STUDYING COLLABORATIVE LEARNING IN ONLINE DISCUSSION FORUMS

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KEYWORDS

ABSTRACT

We present part of a research project on the teaching-learning processes afforded by e-Learning. We detail a system of categories that allows us to analyze formative processes of online teaching-learning. The system was created through content analysis of discussion forums in web-based training in higher education. The forum appears to be a potent tool that positively affects collaborative and critical learning.

ORIGIN AND LITERATURE REVIEW

This research stems from previous works about content analysis conducted by the IDEA! research group at the University of Seville in Spain (Marcelo y Mingorance, 1995; Marcelo, Torres & Perera, 2002). In addition, we also base our research on the *Community of Inquiry Model* developed by Canadian researchers from the University of Alberta and Athabasca University (Anderson et al., 2001; Archer et al., 2001; Garrison et al., 2000; Garrison et al., 2001; Rourke et al., 2001; Rourke & Anderson, 2001). Space limitations preclude discussion of previous results, but these and a detailed analysis of the research process are available in Torres (2003a,b) and Perera (2003).

RESEARCH METHOD

For this qualitative research project, we used the content analysis method to describe and analyze asynchronous communication processes and e-Learning. We used qualitative research design (a recurrent model). We analyzed ten forums with different purposes from five different courses that were delivered through e-Learning. The total number of tutors participating in the courses was 29, with 217 total students. The qualitative data analysis package AQUAD5 was used for the computer treatment of the data. In total, 2124 messages and 41346 lines of text were analyzed.

FRAMEWORK: SYSTEM OF CATEGORIES

Our research led us to establish three interrelated dimensions through which we analysed online formative processes occurring within the forum: cognitive, social and didactics.

Through meticulous analysis of the data, we established a validated system of categories (Torres, 2003a,b). This system helped us become familiar with the teaching-learning processes that tutors and students use when they interact in a training modality such as e-Learning. The content analysis of the forums allowed us to examine those processes, which are reflected in this system of categories:

A. COGNITIVE DIMENSION: defines the extent to which the members of a critical community of research are able to construct meanings (critical thinking) through sustained communication with each other. (More directed by the tutor).

Categories for cognitive dimension and definitions
A.1 *CINIC*: Initiation (triggering event): begins or presents a new problem or before the sensation of confusion (through questions). (No technical topics).
A.2 *CEXPL*: Exploration of ideas, search for outstanding information for the problem.
A.3 *CINTE*: Integration-Building.
A.4 *CRES:* Resolution of dilemma/problem.

Indicators
CINIC
a. Recognizing the problem: information is presented about a problem, that usually culminates in a question.
b. Sense of confusion: questions: asking questions when there is sense of confusion or loss in some topic, or a new discussion begins

CEXPL
a. Divergence within the group: unsubstantiated contradictions of previous ideas in a topic which cause discrepancies with the group.

b. Divergence within a single message: discrepancies within a message about the idea or presented topic.

c. Exchange of information: personal narratives, facts or descriptions (not used as evidence to support a conclusion).

d. Suggestions for reconsideration: suggestions presented about a problem or topic to be they are considered by the group.

e. Brainstorming: offers ideas (not justified) about a topic.

CINTE

a. Convergence within others members of group (agreements): agreements or coincidences (argued, justified) within the group about previous ideas or messages, which help to build a idea or to solve a problem.

b. Convergence and agreement within a single message: provisional/tentative agreements or coincidences with a message, as a justified, developed hypothesis.

c. Connecting, synthesizing ideas: integrating ideas from various sources (books, articles, experience...).

d. Proposing solutions: proposing possible solutions to a problem.

CRES

Application of testing solutions to real world: commenting on the application of a solution given to solve a problem or defending a possible solution.

B. SOCIAL DIMENSION: defines the capacity/ability of members of a critical community of research to project their personal characteristics into the community, thereby presenting themselves to the other members as "real people".

Categories for social dimension and definitions

B.1.1 *SAEM: Affective - Expression of emotions (Positive Emotions)*. Possessing an affective load in the form of expressing the messages (emoticons). Emotional reactions are given that can include jokes or irony.

B.1.2 *SANA: Affective - Narratives of aspects of daily life (Experiences)*. Description of participant's personal aspects, with references to circumstances of their daily life.

B.1.3 *SACR: Affective - Critical, out-of-place remark (Critical)*. Intense emotional reactions are given, stimulated by contributions whose content is understood as critical of a comment or moving away from goals of the course.

B.2 *SINT: Interactive*. Specific reference of agreement, disagreement, amplification... to a text, contribution or manifested idea at another moment by another member (student or tutor). It can include the use of the option

"quote" or to use specific texts from others' messages. It is based on the idea of another participant's, contributing group sense (there is intention).

B.3 *SOCI: Leisure*. Offers pleasure, entertainment... contributions which are external to the content (goals) of the course.

B.4 *SCOH: Cohesive*. Group identity appears through expressions such as: us, we, our, group... Also greetings, closures, formalities of communication...

C. DIDACTICS DIMENSION: defines the design, facilitation and direction of social and cognitive processes for the purpose of obtaining the result of significant and educationally beneficial learning.

Categories for didactics dimension and definitions

C.1.1 *DGPR: Instructional design and management (related to the course only) - References to the program, curriculum (Program)*. Comments about the course program, calendar, content, activities, assessment, teachers, rhythm of the work...

C.1.2 *DGMT: Instructional design and management (related to the course only) - Designing methods (Methods)*. References to the methodology or strategies that will guide the development of the program.

C.1.3 *DGME: Instructional design and management (related to the course only) - Using media, materials (Mediums)*. References to the media or resources (didactic materials and communication channels) necessary for the development of the course (it can also refer to the platform).

C.1.4 *DGNO: Instructional design and management (related to the course only) - Establishing rules (Rules)*. Agreements about the conditions or rules that should be completed for the appropriate development of the program.

C.2.1 *DDAD: Facilitating discourse - Identifying areas of agreement/disagreement (chat)*. Tutor or students try to center the discussion. It also includes identification of agreements and disagreements in the expressed ideas (seeking to reach consensus).

C.2.2 *DDPA: Facilitating discourse - Prompting participation, discussion (Participation)*. Prompting participation, discussion about a topic, encouraging, reiterating, reinforcing contribution of the students, favoring debate...

C.1.3 *DDEP: Facilitating discourse - Assessing the efficacy of the own communication process (Efficacy) (chat)*. Assessing the efficacy of the dialogue process

through interventions that express obstacles or facilitators to reach the established goals.

C.3.1 *DTAR: Tasks - Execution of the tasks.* Responding to the execution of the tasks proposed in the course.

C.3.2 *DTPR: Tasks - Content of the task: references to the parts of the students' assigned tasks.* Goals to reach; description of the task; how, when and where to present the activity…

C.3.3 *DTAP: Tasks – Support.* Support that assists the tutor or students during the accomplishment of the task.

C.3.4 *DTEV: Tasks – Assesment.* Judgment about the students' performance on assignments (students or tutors assess the quality of the task).

C.4.1 *DIFP: Direct teaching - Asking questions (Request).* Questions formulated about the teaching process. Also requests for materials, information, elements... by students.

C.4.2 *DIES: Direct teaching - Presenting a new idea (Structuring).* Interventions by tutors or students to begin a new topic, explaining their background knowledge and principles.

C.4.3 *DIRP: Direct teaching - Answering explicit questions (Answers).* Answer to explicit questions arising during the development of the teaching process.

C.4.4 *DIRI: Direct teaching - Reacting (with or without valuation) to intervention (Reactions).* Interventions generated by a previous comment that gives an opportunity to continue with the idea or to produce another new idea. It may or may not to incorporate assessment.

C.4.5 *DIEC: Direct teaching –* Scaling*, support (*Scaling*) (it can be an answer or reaction).* Step by step explanation about how to understand something, how to carry out some practical task, and clarification of difficulties (especially the most technical learnings). Also includes metaphors.

C.4.6 *DIRD: Direct teaching - Summarizing the discussion (Summary).* Attempts to synthesize the ideas developed in a discussion (like final summary to organize and to clarify ideas).

C.4.7 *DICF: Direct teaching - Providing knowledge from different sources (Increase knowledge).* Complementary information contributed from different sources (reading articles, other comments, urls…). It is always a reaction.

C.4.8 *DIEX: Direct teaching - External comments to the course.* Comments, situations, projects... external to the course.

CONCLUSIONS

Conclusions that we present in this article have built off previous research which applied the above-mentioned system of categories and the use of multiple evaluation techniques and strategies. On the one hand, the system of categories has provided information about teaching and learning with relation to the quality and nature of the cognitive processes reflected in the discussion forum; as a result, we can better understand the role of cognition in the transaction of teaching and learning in asynchronous environments and using text-based discussion. On the other hand, the value of using content analysis as an analysis strategy for e-Learning transactions is that it allows us to identify linguistic structures characterized by the indicators that conform to the three dimensions of our system of categories: cognitive presence, social and didactics.

The last objective of this study is to characterize, from the participants' perspective, the context of the teaching-learning processes that take place in discussion board forums, according to pedagogic, social and cognitive dimensions.
In the educational environment of the online discussion forum, social-emotional communication is an important variable in online teaching. In our study we confirmed that there is a sufficient level of social presence that supports the development of significant learning in discussion forums. This social aspect of communication within forums can create an environment of trust and confidence between students and tutors, which promotes collaborative learning. In this way, personal and/or social-emotional communication help to create a sense of the learning community. Consequently, the social aspect of groups in the forum is a factor that enhances the interactive processes of teaching and learning.

Next to the previous premise, the constructivist character of the activities undertaken in the courses we analyzed allowed us to deduce that the forum is a space that facilitates the social construction of knowledge. Nevertheless, the cognitive dimension of our system of categories shows us the difficulty and the enormous effort that students have to make to move past the "exploration of ideas" phase and focus on "integration-building" activities. Students are willing to share ideas, but not to deepen their knowledge through debate. Therefore, the forum supports students' learning, but students do not come to the point of describing on the forum how they transfer their forum-based learning to real-life practice. That is to say, we cannot determine if

the learning taking place on the forum is being carried out successfully in real-life practice.

In the educational activities developed through the forum, instructors and students take on different profiles and tasks than those they might assume in traditional educational models. Instructors in online teaching have different, more reactive roles: they facilitate or moderate debates; respond to students individually and to the complete group; negotiate the flow of content through the tasks. Students acquire a more active role, intervening in the administration of the communication in educational processes and as agents of new ideas inside the learning process in group. This confirms that students' participation is predominant in the didactic functions that were traditionally carried out by tutors.

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BIOGRAPHY

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