, which together account for 75%. It is in the period 2007 to 2009 when the percentage drops to 25% although it must considered that the latter period covers only three years, not four as in the previous period.

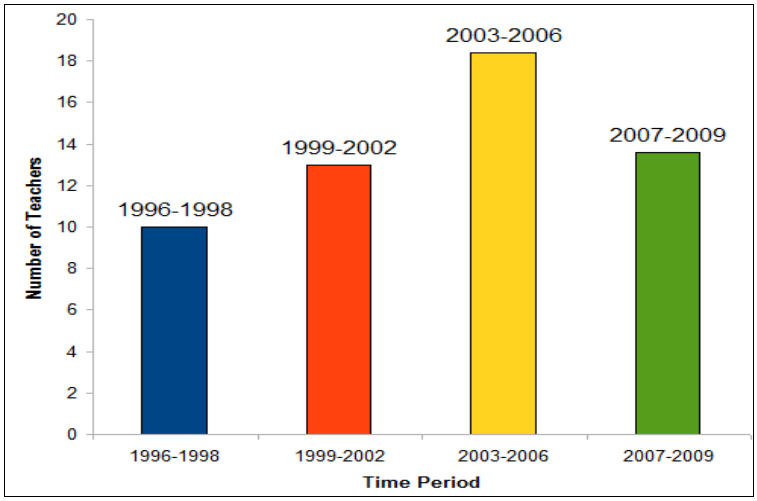

Figure 1. Periods of time when the teachers begin to taught online.

The teachers' involvement in online learning (see Figure 1) in the 2003-2006 period is attributable to the easy access provided to teachers to use moodle compared to the requirements and formalities required to use blackboard. This is also reflected in slightly higher percentage of teachers who continue to use moodle (see Figure 4) despite institutional efforts, mostly in the period 2007-2009, to institutionalize blackboard as the UABC LMS.

It is important to consider that the UABC did not have an explicit strategy for the diffusion of online education seen as an innovation in the teaching-learning process. This has left to the personal initiative of some teachers interested in spreading education online. The use of a theory as the "diffusion of innovations" proposed by Roger (1995) could provide directions to the university authorities in establishing policies and strategies in this process.

Number of Online Curses and Percentage Imparted Online

In the survey, the scale presented to teachers about the number of online courses taught goes from 1-2 to more than 12 courses at intervals of three units as shown in Figure 2. The highest percentage of the number of courses that teachers have taught is concentrated between 1 and 5, representing 56% of courses; while those who have taught from 6 to over 12 represent 44%. These results reflect the experience of teachers teaching online, which shows that teachers are gaining experience in this modality.

To determine the percentage of course content that teachers taught online, the data obtained are identified as shown in Table 1. The largest percentage, 29% of teachers said that 30% to 79% of the contents of all courses are taught online; none of their courses has lower percentages as shown in Figure 3. On the other hand, the percentage of teachers who claimed that the contents taught online is less than 80%, which is also relatively high with 20% followed, and by a 15% of teachers said that in all their courses, only 1% to 29% of the contents were online (see Figure 3).

In general, we find that the majority of teachers offered their courses in blended mode as defined by Allen and Seaman (2005) or a "partial conversion" stage according to Belanger and Jordan (2000). On the other hand,

we find that 33% of them are in the “total conversion” stage, providing 80% or more of its content online (see Figure 3).

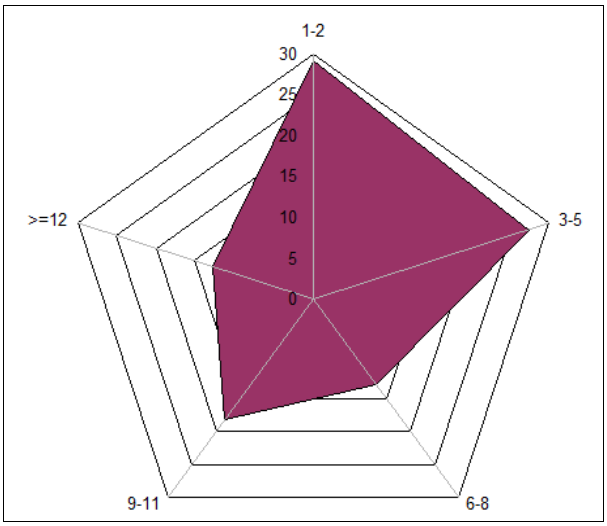

Figure 2. Percentage of number of online courses taught.

Table 1

Coding of the Answers Obtained About the Percentage of Contents Offered Online

Almost none	Almost all	All of them	Coding
		80%	> = 80%
30%-79%	80%		-80%
		30%-79%	30%/79%
80%	30%-79%		-30%/79%
1%-29%	30%-79%		--30%/79%
30%-79%	1%-29%		+1%/29%
		1%-29%	1%/29%

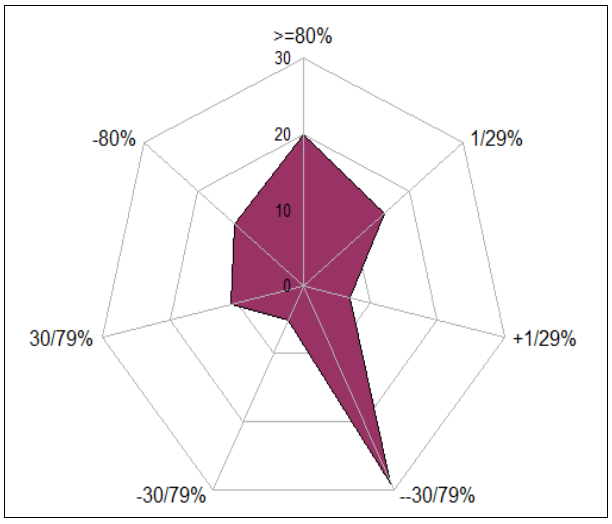

Figure 3. Percentage of content taught online.

Use of LMS

In UABC, five LMS have been used to deliver online courses and in some point of time, some of them were simultaneously installed in university servers. As it was expected, some of the teachers use or have used more than one LMS at the same time. The LMS more frequently mentioned were moodle and blackboard. These LMS have positioned better in the last six years.

In Figure 4, it can be seen that moodle has 29% of mentions and blackboard 26%. Virtual-U (14%) and UABC Virtual (14%) were the most used platforms between 1999 and 2002, no longer used now, but in the category of "others", teachers mentioned some external LMS or self-development LMS (14%) that are currently being used.

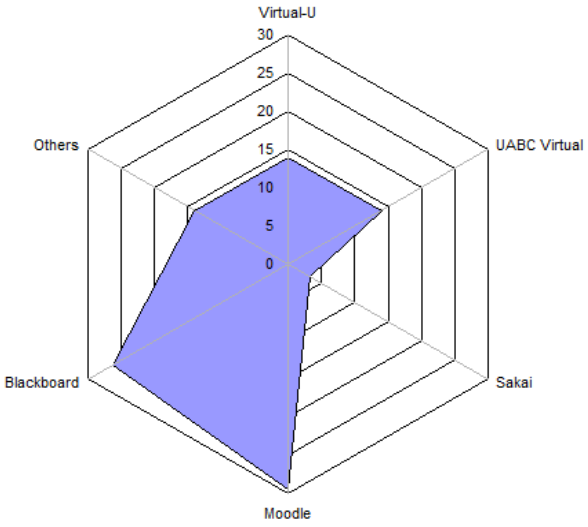

Figure 4. Percentage of LMS mentioned.

The predominance of moodle and blackboard is expected, because these are the LMS currently in place and the other platforms are abandoned in favor of more accessible systems in the university. It remains to be seen whether the preferences of some teachers to moodle can be sustained despite of institutional efforts to impose blackboard as the official platform and the one recognized for academic and administrative purposes.

Teachers' Beliefs About Online Education

The results on beliefs of teachers about online education in general, course structure, communicative approach, contents and cognitive components are presented in Figures 5 and 6.

As seen in Figure 5, beliefs about online education are favorable. The agreement on the assertions in general is high, however, in Figure 5, the responses of the third statement can be emphasized, "An online course may be better than face-to-face course", which is the response that shows less agreement; and for the responses of the first statement, "Online learning is only for very disciplined students", a partially agreement response exceeds 50%, teachers who believed that online education is not just for very disciplined students is 25%.

The above statements are consistent with the beliefs of teachers who do not know, or have limited online experience and have a more traditional belief that students require to be much disciplined to succeed in distance education programs. In contrast, Sherron and Boettcher (1997) mentioned that with the latest technologies, which are part of the fourth generation of distance education learning technologies, it is possible for students to follow up more closely, allowing the incorporation of less disciplined students into distance education programs.

Furthermore, statements relating to the structure, communicative approach, contents and cognitive components also show remarkable agreements (see Figure 6).

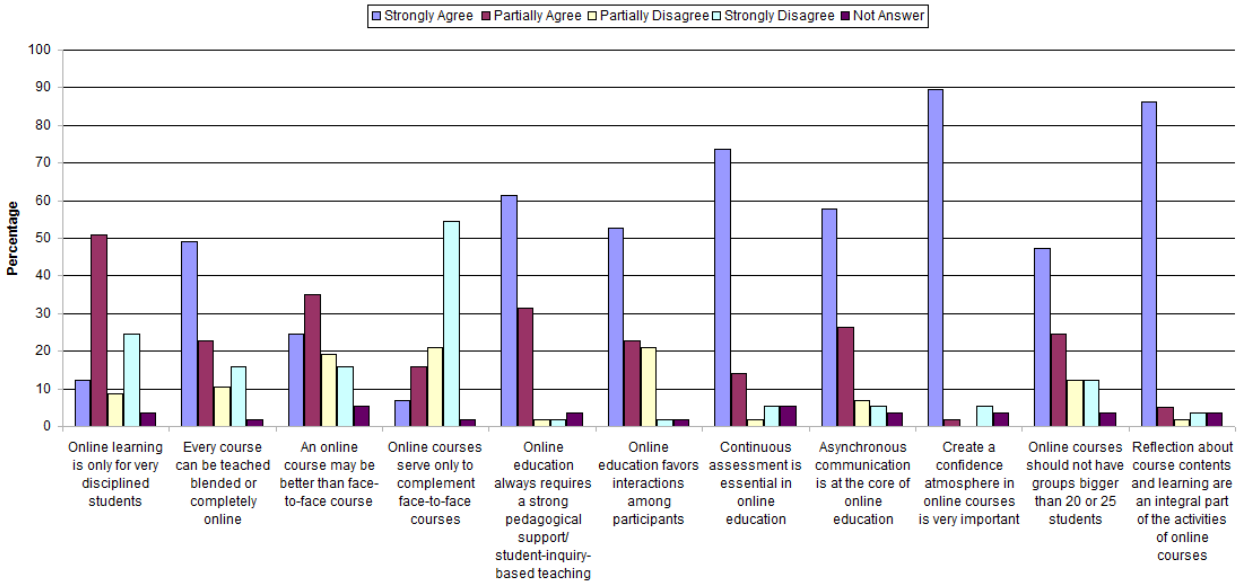

Figure 5. Beliefs about online education in general.

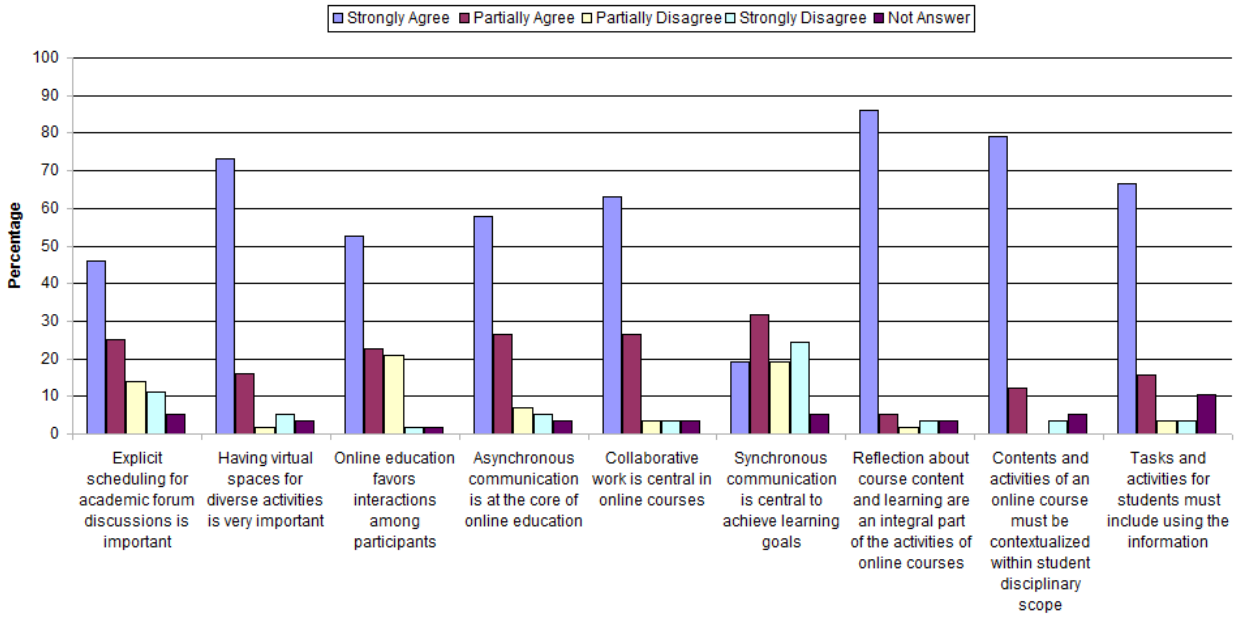

Figure 6. Beliefs about the structure, communicative approach, contents and cognitive components.

The agreement is less noticeable in the sixth statement, “Synchronous communication is central to achieve learning goals”, for which the answers are relatively homogeneous. Furthermore, although not as marked as the previous, for the next statement, “Explicit scheduling for academic discussions is important”, it is noticed that disagreement is considerable.

The above results indicate that the benefits of asynchronous communication mentioned by many authors as Hiltz (1994; 1995), Harasim, Hiltz, Teles and Turoff (1995), Ally (2004) and Anderson and Elloumi (2004)

among others, have permeated among the teachers who responded the survey.

It is noted that the recognition of the importance of reflection about what is taught, the contextualized of content and the use of information, are all in accordance with the Jonassen's (2006) proposal for the design of constructivist learning environments.

Online Teaching Practices

Online teaching practices are divided into: communicative approach (see Figure 7), learning activities (see Figure 8), and some evaluation practices (see Figure 9). Note that the real value for "Never" is the sum of "Never" and "Never but like to" (we will call it "real Never"). Many of these activities are related to the teacher technical skill to use the tool, so that the response "Never but like to" inform us about the interest of the teachers to learn.

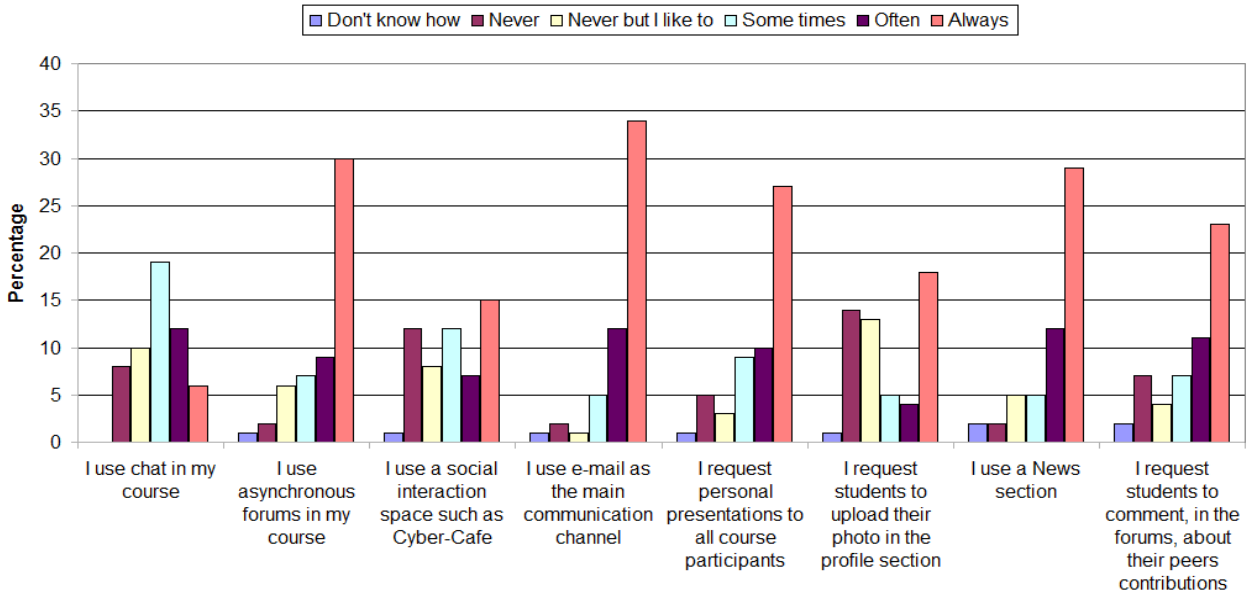

Figure 7. Teachers communicative approach.

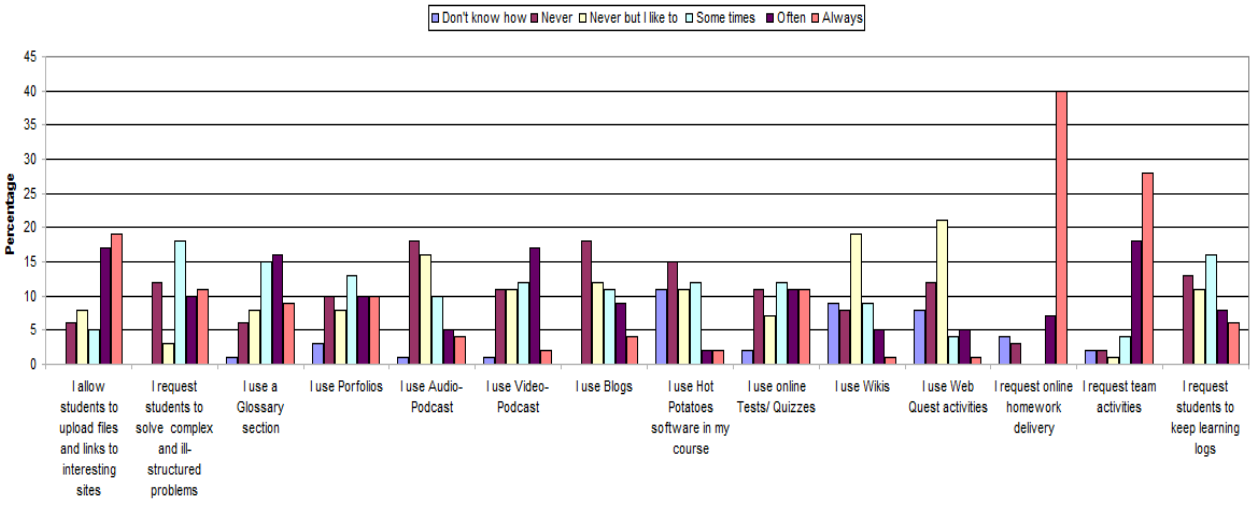

Figure 8. Some learning activities used.

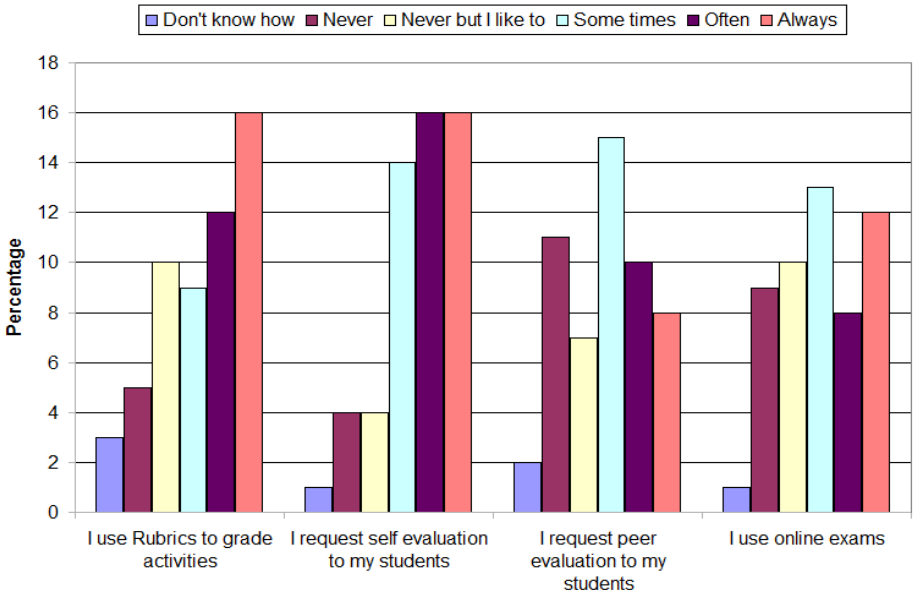

Figure 9. Some evaluation practices used.

It can be observed in Figure 7 about part of the communicative approach that teachers practice in their courses. From the eight statements, three showed marked disagreements: The usage of chat in their courses (first statement), the usage of a social interaction space (third statement) and the upload of a personal photo (sixth statement).

What teachers do in their courses are consistent with what they mention about their beliefs on online education. Activities and communication spaces are used by teachers, and as in their beliefs, the use of synchronous communication ("I use chat in my course") is where the less agreement is found.

Although the use of social interaction and the request to upload their photos indicate that teachers have not valued the importance of social interaction in the online course, we must consider that most teachers teach in blended courses, which would explain the lesser importance to this type of interaction. However, the value of "real Never" is high in some of the responses.

Contrary to the beliefs and communicative approach, responses on the use of learning activities are more diverse and the "real Never" is greater in general. In learning activities, teachers' technical skills are manifested in the type of activities used and the "real Never" is higher as we can see in the use of Web Quest, Wikis or Podcast. Other more common activities which teachers agree are online homework delivery and request team activities.

With reference to the assessment practices, responses show the interest in learning new forms of assessment, such the use of online exams or the use of self-evaluation which have high "real Never" values. The diversity in assessment techniques is desirable, because it allows the evaluation of different facts of the learning process. Authors like Angelo and Cross (1993), Marzano, Pickering and McTighe (1993), Anderson, Bauer and Speck (2002) and Alley, Blocher and Markel (2005) among others, presented a wide range of assessment techniques that can be incorporated into online education.

Conclusion

Despite the lack of continuity in programs designed to promote online education in UABC, there is an increasing number of teachers involved in online education. Yet, most teachers involved in online education have little experience teaching online, which is reflected in the number of courses taught in this modality.

Moreover, most of the teachers taught blended courses.

The beliefs and practices expressed by the teachers about online education correspond to an education that encourages communication and the construction of constructivist learning environments. These are encouraging elements of the teachers' learning process to be online teachers. However, the results show some deficiencies in the use of available technology in the LMS.

This paper leads us to identify areas of opportunity for teachers' training, both in the use of technology and teaching strategies.

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