ANALYZING THE ASYNCHRONOUS ONLINE COMMUNICATION THE DEVELOPMENT OF A QUALITATIVE INSTRUMENT

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Introduction

Web-Based Education is growing in the entire world. A growing increment is observed from the training opportunities to distance education adapted to the long life learning necessities of the professionals and students. But at the same time that the use of the Web-Based Training is enlarged, new research problems arise for people concerned with knowing more about the learning processes. The Web-Based Training offers new learning opportunities and we need to know more about how and in what circunstances we can improve the possibilities of learning of the Web-Based Training (Marcelo et al, 2002).

One of the area of interest to investigate has to do with synchronous and asynchronous electronic communication. Our research group is trying to learn more about the content and process of discourse that is generated in electronic situations in Web-Based Training. The analysis of the discourse is an area of research that is a very multidisciplinary one. In the excellent book edited by Van Dijk (2000: 23), he says about the discourse that *"people use the language to communicate ideas or beliefs and they make it as more complex social events."* The analysis of the discourse necessarily incorporates a study of the utilized language, of the beliefs that communicate and of the interaction in situations of social nature. Therefore we consider that the electronic communication situations are also natural situations. For Davis and Brewer, "*electronic discourse is one form of interactive electronic communication... we reserve the term for the two-directional texts in which one person using a keyboard writes language that appears on the sender's monitor and is transmited to the monitor of a recipient, who respond by keyboard*" (1997:1). For these authors, the electronic discourse is centered in the form like people use the language to exchange ideas and not so much in the means that they use for it.

For the analysis of CMC, Blanton, Moorman and Try (1998) made a proposal to organize the messages among convergent and divergent situations, depending on the interpretations of the users. Starting from this work, Shotsberger (2001) applied different categories for the analysis of synchronous dialogues through chats. These were: statement, beliefs, concerns, practice, desire, intention, asks and result.

The analysis of the processes of CMC has had different perspectives. Henry (1991) proposed that the electronic communication could be analyzed through five dimensions: participative, social, interactive, cognitive and metacognitive. Henry's contribution, together with the works developed by Garrison, Anderson, Archer and Rouke in the University of Alberta (Canada) have guided our construction of a system of categories for the analysis of the asynchronous communication in the forums of web-based training courses.

The Model for the analysis of asynchronous communication

Garrison, Anderson, Archer and Rourke (see the references at the end of the paper) developed a theoretical model to explain the process of electronic communication in asynchronous forums. This is the model in which we have based on analyzing the interactions in the processes of asynchronous communication. This model, like one can observe in the following figure includes three main analysis dimensions: Social, Cognitive and Didactics.

COMMUNITY OF INQUIRY
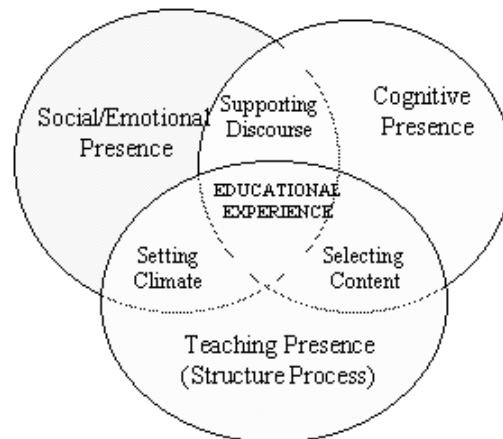
From Garrison, Anderson and Archer

Social dimension in electronic discourse

The social dimension comes to include all those declarations of the students or tutors where the creation of a dynamic group is promoted. It includes social relationships, expressions of emotions, and messages where the group of students is affirmed as such. In the social dimension gratefulness are included, jokes, greetings, etc. In our system of categories, the social dimension includes the following elements:

- AFFECTIVE: We include in this category, those declarations that has to do with the expression of emotions, jokes, greetings, irony, as well as critics.

- INTERACTIVE: This category has to do with interaction: the main reason about this dimension tells that the members of the group make about declarations or statements carried out by other members.

- COHESION: Regarding declarations where the students tell explicitly how feel themself into the group. The identity's group appears reflected by means of expressions like: us, we, colleagues, group, etc. Also includes greetings, farewells, formal ways in the communication.

- LEISURE: In this category we include those aspects of the group communication that don't have to do with the content of the course: comments on a book, a movie, etc.

Teaching dimension in electronic discourse

The asynchronous forums represent an opportunity to direct the learning of the students. In the virtual forums, the same as in the real classrooms, teachers and students interact, formulate questions, they expose ideas, answer questions, etc. For this reason we need a dimension that analyzes these processes from a didactic point of view. Following the proposal from Garrison et at., but enlarging some of the categories, we have ended up establishing the following categories:

- DESIGN INSTRUCTIONAL AND MANAGEMENT: In this subdivision we have included a relationship of categories that make reference to statements where well the tutor or the students, make reference to aspects related to the dynamics of the course: the development of the program, of the contents, timetable, the methodology, the means and materials to use, as well as the rules and norms.

- DIRECT TEACHING: This subdivision includes a series of categories that make reference to the processes common of interaction in the virtual classroom: to formulate questions, to introduce new ideas, to answer questions, reactions to interventions of other members of the group, to share additional information, to summarize, etc.

- FACILITATE THE DISCOURSE: This third subdivision makes reference to the tutor's or students interventions with the idea of promoting participation, to identify agreement areas or disagreement or to value the effectiveness of the own training process.

- TASKS: This fourth subdivision includes elements related to the tasks that the students have to do along the course. These tasks can be individual or in groups. In the e-forums the students sometimes request explanation regarding the content of the task (what it is expected from them), or they look for answering for their activities.

Cognitive dimension

The cognitive dimension seeks to analyze in what measure the students go understanding and building meanings and elaborating a critical thought. As Duffy et al. (1998) outline, "*electronic conferencing systems allow the instructors to (a) observe students' contributions to the discussion, (b) include transcripts of the discussions in a portfolio for feedback or grading, (c) participate in the discussion to model critical-thinking skills, (d) interject questions and comments to coach critical thinking, and (e) provide expertise in a topic area when such input is required*" (53). For the analysis of the processes of meaning construction we have used some categories that organize the thought just as a process of resolution of problems with the following phases:

- INITIATION: In this category the problem must be identified. In relation to this problem, there is a need to consider the constraints around the problem, new meanings that might arise from the problem. Theremore, in a situation of online learning any member of the group can begin this phase.

- EXPLORATION: In this category, the participants exchange ideas, it is required that they recognize the nature of the problem, and that they obtain the outstanding information. At the end of this phase the students begin to be selective with regard to what is and is not outstanding. It is a phase of contributing ideas, to formulate questions and exchange of information.

- INTEGRATION: It is characterized by the construction of knowledge starting from the ideas generated in the exploration phase. Integration of ideas and meaning construction should come from the debate in the community.

- RESOLUTION of the dilemma or of problem: hypothesis and treatments are contrasted from a critical perspective.

Contrast of the reliability among codifiers

The elaboration of the system of categories that previously we have described it has been laborious. The research team has gone generating different approaches of systems of categories and applying to an example of texts coming from a web-based course (see http://www.webformacion.net). The research team, composed by the three authors of this paper coded in an independent way the same texts. After each code, the team met to compare the codes carried out by each one of the members based on the same texts. The debate and discussion on the tuneless elements usually arrive to modifications of the system of categories.

The analyzed data. Analysis of international courses

At the present time, we are in the process of coding the messages generated from five web-based courses that we have already developed. The student in these courses come from six different countries: Spain, Chile, Argentina, Colombia, Republic Dominican and Mexico These web based courses are varied in their contents, although all have used the forum like interaction vehicle among the students. The total of messages got in the five forums is of 3417. These messages have been coded using the system of categories and at the moment we are in the analysis phase.

The code unit

The code unit, that we have chosen, has been the complete message. We find that the message has unit in itself and it generally represents an idea that is approached on the part of the speaker. Each message can be coded in one, two or three of the dimensions that we have used in the system of categories. This way, a message can contain social information for example, only. Other messages can be coded in a multiple way.

The analysis of data

The analysis of data is carrying out using the computer program AQUAD-5. This program facilitates the process of recovery of coded text and of hypothesis contrast and this process is integrated inside the tradition of qualitative analysis.

Conclusions

This paper is based on the process of elaboration of a system of categories that allows us to analyze the computer-mediated asynchronous communications (CMC). The created instrument comes from a ratified process through its application to forums of several courses of Web-based Training with different purposes. This instrument has been subjected to a mixed process of deductive and inductive coding, it has gone by different moments of readjustments and continuous transformations in its construction. Our effort has been centered in reaching a good grade of exclusivity among categories, and of clarification and delimitation of its codes.

The system is finally constituted by three general dimensions: cognitive, social and didactics. Each one of these general dimensions have different categories and indicators that define them. The system has been applied to 3417 messages. With this it finishes the first phase of the research. Now we are in the process of analyzing the data coded with it. In the final presentation we will inform about the results related with:

- The role of the different tutors in the communication process in the courses of Web-based Training.
- To identify students' profiles and their learning styles in Web-based Training.
- To identify the thematics in the forum which help to a bigger participation and other that offer resistance.
- To find discourse that can conceptualize the learning.
- To analyze the forum like space for the thought and collective construction of the knowledge.
- To analyze the forum like space that facilitates the significant learning and in group way.

References

Anderson, T. et al. (2001). *Assessing Teaching Presence in a Computer Conferencing Context.* JALN, Vo. 5, No. 2,

Blanton, W.; Moorman, G. & they Try, W. (1998*): Telecommunications and teacher education: TO social constructivist review.* In Pearson, P.S. & Iran-Nejad, A. (Eds.): *Review of Research in Education, nº 23, pp.* 235-275.

Davis, B. and Brewer, J. (1997). *Electronic Discourse. Linguistic Individuals in Virtual Space.* New York, SUNY Press.

Duffy, T., Dueber, B. And Hawley, C. (1998). *Critical thinking in a distributed environment: A Pedagogical base for the design of conferencing systems.* En Bonk, C. y King, K. Electronic Collaborators. New Jersey, Lawrence Erlbaum Ass, pp. 51-78.

Garrison, D., Anderson, T. and Archer, W. *Critical Thinking and Computer Conferencing: A Model and Tool to Assess Cognitive Presence* http://www.atl.ualberta.ca/cmc/CogPresPaper_June30_.pdf

Henri, F. (1991) *Computer conferencing and content analysis* in O'Malley, C. (ed.) Computer Supported Collaborative Learning: Heidelberg: Springer-Verlag.

Marcelo, C. et al. (2002). *E-Learning Teleformación. Diseño, desarrollo y evaluación de la formación a través de Internet.* Barcelona, Gestión2000.

Rourke, L. et al. (2001). *Assessing Social Presence in Asynchronous Text-Based Computer Conferencing.* Journal of Distance Education, Http://cade.athabascau.ca/vol14.2/rourke_et_al.html

Shotsberger, P. (2001): *Classifying forms of synchronous dialogue resulting from Web-based teacher professional development.* Communication presented to SITE, Orlando, USES.

Van Dijk, T.A. (2000): *The discourse like social interaction*. In Van Dijk, T.A. (Comp.): The discourse like social interaction. Vol. II. Barcelona: Gedisa, pp.19-66.

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