Anexo 5. Participaciones en congresos

I.

Experiencia de un curso a distancia (matemáticas) a nivel posgrado.

Institución organizadora: FLACSO, Facultad Latinoamericana de Ciencias Sociales.
Nombre del congreso: E-competencias.
Modalidad: En Línea
Estatus: Presentado
Disponible en:
http://www.flacso.edu.mx/competencias2/index.php?option=com_frontpage&Itemid=1
Fecha de verificación: 13 de marzo del 2009

Resumen

El curso, dirigido a alumnos de posgrado que se encontraban en distintas ciudades, implicó interacción a distancia entre alumnos y profesor(es) a través del uso de una plataforma básica y distintas herramientas digitales de apoyo y conectividad.

La investigación realizada mostró la importancia del desarrollo de habilidades digitales por parte de los estudiantes, principalmente en el manejo y comunicación de la información.

Inicialmente los alumnos presentaron diferentes niveles en el dominio de los contenidos temáticos, así como de habilidades en el manejo de la tecnología; sin embargo, a lo largo del curso, los alumnos dieron evidencia en el desarrollo de competencias informáticas específicas, al utilizar distintos recursos a fin de acordar la mejor manera de representar sus diferentes soluciones matemáticas. y solicitar herramientas adicionales de apoyo al aprendizaje.

II.

E- competencias y enseñanza de las matemáticas a distancia.

Institución organizadora: FLACSO, Facultad Latinoamericana de Ciencias Sociales.
Nombre del congreso: E-competencias.
Modalidad: En Línea
Estatus: Presentado
Disponible en:
http://www.flacso.edu.mx/competencias2/index.php?option=com_seyret&task=videodirectlink&Itemid=2&id=23

Resumen

Se describen algunas habilidades utilizadas por los profesores durante una experiencia en un curso de matemáticas discretas a distancia, particularmente en las asesorías por chat.

III

Computer aided Group Collaboration
An Experience evaluated through Quantitative and Qualitative approaches

Institución organizadora:

Nombre del congreso: **ICIW 2009 The Fourth International Conference on Internet and Web Applications and Services**

Modalidad: presencial.

Estatus: Aceptado

Se realizará del 24de Mayo 24 al 28de Mayo del 2009 en - Venecia, Italia.

Abstract

This paper presents the experience of students enrolled in a graduate Math course, in which a specific virtual environment for collaboration, based on Team Accelerated Instruction (TAI) specifically adapted for virtual synchronous and asynchronous contexts supported by Internet was analyzed and evaluated.
Preliminary results of the application of a particular quantitative methodology developed specifically for this experience, aided by qualitative data are presented as well. The results show a diversity of response where a natural leadership from one of the students emerges, and where the Baker's Model of collaboration could be used to qualify in a qualitative base this collaboration.

1. Introduction

Computers and Communications Networks either for individual use or for distance education practices is a common practice in education. Communication and information technologies can support education as Computer Supported Collaborative Learning (CSCL) has demonstrated. Diellenbourg [1] states there are a variety of definitions of Computer Supported Collaboration Learning practices or, CSCL, therefore suggesting it is difficult to define this field of analysis. On the other hand Koschman [2] focuses on instructional practices introducing an important qualitative dimension to evaluation, whereas Stribjos [3] basically considers CLSC an emergent paradigm based on interaction.

Hence the main question is how basic collaboration can be analyzed specifically for pedagogical purposes. Collaboration analysis is still an open issue for research [4] [5] open to different perspectives both quantitative [6] and qualitative [7].

On its part, Baker [7] provides useful categories, namely symmetry, alignment and agreement, which describe the forms in which collaboration and coordination among students help task orientation in educational contexts. Baker´s model was originally design for face to face situations, leaving a Basic

question open that is if these processes operate equally under computer mediated settings.

CLSC still needs to be analyzed and evaluated, thus there is a basic requirement for novel methodologies that enable researchers in defining what is really going on during the students´ learning process. Is collaboration aided indeed by computer supported devices? Can we perfect existing computing models? Is there a possibility for improvement within existing computing applications used for groupware interaction and education?

We assume there is room for improvement. This paper introduces some preliminary findings gathered as a result of improvements in existing computer assisted methodology for Math learning through collaboration.

Our analysis is based on Baker´s model and on Searle's [8] and Austin's [9] basic speech acts theory essentially considering speech acts as illocutionary acts, that is to say that "by saying something, we do something"; therefore, we mean to identify the ways in which through interaction students enunciate, state and say things, thus providing us with empirical evidence for collaboration and learning.

Computer Supported Collaborative Learning is widely developed and numerous Studies relate the experience of students aided by Computers. However, little has been evaluated as to determine if computer aided environments generate conditions for collaboration and thus learning [10]. This paper presents the experience of students enrolled in a Math course at a graduate level, in which a specific virtual environment for collaboration, based on Team Accelerated Instruction (TAI) [11] l was specifically developed in order to promote virtual synchronous interaction supported by Internet.

Preliminary results of the application of a particular quantitative methodology of analysis were developed specifically for these experiences are presented, as well as some qualitative data and analysis.

2. Context

The course was developed over five weeks, between July and August 2008, with a group of 18 students registered by CENIDET's Master's Program in Computer Sciences[1]. Student participation in the preliminary distance course was voluntary. Students were computer systems engineers or had undergraduate degrees in computing located in different cities from the Mexican states of Guerrero, Veracruz, Chiapas, Sinaloa and Morelos.

Two teachers with experience in conventional courses on the subject, also familiar with Internet use provided the techno-pedagogical design for the course and guided the participants.

The objectives, abilities to be developed and focus used for content approach suggested the design of at least three kinds of activities: individual; a second one in pairs, with the objective of comparing answers to exercises (such as suggested by Team Accelerated Instruction or TAI parameters); and a third being group discussion.

These activities were carried out in an asynchronous manner (email, forums,

[1] National Center of Investigation and Technological Development (CENIDET), an institution that belongs to National System of Higher Technological Education of México.

individual reading, self-evaluations, etcetera), or a synchronous one (chat), in periods of two-hour sessions for each subject, in every case. Eight teams were formed composed by two members each; chat sessions were preceded by readings of texts, presentations of examples and exercises, as well as forums and the exchange of questions and answers between student pairs. Synchronous sessions were conducted for the purpose of clarifying doubts which had not been solved after having been worked out. In order to provide feedback and interact with the group, teachers used the same synchronous and asynchronous tools provided by Moodle computing platform (V. 8.1).

3. Tools for logging information

Moodle space was adapted, defining general and group interaction areas with resources for each type of task. Interactions were recorded through Moodle tools, such as general forums and team forums, Chat sessions, libraries; student assignments, and "self-evaluations". Non-participant observations were made by the research team during the synchronous interactions.

Each subject matter has the following scheme of work:

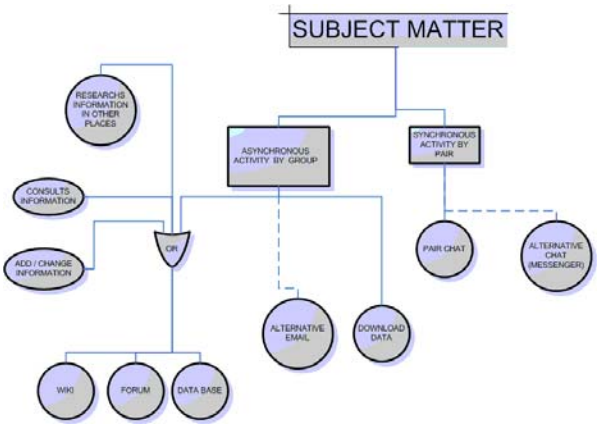

Diagram 1 Techno-Pedagogical Design and Work scheme for each subject matter within Moodle

Since most collaboration within Moodle happened through synchronous activities, this paper analyzes dialogues and interactions in which collaboration is done.

Moodle was prepared to attend participants in several discussion boards or forums in which students could share information, generate discussion or pose questions. Most consultations and academic tutoring took place in asynchronous forums in which students would pose their questions and teachers would provide with suggestions or answers and/or in synchronous Chats in which students were attended discussions were conducted by teachers for specific group members under a fixed schedule. Other synchronous as well as asynchronous activities were also developed among students, mainly for consult and support. However Moddle did not register most of them since other communication used outside Moodle, such as Messenger and email, were preferred

Some records and conversations on platform registered by Moodle during synchronous and asynchronous interactions, suggest that students favored some alternative communication media such as Messenger, cell phone and email, which provided them with additional support for task completion. The vast majority of participants used Moodle only to interact with teachers and to hand in assignments. Student-to-student interaction was conducted otherwise besides Moodle. However, registry of interactions provided researchers with rich evidence of the way in which the students coordinated the attainment of the home work.

An interdisciplinary team of researchers developed an observation guide in order to complement qualitative data in the chats and in situations of synchronic interaction. Observation leads us to define items related to individual performance as well as Group performance, narrative records were also compiled for this matter, such as:

1. Previous knowledge on the subject and /or previous experience that are put into action
2. The way in which students organize themselves to complete a task
3. The resources they turn to (including alternative information and/or technology)
4. The way in which they pose questions or problems
5. The way in which they arrive to consensus
6. The different manner in which they respond to teachers
7. The way in which responses or answers are negotiated
8. If teachers or students promote collaboration or not and the way they do it
9. The manner in which students respond to new questions or demands from teachers or from others
10. The way in which students respond to failure

4. Quantitative interaction analysis

Quantitative analysis required a systematic measurement procedure from the research team. That is periodical observation and record on who interacted with whom and for which purposes.

This kind of observation leads to define interaction as well as leadership patterns among team members, and between Chatters during discussion.

Statistical data supports observation records on who was more prone to interaction, who responded first and to whom, etc. As shown in Figure 1.

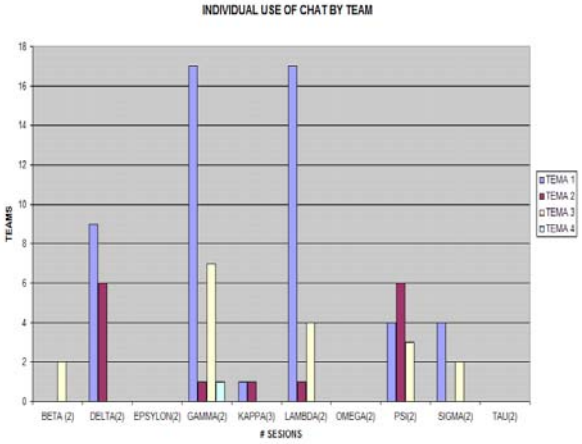

Figure 1 Individual use of Chat by team

Qualitative evidence shows students who were more proficient either in Math or in technologies were able to respond first or preferably to teacher questions. This data were also corroborated by student's opinions on the course, and on the way collaboration had taken place.
A systematic methodology and software is developing in order to identify specific speech acts during the interaction process. Preliminary data showed evidence of interaction patters towards collaboration.

Our main corpus of analysis consisted of synchronous interactions by group Chat and general consultation with teachers. Results were gathered on a data base for later quantitative and qualitative review by researchers and teachers, thus permitting instructors to redefine and perfect activities for the following sessions.

Moodle provided us with enough data as to evaluate student-to student interactions on a peer to peer basis, as well as Group sessions. Additionally, Moodle facilitated a record of who accessed information or resources on the platform, as well as who looked for assistance from whom and when exactly. On the other hand, since some sessions were conducted by two teachers at once, Moodle registry also allowed the analysis of teacher to student interaction, as well as teacher to teacher interaction, thus providing elements for pedagogical design and evaluation.

5. Qualitative interaction analysis

As previously mentioned, synchronous activities conducted through Chats in Moodle were analyzed for the purpose of determining collaboration as well as a model of interaction based on a quantitative analysis procedure.

As stated before, a model for dialogue analysis based on Baker and others [12] [13] [14] [15] [16] and explored also by Angeles[16], was used.

Interactions were assigned to categories: acceptance, response, proposal, expression, question and request.

Chat analysis was done in the following manner:

1. Greetings were identified as messages or information that are not relevant to the task but are important for students for socialization purposes.
2. Messages that were part of the same idea or relevant or linked to the subject matter.
3. Messages were classified as being part of one or more speech acts depending on the kind of idea or question being posted or the interaction that they promote.
4. Question-and-answer patterns were defined for the specific case in which participants were solving a specific Math problem.
5. Collaboration was thus identified along interaction patterns through Chat based on speech acts and Baker model.
6. This Basic process of analysis was repeated until collaboration patters were identified and basic elements for a concurrent computational model were specified.

A qualitative analysis model for interaction was obtained through dialogue analysis. This allowed for the identification of preferred dialogues and forms of interaction that lead to collaboration. Through individual analysis agreement, alignment or symmetry was thus obtained.

The following transcription of a Chat describes the interaction that took place between two students in a Chat session. This dialogue was developed by two students as a final discussion after the teacher gave them the correct answer to an exercise. Fragments are translated from Spanish into English Emoticons are preserved.

EXPRESSION	22:22 Adan: Hi!
PROPOSAL	22:24 Adan: Well I think to take into account that this is a binary predicate that we have to relate two different numbers
ACCEPTANCE	22:25 Hugo Omar: yes you are right
ACCEPTANCE	22:26 Adan: and in relationship to quantifiers I think we got it

ACCEPTANCE	22:27 Hugo Omar: The second one you <u>got it also</u> =
PROPOSAL	22:27 Hugo Omar: $\forall x \in R(x<0 \rightarrow \neg(\exists y \in R \mid y^2 = x))$
ACCEPTANCE	22:28 Adan: <u>yes indeed</u>
PROPOSAL	22:28 Hugo Omar: <u>i think i have</u> a extra parenthesis 🙂
PROPOSAL	22:30 Hugo Omar: it is similiar in general. <u>We should post</u> this question tomorrow to the teacher
ACCEPTANCE + REQUEST	22:32 Adan: hm in translation to mathematical language <u>we have got it similar to that of the teacher</u>; i just have a doubt; its the same its the same as that of??
RESPONSE	22:32 Hugo Omar: the parenthesis? the teachers said that these were different forms of interpretation
EXPRESSION	22:33 Adan: <u>hmmmmm ok</u>
ACCEPTANCE	22:33 Hugo Omar: <u>ok</u> let´s go to b)
--------	22:37: Hugo Omar left chat
--------	22:37 Adan: in this cases we have the same doubt
--------	22:37: Hugo Omar enters chat
PROPOSAL related to 1	22:38 Hugo Omar: $\forall(m,n)$ (Z🥐 ^ Z(m) ^ NP(P(o,n,m)) → NP(m) v NP🥐)
	for some strange reason i did use it here 🙂
1	22:38 Hugo Omar: $\forall(m,n)$ (Z(n) ^ Z(m) ^ NP(P(o,n,m)) → NP(m) v NP(n))
PROPOSAL	22:38 Hugo Omar: Z(x) = it´s integer number NP(x) = x it´s even P(z,x,y) = z is a result of x by y
RESPONSE	22:40 Hugo Omar: <u>but as the teacher's result I said nothing about z</u>
PROPOSAL	22:42 Hugo Omar: $\forall m,n \in Z \wedge (m*n \% 2 = 0) \rightarrow (m \% 2 = 0) \vee (n \% 2 = 0)$ $[\exists(x,y,z,m,n) \varepsilon Z \wedge m*n=x \mid x=2*x \rightarrow (m=2*z$ □ $n=2*z)]$ $\forall \mathbf{m} \forall \mathbf{n} \mid \mathbf{m,n,k} \in \mathbb{Z} \wedge m*n = 2k \Rightarrow \mathbf{m = 2k \vee n = 2k}$
EXPRESSION + RESPONSE +ACCEPTANCE	22:42 Adan: <u>hahahaha</u> it is strange <u>but i think</u> the internal parenthesis is extra compared to the teachers´ but <u>you are right</u> it depends on interpretation
ACCEPTANCE	22:42 Hugo Omar: <u>that is what we have in</u> b) mathematical language

QUESTION	22:44 Hugo Omar: huh i used the module I don't know if that exists :S
QUESTION	22:44 Hugo Omar: or if can be used there
EXPRESSION	22:44 Adan: hmmm I don't see why not
RESPONSE	22:45 Hugo Omar: yours is almost as the teachers´ but you got yourself all complicated
EXPRESSION + QUESTION	22:46 Adan: hahahaha why??
ACCEPTANCE	22:47 Adan: and my universal quantificaters are missing

In this particular example we have underlined key words indicating acceptance, symmetry and alignment so on. However, it should be noted that this constitutes a brief example of the whole corpus of this research.

5. Results

General results for this paper derived directly from the corpus being analyzed, as as follows:

From a general guideline for observation from Section 3, researchers obtained evidence from:
The way in which they pose questions or problems (4).
The way in which they arrive to consensus (5).
The way in which responses or answers are negotiated (7).
Other aspects for observation are not evident from this example.

On the other hand, from evidence gathered, either from the quantitative or the qualitative analyses, the following results may be observed:

- A high percentage of participants (80%), showed collaboration patterns while working on Chats. Students arrived at alignment and agreement although in some cases other Tools for communication and interaction were used (Messenger and emails).
- Due to responses to interviews and observations Moodle was characterized by students and teachers as a slow response platform, therefore, in analyzing dialogues silences were interpreted as delayed agreements. This might be another reason why participants turned to alternative communication tools such as Messenger and emails, especially for alignment before collaboration. Moodle was hence used as a delivery platform for solutions to assignments and problems, and/or for consultation with teachers.
- Since assignments and tasks were designed specifically as thematically based, as was recommended in [3] alignment in dialogues was easily achieved, hence, the techno-pedagogical model guarantees collaboration.
- Symmetry was also achieved, since the number of illocutionary speech acts was equal to the number of responses.
- Dialogues showed agreement through perlocutory speech acts, even though the number of requests exceeded the number of proposals.
- Finally, leadership developed naturally among participants through general interaction among participants

as well as inside working groups during the course.

6. Conclusions

Quantitative methods have traditionally demonstrated their viability and usefulness for the analysis of synchronous computer mediated interactions, nevertheless, as shown in this paper, Baker's interaction approach through dialogue and speech acts has also proven to be a useful category for the analysis of collaboration in distance computing mediated environments.

The use of internet didn't report a significant achievement in the development in the synchronous interactions because the same limitations in the platform MOODLE.

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Anexo 5.

Participaciones en congresos

Reflexiones sobre la colaboración de alumnos en un curso a distancia utilizando TIC

Congreso: III Congreso de Innovación Educativa
Realizado: del 9 al 12 de diciembre del 2009 ITESM
Modalidad: en línea

Contenido de las diapositivas:

•La experiencia es muy especial, ya que aunque hay antecedentes del manejo de sistemas de colaboración a distancia asistidos por computadora, pocos se emplean en la enseñanza de las matemáticas y menos en un nivel de posgrado.

Objetivos de la experiencia

•Analizar los niveles de colaboración entre alumnos en un curso en línea, a partir del modelo de Baker.

–Alineación, simetría y acuerdo.

•Análisis de textos con ayuda de actos del habla.

•Identificar las competencias tecnológicas que se desarrollaron en los alumnos a partir de esta experiencia.

Retos

1.- Alumnos y profesores en diferentes lugares geográficos.

2.- Requerimientos especiales para el manejo de las matemáticas en la plataforma. (ejemplo: Editor de Ecuaciones)

Editor de ecuaciones del Chat

•Botones del editor de ecuaciones, así como la ventana que se abre.

Plataforma MOODLE

•Plataforma abierta

•Permite personalizarla a las necesidades, actividades y requerimientos del usuario.

• Requiere gran capacidad de recursos informáticos:
Red de comunicaciones
Servidor

Curso en MOODLE

•El curso abarcó 4 semanas cada semana con un tópico distinto.

•Cada semana se repitió la experiencia de colaboración.

Estrategia del curso

•Se diseñaron actividades individuales y en parejas.

•Actividades sincrónicas y asincrónicas.

Anexo 5.

Participaciones en congresos

•Sesiones sincrónicas colaborativas (Chat´s en MOODLE) entre alumnos y profesores.
Medición de la colaboración

•Se dio por sesiones programadas con el profesor y con sesiones solamente con miembros del equipo.

•También por sesiones definidas por los equipos mismos.
Extracto de Chat con editor de ecuaciones incluido
Análisis de los diálogos
Metodología: el análisis de las intervenciones en el Chat fue estructurado de la siguiente manera:
1.- Identificar saludos, mensajes y preguntas que no aportan a la solución pero son importantes en la socialización de los alumnos.
2.-Buscar mensajes que forman una sola idea pero que fueron escritos a lo largo de varios mensajes, concatenación.
3.- Clasificar los mensajes en uno o más actos del habla, ya que pueden existen en una sola línea de interacción varias ideas.

Análisis de los diálogos…
4.- Identificar de patrones de preguntas y respuestas. Los sujetos deben de estar interactuando para resolver un problema. (en este caso de matemáticas).

5.-Analizar para ver la actividad de colaboración a lo largo del Chat con base a los actos del habla y las ocho formas básicas de colaboración.

6.-Repetir el proceso hasta reducir hasta tener ideas básicas que identifiquen la colaboración y los actos del habla y poder caracterizar el modelo concurrente para la colaboración.

Resultados del análisis e interacciones
•Alineación: Dado que los alumnos entraban a sesiones temáticas especificas esto garantizaba la posibilidad de alineación en el diálogo.

•Simetría: El número de solicitudes (actos ilocutorios) resulto similar al de respuestas, lo que demuestra que hubo simetría.

•Acuerdo: En todo el diálogo existierón más aceptaciones (actos perlocutivos), que propuestas o que número de solicitudes (actos ilocutorios).

•Liderazgo: El liderazgo se desarrollo de manera natural en las interacciones, tanto de forma general, como de equipo.

Resultados del análisis e interacciones
•En la gráfica mostrada podemos observar el comportamiento de asistencias al Chat general, se tenían 23 alumnos matriculados en este curso, obsérvese como desde la primera sesión disminuye le asistencia.
Resultados del análisis e interacciones

Anexo 5.

Participaciones en congresos

•Se observa el uso del Chat por equipo (nombres de letras griegas), nótese como ciertos temas generan un mayor número de sesiones de interacción que otros.
Resultados del análisis e interacciones
•Se observa también en estos diálogos períodos de silencio que pueden duraron entre 1 y 3 minutos. Suponemos varias causas:
–a) el desarrollo de la mayoría de los Chats se realizaban después de las 10:00 de las noche, ya que muchos alumnos trabajaban y no podían conectarse desde su trabajo por lo que se refleja que estaban cansados y tenían poca interacción;
– b) la velocidad de conexión de cada alumno a Internet no era suficiente para poder mantener un diálogo fluido;
–c) La respuesta generada después del periodo de tiempo que corresponde a un Acto del Habla tipo perlocutivo, nos muestra que el alumno está realizando una aceptación tardía.
Conclusiones
•No todos los alumnos iniciaron con el mismo dominio tecnológico. Algunos alumnos mostraron un incremento en su habilidad para el manejo de la tecnología
•El liderazgo se generó de manera natural en las interacciones .
•La colaboración requirió de herramientas tecnológicas adicionales , solicitadas expresamente por los alumnos.
•Se percibieron algunas dificultades tecnológicas de comunicación, que en algunos casos inhibieron la interacción.
•Los alumnos se sirvieron de varias herramientas tecnológicas para facilitar la colaboración para la realización de sus tareas. (messenger, wikipedia)

Conclusiones
•Debido al diseño de las actividades hubo temas que generaron mayor interacción que otros.

•Los alumnos que participaron en esta experiencia de forma virtual, se acoplaron mejor con sus compañeros al momento de interactuar de manera presencial en un curso posterior.

•La mayoría de los silencios encontrados en los Chats, se interpretaron como aceptaciones tardías.