

Collaborative Project Work Development in a Virtual Environment with Low-Intermediate Undergraduate Colombian Students

Desarrollo de trabajo colaborativo en un ambiente virtual con estudiantes
colombianos de pregrado de nivel intermedio-bajo

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This paper reports on an exploratory, descriptive, and interpretive study in which the roles of discussion boards, the students, the teacher, and the monitors were explored as they constructed a collaborative class project in a virtual environment. This research was conducted in the virtual program of a Colombian public university. Data were gathered through a questionnaire, recordings of conversations through Skype, and artifacts or samples of students' participation in the discussion boards. The analysis of the data followed the principles of grounded theory. The main findings suggest that as they were doing project work in a virtual environment, students played the role of team workers, the teacher and monitors played shared roles, and the discussion boards served as a facilitating tool.

Key words: Collaborative class project, discussion boards, virtual environment.

En este documento se presenta un estudio exploratorio, descriptivo e interpretativo, en el que se analiza el papel de los foros de discusión, de los estudiantes, del profesor y de los monitores mientras construían un proyecto colaborativo en un ambiente virtual. La investigación se llevó a cabo en un programa virtual de una universidad pública en Colombia. Los datos se recolectaron a través de un cuestionario, grabaciones de conversaciones por medio del programa Skype y ejemplos de las participaciones de los estudiantes en los foros de discusión; y se analizaron siguiendo los principios de la teoría fundamentada. Los principales resultados indican que mientras se realizaba el proyecto colaborativo, los estudiantes cumplieron el papel de trabajadores en equipo; el profesor y los monitores adoptaron papeles compartidos y los foros de discusión actuaron como herramienta facilitadora.

Palabras clave: ambiente virtual, foros de discusión, proyecto de clase colaborativo.

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Introduction

Currently, there is an increasing interest in using the virtual modality to teach and learn foreign and second languages. Consequently, information and communication technologies (ICTs) have become useful means for accessing information. ICTs have challenged teachers, students, and the academic community to develop certain abilities to be more competent and to understand how to profit from these tools to develop better classroom teaching and learning practices. Additionally, the application of ICTs has exerted influence on the roles that teachers, students, and educational tools play in the learning process.

The program in which this research took place acknowledges the demands of ICTs in teaching and learning processes. Therefore, the Foreign Languages Department at the public university created a face-to-face and a virtual modality for English language learning.

Bearing in mind the methodology of the program and the demands of a new technological era, as well as the students' learning needs, I became interested in inquiring about the roles of teachers, tutors, students, and discussion boards as they developed project work. My inquiry also emerged as a need to promote collaborative knowledge construction among teachers and students. Therefore, the objectives of this project were:

1. To describe the roles that the teacher, the monitors, and the students played as they constructed a collaborative class project.
2. To explore the role that discussion boards played as a collaborative class project was constructed.
3. To draw pedagogical and conceptual implications for the development of virtual courses.

This article contains theoretical concepts that support the research, the procedure followed to explore the roles during the class project implementation, and the outcomes of the implementation. At the end, I present the conclusions and implications for further research.

Context and Participants

This research took place during the second term of 2012 in a virtual English language learning program at a public university in Bogotá (Colombia). The program supports all of the students from the university who are interested in learning the English language through the use of ICTs. It is a blended program that combines face-to-face and virtual learning in which a head teacher and monitors are in charge of leading the course. It is made up of the spaces and applications offered by the Blackboard Management Learning System and its different tools (discussion boards, chats, interactive learning applications, etc.). The explanations, contents, and contexts necessary for the students to understand the language are offered in this virtual environment.

Fifty students enrolled in level III of the virtual English course and two monitors who supported the teacher in the course implementation participated in this study. The students were undergraduate students from different schools in the university. The monitors were two undergraduate students from the Philology and Languages-English Program, from the human sciences school. It was their first time working as monitors in a virtual course, and they were new at managing certain tools of the platform.

Theoretical Framework

Virtual education, discussion boards, project work, and collaborative learning guided the development of this research endeavor. These concepts complemented one another and helped in the theoretical construction and understanding of this study.

Virtual Education

Virtual education, on the one hand, is defined by Ossa (2006) as "a revolutionary educational model that is made up of an innovative and flexible curriculum that brings about interactivity in the teaching-learning process owing to the technological

support offered by telecommunication systems, electronic networks, didactic tools, and virtual libraries and labs” (p. 14 [trans.]). On the other hand, Cebrián (2003) affirms that “in the university system, virtual education is an infrastructure of networks and computers that generate new spaces for the university community to hold communication, investigation, teaching, and learning processes” (p. 17 [trans.]).

García, Ruíz, and Domínguez (2007) classify virtual education courses into two models: total e-learning and blended learning. The total e-learning model does not incorporate any face-to-face meeting because the contents, evaluations, and tutorials take place virtually. The blended model combines face-to-face and virtual learning. In the blended learning model, the teacher plays an important role as a teaching and learning designer. Thus, “teachers in charge of blended learning courses need to have not only technological but also pedagogical knowledge to offer high-quality learning opportunities to students” (translated from García et al., 2007, p. 117).

Castellanos (2009); Clavijo, Hine, and Quintero (2008); Cuesta (2010); Rogers (2008); and Rojas (2007), who have conducted research studies locally, suggest that technology can be used to promote and foster English language learning through the use of appropriate tools but it must always keep in mind institutional and learners’ needs. Likewise, Barrios (2008) and Medina (2009) favor the use of technological tools to support language learning. The former researcher affirms that “the implementation of asynchronous activities is a key element in the construction of participants’ networks because of the collaboration that takes place in order to get common goals” (Barrios, 2008, p. 42 [trans.]). The latter author recommends taking advantage of online tutoring “to raise the students’ awareness about language learning” (Medina, 2009, p. 133) so that we can better understand students’ strengths and weaknesses.

ICTS offer a range of possibilities for virtual education. However, the decisions about how, when, where, and why to use this tool must be made by teachers, students, and institutions depending on their needs. Despite the multiple advantages ICTS offer, we also need to be aware of their possible limitations and the best ways to optimize this resource.

Discussion Boards

The literature about discussion boards is extensive. Numerous authors both abroad and in the Colombian context have researched their use and have theorized about the advantages of using them. Below, I will discuss what specifically a discussion board is, its advantages and research conducted by researchers who have employed this tool.

According to Bikowski and Kessler (2002), a discussion board is “an electronic forum in which people with common interests can share comments and questions on a specific topic” (p. 39). Halnon (2002) affirms that a discussion board is a “bulletin board where you can leave and expect to see responses to messages you have left” (p. 14). Brito (2004) defines the discussion board as a space where different topics can be discussed and notes that it is useful for finding the solutions to problems because there we can find the opinions of different people. The author states that a forum can be used for different purposes such as interchanging experiences, reflections, analysis, and contrasting opinions and promoting discussions.

Cantor (2009) conducted a study with the aim of exploring students’ perceptions about the use of discussion boards in a virtual program. By analyzing the data collected, the researcher found three main categories in regard to the use of the tool: perceptions, expectations, and usage.

In regard to perceptions, the students felt that discussion boards allowed them to express themselves freely because no one judged their opinions and because their participations were validated and graded

without a focus on grammar aspects. In terms of expectations, Cantor (2009) found that in upcoming courses, students expected to participate in discussion boards in which they could discuss topics of their interest such as sports, music, literature, and science. As for the usage of the tool, the students expressed that it was helpful to interact with the teacher and other students, it was easy to use and participation was regular along the course. Cantor concluded that the discussion board “should be given a higher status since it can be a key mediator between teacher-student and student-student” (p. 119) because it helps in developing collaborative work, autonomy, and control over the time, amount and quality of interaction as well as tolerance. I agree with Cantor’s conclusion because discussion boards are useful means through which teachers and students can communicate and interact constantly, even more so when it is not possible to meet students face to face. Additionally, Cantor emphasizes the role teachers play in discussion boards, particularly when interacting with students, providing feedback, and fostering autonomy.

As asynchronous tools, discussion boards give teachers and learners a range of advantages that enrich the learning process in a virtual learning environment. More than serving the purpose of discussing a topic, discussion boards can be used to foster cooperative and collaborative work to construct knowledge by interacting with teachers and with peers.

Project Work

Because project work is a broad term that involves many elements of education, I only mention here the definitions and characteristics that most apply to this research. Ribé and Vidal (1993) define project work as the full implementation of three types of tasks that they call first-generation, second-generation, and third-generation tasks.

First-generation tasks aim at developing communicative abilities “in a specific area of the language

being taught” (Ribé and Vidal, 1993, p. 2), and second-generation tasks focus on content, procedure, and language. Second-generation tasks require students to develop language skills and cognitive strategies that allow them to handle, organize, and present information. The implementation of second-generation tasks permits learners to analyze the information they need, select appropriate procedures, collect information, select relevant data, present the data in an organized way, and analyze the procedures and results. Ribé and Vidal explain that language “is a vehicle for doing a ‘real’ piece of work and it implies using a range of structures, functions and lexical sets” (p. 2).

Ribé and Vidal (1993) affirm that third-generation tasks involve language and cognitive strategies, as do the previous tasks, and also aim at developing “the personality of the students through the experience of learning a foreign language” (p. 2). These tasks must involve aspects of the individuals’ personalities, previous experience, and knowledge. Some of the aspects that can be included are arts, music, literature, hobbies, and concerns, all of them mediated by creativity.

A complementary definition and characterization of project work has been provided by Gutiérrez (2001), who affirms that project work is “a pedagogical strategy that comprises the objectives of active pedagogy, conceptual change, autonomy, and teacher-student interaction with the purpose of generating knowledge” (p. 49 [trans.]). The author states that “the main function of project work is to guide the students in a systematic and organized way in order to reach a certain goal” (translated from Gutiérrez, p. 49).

According to Gutiérrez (2001), closed and rigid curricula do not allow innovation or change implementation through project work because of the fixed contents, the memorization of contents, the focus on the teacher, and the importance given to results. Conversely, “opened curricula are flexible, contents can be changed and interrelated, processes are given

importance, and individual students' differences are taken into account" (translated from Gutiérrez, p. 51).

Collaborative Learning

One of the most important challenges for teachers involved in the field of virtual education is the enhancement of collaborative work through the appropriate use of technological tools, instructional design, and pedagogy. Collaborative work is essential in any learning context because we are social human beings who construct knowledge together. Bearing in mind the context in which I conducted this project, elements such as virtual education, discussion boards, and project work joined together so that collaborative work and learning could take place.

Dillenbourg (1999) uses the adjective "collaborative" to describe four aspects of learning: the situations, interactions, learning mechanisms, and effects of collaborative learning. Situations can be characterized as collaborative, depending on the agents involved. For instance, it is more likely for collaboration to occur when two people from a similar status work together rather than when people from different statuses work together, for example a boss and an employee or a teacher and a pupil.

According to Dillenbourg (1999), collaboration involves interactions that are highly characterized by negotiation. In order for these interactions to in fact happen, there must be three elements: interactivity, synchronicity, and negotiability. Interactivity depends on the degree to which the interactions influence the peers' cognitive processes, more than on the number of interactions. Synchronicity is associated with cooperation and cooperative work, which has to do with the division of labor for completing tasks. Negotiability is the third element that makes up collaboration and has to do with the collaborative dialogue between partners in which they "argue for their standpoint, justify, negotiate, and attempt to convince" (Dillenbourg, 1999, p. 13).

From concepts such as virtual education, discussion boards, project work, and collaborative learning, I conclude that virtual environments are rich and appropriate spaces in which multiple strategies, methodologies, and teaching and learning approaches can be applied. Virtual environments allow teachers and learners to manage their time and space accordingly, and the learner is the focus of the process rather than the teacher or the activities themselves. Virtual environments allow for implementing different strategies with learners such as collaborative and cooperative work. In addition, it is possible to conduct multiple projects with the students, depending on their needs, likes, and adaptation to the program syllabus. In this kind of environment, learners and teachers have begun to play an important role, and this has important new implications in the teaching and learning field.

Research Design

This is a qualitative, descriptive, interpretive study in which a group of students, two monitors, and a teacher participated. The study took place in a virtual English language learning program at a public university in Bogotá (Colombia). The instruments used to collect the data were questionnaires, recordings, and artifacts.

Merriam (1998) defines qualitative research as an umbrella term that covers "several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible" (p. 5). Based on the premise that in qualitative research, reality is constructed by individuals' interacting in their social worlds, the author identifies five main characteristics of the term.

The first aim of qualitative research is to understand the meanings people construct as they interact in a particular context. Although meaning is mediated through the investigator's perspective, the purpose is to understand the phenomena of interest

through the participants' own perspectives, not the researcher's.

A second characteristic of qualitative research is the importance of the researcher as the primary instrument for collecting and analyzing data. Surveys, questionnaires, artifacts or products from students' work, and computers, among other tools, are useful instruments for collecting data, but the most important tool is the researcher because he/she is a mediator between the data and its interpretation.

The third characteristic of qualitative research, according to Merriam (1998), involves fieldwork. This means that the researcher "must physically go to the people, setting, site, institution in order to observe behavior in its natural setting" (p. 7). To collect sufficient data to give the right interpretation to the data and to the participants' meaning construction, the researcher needs to have real contact with the population and the setting.

The fourth characteristic refers to the inductive strategy employed in this method. This means that rather than testing existing theories, the researcher builds abstractions, concepts, hypotheses, or theories. Thus, the researcher builds on his own theory based on the data findings. This is what makes qualitative research a genuinely innovative and worthwhile endeavor (Merriam, 1998).

Finally, the product of qualitative research is descriptive. Whereas quantitative research uses numbers, qualitative research uses words and images to describe the different phenomena. To support the findings of the study, the researcher uses participants' words, direct quotes from documents and a wide variety of evidence collected from the data (Merriam, 1998).

To collect the data, I used three instruments: a questionnaire, recordings of virtual meetings with the monitors, and artifacts and samples from participations on discussion boards. Because one of the objectives of this research consisted of describing the roles of the students and monitors as they

proceeded with the class project, the questionnaire was the most appropriate instrument for acquiring information on the functions the participants thought were important by the time they began their projects. The recordings were appropriate instruments for contrasting and validating the information provided by the monitors on the questionnaire at the same time that they served the purpose of analyzing my own role as a head teacher. The artifacts and samples from the students, monitors, and teacher's participations on the discussion boards became important instruments for exploring the role of discussion boards in the collaborative construction of the class project and for validating the information provided by students on the questionnaire.

Pedagogical Design

To plan, implement, and evaluate all of the pedagogical activities and to support this research, I adapted the project planning form from the Buck Institute for Education (see Appendix A). This is a useful instrument for planning project development with students in a virtual environment. It incorporates the project objectives, the technological tools used, the skills the students need to develop, the assessment criteria, and the time spent developing the project. In addition to the project planning form, I adapted and used the International Society for Technology in Education (2007) standards to evaluate the students' project achievements.

Along the course, the students worked on creating a video as part of their class projects. The students began to construct their projects from the very beginning of the course. Each week, a forum was posted so that they could be guided throughout the process. It was important to begin with a forum in which the students could get to know each other and then to start moving little by little to their topic choices, subtopic choices, group formation, creation of a written draft, correction of the draft, video

recording, socialization of the videos in the academic and cultural meetings, and evaluation of the activity.

Data Analysis

To analyze the data, I applied the grounded theory analysis approach because it allowed me to systematically organize, analyze, and interpret the gathered information. Grounded theory is “a qualitative research method that uses a systematic set of procedures to develop an inductively derived theory about a phenomenon” (Strauss & Corbin as cited in Neuman, 1991, p. 24). As the data are analyzed, theories are constructed according to previously formulated research questions.

Findings

Taking into account the research questions and the data collected, three categories and four subcategories emerged; these are shown in Figure 1. Each category and subcategory is described by its characteristics and dimensions based on the data analysis.

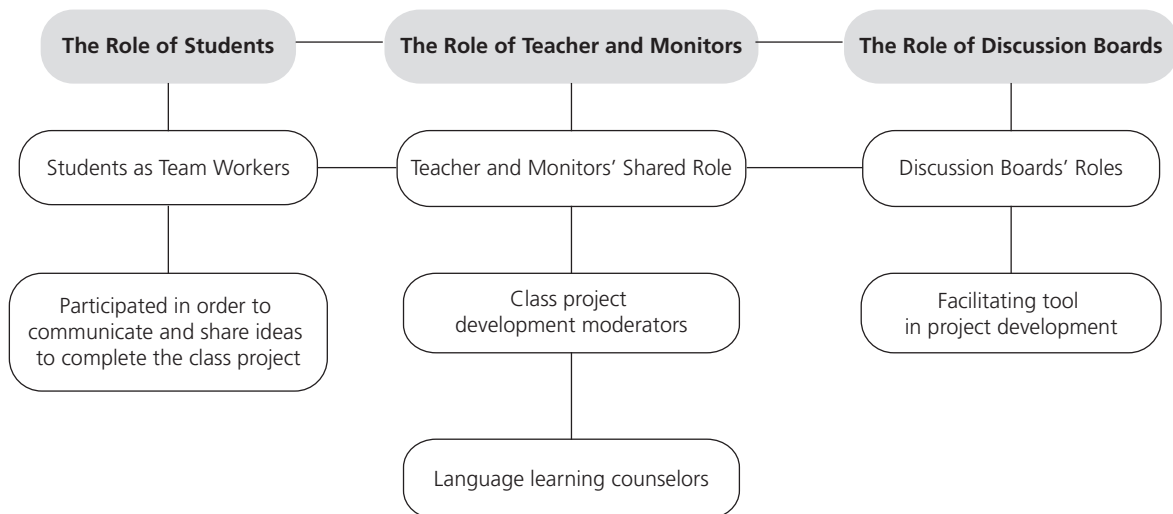
To analyze the data, I organized them into folders. I numbered the information collected from the questionnaires line by line, and I drew a column for

comments. I also organized the artifacts and numbered line by line the students’ participation in the forums. For the artifacts for which it was not possible to write numbers, I wrote comments on separate notes on the list. Once the data were organized, I began the coding procedure. This procedure began as I began to look for patterns or codes in the data. I then began naming the codes and patterns in the data. Finally, I grouped the common patterns according to their similarities. After grouping the codes, I began to identify patterns among the categories. The descriptions of each category and subcategory are supported with evidence found in the questionnaires, recordings, and artifacts and are based on theories related to the findings.

**The Role of the Students:
Students as Team Workers**

In the process of planning, developing, and ending the project, the students played the role of team workers because they were committed to a shared goal, they had complementary skills, they had mutual and individual accountability, and they worked interactively and independently (Duke Corporate Education, 2005).

Figure 1. Categories and Subcategories



“Students were committed to a shared purpose or goal; this means that there was a specific reason for the team to exist and for the members to be part of it” (Duke Corporate Education, 2005, p. 3). Some of the common objectives students shared as they worked on small teams were:

To work in teams to get a satisfactory result.

To present our team work in an active and creative way to achieve our objective that was learn [sic]. (Questionnaire, Diana)

“As team workers, students had complementary skills” (Duke Corporate Education, 2005, p. 3). There was a balance of capabilities among the teams’ members so that each team worked effectively. On all teams, there were students from different majors, so they had different talents and abilities and complemented one another according to those abilities. Some students who were more able to manage technological tools offered to contribute to the teams according to their skills. Some students who studied graphic design were very good at managing the technological tools:

Hello, I am Peter...study graphic design I am in 7 semester...the one that wants I him can collaborate with the part of edition of the video, This is what is in use as virtual tour in the page, an animation and a map I believe that it can be better, this one is the link. [sic] (Discussion board, selecting the topic for the project, Pedro)

The team members also worked interactively and interdependently (Duke Corporate Education, 2005). In addition to being committed to shared goals, complementary skills, and individual and mutual responsibilities, the students also had to work interactively and interdependently. Hence, as team workers the students had to participate in the different activities to interact with their teammates so that they could communicate and share ideas to complete the class project.

Sharing Ideas to Complete the Class Project

Sammons (2007) holds that “sharing information and sources of information” (p. 312) is one of the actions that learners accomplish when working collaboratively. From the perspective of the group information framework, social knowledge construction involves sharing information. This framework is defined as “the degree to which information, ideas, or cognitive processes are shared, and are being shared, among group members and how this sharing of information affects both individual and group level outcomes” (Hinsz, Tindale, & Vollrath as cited in Derry, L. Gance, S. Gance, & Schlager, 2000, p. 57).

As a complement to sharing information, students considered that it was necessary to discuss what information was important and to organize that information to make their work more effective. This is evidenced in the discussions students had through the forums, as shown in Figure 2.

To reach their learning goals, students as team workers participated to communicate and share ideas so that they could complete tasks and solve conflicts. Because students worked in teams, there were elements such as opportunities to participate, to interact with others to negotiate and make decisions, to share ideas, and to be responsible. These elements apply to collaboration according to the way it is described by Dillenbourg (1999). The role that the students played as team workers affected the dynamics of the team both positively and negatively. The members of the team who had more capacity to communicate with others and to share ideas had fewer difficulties throughout the project’s progress, and their experiences were positive. In contrast, the students who preferred labor division, who rarely communicated with others or who had time constraints because of lack of organization faced more problems within the team, and even though they submitted their projects by following almost all the parameters, their experiences were not particularly satisfactory.

Figure 2. Students' Participation in Forums

Asunto: RE: Spider WEB	Responder Espacio Modificar De finir indicador E liminar
Autor: Lorena Fecha de publicación: viernes 10 de septiembre de 2010 13H37' GMT-05:00 Fecha de última modificación: viernes 10 de septiembre de 2010 13H37' GMT-05:00 Vistas totales: 95 Sus vistas: 37	« Publicación anterior Siguiete publicación »
Mostrar publicación principal	
<p>SPIDER WEB.docx (14.276 Kb)</p> <p>Hi guys!!</p> <p>As you know the idea is to send subtopics about our topic, I propose the following structure wich I have organized in a spider web.</p> <p>If you are agree whit the subtopics we could start to work on it, please do feel free to comment or add any sugestion that you think would be better.</p> <p>Bye for now,</p> <p>Lorena</p>	
Asunto: RE: Spider WEB	Responder Espacio Modificar De finir indicador E liminar

The Teacher's and Monitors' Shared Roles

Given that it was the monitors' first experience working with students in a virtual environment, the teacher and the monitors agreed upon all being involved together in planning the tasks, motivating students, facilitating access to materials, organizing the teams, encouraging students to interact and work collaboratively, revising their progress, providing feedback, resolving doubts, and facilitating tools to evaluate their own progress. Instead of dividing up responsibilities, the teacher and monitors complemented one another depending on time availability and the ability to perform certain tasks. This task division facilitated our work and allowed for organization and timely task fulfillment.

The Teacher and Monitors as Class Project Development Moderators

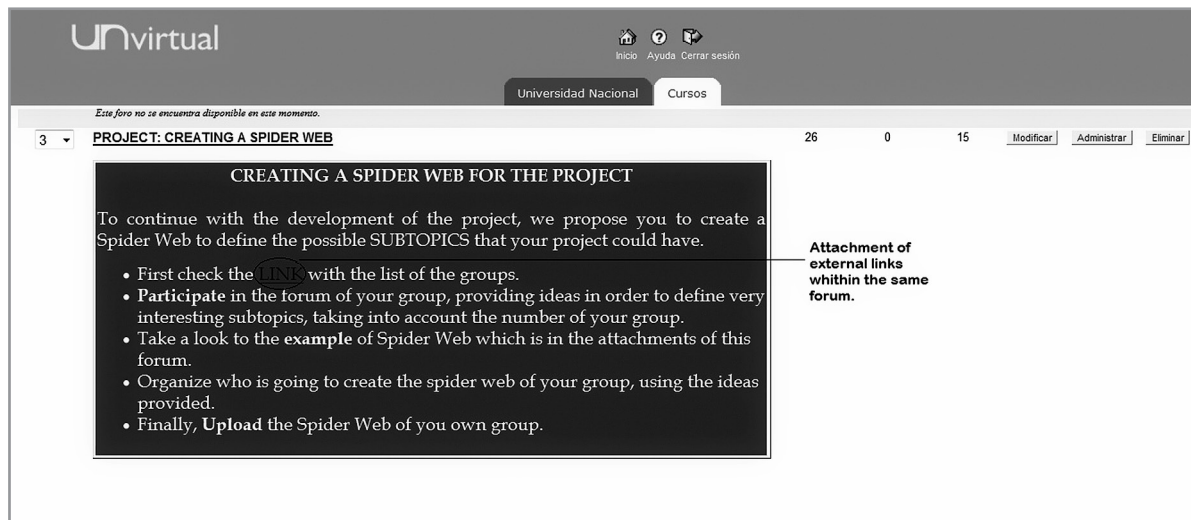
In the role of class project development moderators, the teacher and the monitors took specific actions that favored the initiation, development, and

ending of the students' class projects. This role is consistent with the skills of an e-moderator according to the model described by Jaques and Salmon (2007). The authors continue, and I agree, "e-moderators develop skills along a continuum of five stages that are: access and motivation, online socialization, information exchange, knowledge construction and development" (p. 43). The teacher's and the monitors' functions were not fixed at each stage; on the contrary, they interweaved.

In the access and motivation stage, the teacher and monitors guided students through announcements, orientation guides, and tasks that contained detailed instructions for how to accomplish their projects step by step. It was necessary to create routines that facilitated students' following instructions as shown in Figure 3.

In the online socialization stage, the teacher and the monitors captured the students' attention by inviting them to get to know each other through a posted forum on which they shared personal information. Students could learn about each other

Figure 3. Forum, Project Task



through this forum by interchanging information such as their majors, personal information and interests, and experience with virtual education and technology. They used this information in later stages of the project. Furthermore, introducing themselves was a good way to break the ice before beginning the project (see Appendix B).

In the information exchange and knowledge construction stage, the teacher and monitors had to be very active in their roles to involve students in the process. In the virtual meetings, they paid attention to the suitability, correct explanations, and correct sequences of activities to be posted during the week because in this virtual environment the students needed a great deal of guidance. The teacher and monitors discussed the instructions, the deadlines for completing the tasks, and the parameters for assessing and evaluating the students' participation. This ensured that the students received and understood the messages and that the tasks could be completed.

The use of language for promoting the students' motivation for the course was also part of the teacher's and the monitors' roles as project development moderators. On the questionnaire the monitors completed, one of them said that it was relevant

“to encourage the students' participation in the discussion board through comments that motivate their active involvement in the discussion boards” (Questionnaire, Monitor 1).

Using encouraging words was effective for students to continue with their projects and to promote their motivation. When there was lack of participation, the teacher and monitors wrote comments to stimulate the team members to continue working and to communicate with one another.

In the development stage, the teacher and monitors encouraged students to peer-evaluate and self-reflect on their learning. This self-reflection occurred at the end of the process, when the students' videos were ready. On the one hand, one of the purposes of making the projects was to show them to other classmates, to socialize with them and to interact with members of other teams by providing feedback and comments on their videos. This socialization took place in the virtual cultural meetings. On the other hand, it was important for the students to reflect upon their own learning processes during the project development. For their self-reflection, we provided a self-evaluation questionnaire (see Appendix C) when they ended their projects; through this means, they

reflected upon their own processes and evaluated the project work activity.

The role that the teacher and the monitors played as project development moderators facilitated the teams' work dynamics in the context of a virtual environment. Throughout the process, we motivated students, facilitated some materials, and encouraged socialization and information exchange, self-evaluation, peer evaluation, and evaluation of the project implementation. We were mediators of the students' interaction with the content of the course and their interaction with their partners. To continue this support, the teacher and monitors also played the role of learning counselors. Below, I will focus on this role.

The Teacher and Monitors as Language Learning Counselors

The counseling role of the teacher and the monitors was reflected through their continuous monitoring of the students' progress and feedback on their written work. Concerning the feedback that teachers provide students in a virtual course, White (2003) affirms that "learners expect individualized feedback on language used in collaborative work online, and the teacher needs to negotiate parameters in relation to when, how often, how, and why this feedback will, or will not, be given" (p. 73). Because of the virtual course's limited amount of time and large number of activities, it was not possible to negotiate with the students the feedback to be provided. However, students were given individual feedback each time they submitted a written task. In fact, when the monitors responded to the questionnaire, they affirmed that providing feedback to students and being attentive to their questions would be two of their assignments.

The monitors considered it relevant to identify the students' grammar mistakes in their written compositions and to resolve doubts about language use. Based on the identification of mistakes, they

provided feedback that helped the students to correct the mistakes and clarify doubts. The corrections were made in written form.

Feedback was also given to students by writing short comments with recommendations to work on grammar or vocabulary but without pointing out specific grammar mistakes. Suggestions were also given regarding how to complement the videos or make them more attractive.

Feedback was complementary, and it gave the students a range of possibilities for noticing and correcting their mistakes. It had a positive effect on the students, who incorporated the corrections, and because of this, the ideas in the videos were clearer. The only shortcoming was that despite the time we spent giving feedback, some students on the teams did not incorporate the corrections, and this affected the clarity of the ideas in their final products.

The Discussion Boards' Role

The discussion boards were a central element that allowed the teacher, the monitors, and the students to communicate. According to McNeely (2005), message boards and discussion boards are highly useful tools because they allow students to communicate quickly in a centralized manner. The centralization and the conversations that took place on the discussion boards made it possible for the students, the teacher and the monitors to have a common space to interact and to share ideas to complete the class project. It was positive because all of the course members viewed each other's ideas and comments, gave feedback, and corrected mistakes or reshaped ideas (see Figure 4).

Apart from their being a medium to express opinions and share ideas, Bikowski and Kessler (2002) state that discussion boards are beneficial because they can be "used to interact with individuals and small groups" (p. 28). This facility to interact was particularly effective for coordinating activities on the small teams. As one student said:

Figure 4. Discussion Board Thread

The screenshot shows a Blackboard Academic Suite interface. The top navigation bar includes 'Unvirtual' and 'Universidad Nacional Cursos'. The left sidebar contains a menu with items like 'Anuncios', 'Actividades', 'Guía Estudiante', 'Módulos Virtuales', 'Tutoría Presencial', 'Tutoría en línea', 'Clubes de Práctica', 'Evaluaciones', 'Foros', 'Audio Foros', 'Mis calificaciones', 'Interacción Semanal', 'Cronograma', 'Mis Compañeros', 'Mi Profesor', 'Learn and Help', and 'Materiales del curso'. The main content area shows a discussion board thread for 'Group 1'. The thread header indicates 'Publicaciones totales: 7' and 'Publicaciones sin leer: 0'. A table lists the posts:

Author	Date
Monitor 1	7/09/10 12:27
Luisa	10/09/10 23:44
Angelica	11/09/10 2:40
Diana	11/09/10 21:09
David	12/09/10 10:27
David	12/09/10 10:34
Diana	12/09/10 22:09

The selected post is by Angelica, with the subject 'Asunto: RE: Group 1'. The post content reads: 'Hello, I'm part of group # 1. I was watching the draft Luisa, I find interesting the issues proposed, although it covers many places and we must remember that we are only four people. Luisa's file using, I suggest fewer places, here I attached the file. I left the sites that I find most interesting in my opinion. Obviously everything is subject to all propose changes. In particular, I would like to make the Cartagena because I have a trip to this city in October.'

The discussion boards provided a space fundamental [sic] of interaction with our mentors and peers, thanks to them *resolvi* [sic] several questions and got to know other viewpoints. (Evaluation, Jindra)

Even though there were other tools for communicating and interacting, for example, e-mail, chat, and even some social networks, the discussion boards allowed more interaction with the students because of their asynchronous nature.

The exchange of ideas and interactions taking place through the discussion boards contributed to the construction of the class project because all of the students could express their ideas and feelings through this means. Thus, the discussion boards served as central nodes that facilitated the development of the project.

The Discussion Boards as Facilitating Tools in Project Development

Referring to the discussion board as a facilitating tool, one student affirmed that “It was the most

accessible and for which we had more communication and interaction, finally that we were able to coordinate the activity” (Evaluation, José). Furthermore, another student said that, “Discussion boards are very useful for the development of the project because in this way we could express our ideas about it” (Evaluation, Karen).

Discussion boards favored the coordination and development of the project because through them, students could participate, communicate, and share ideas.

The discussion boards served as facilitating tools in the development of the project as process and product, the final artifact of which was a video. As facilitating tools, they were a bridge that connected the teacher, the monitors, and the students. This tool allowed for monitoring processes, team formation, and access to other collaborative learning materials and gave the teacher, the monitors and the students the chance to participate according to time and place availability. The discussion boards allowed discussion, corrections, suggestions, and brainstorming.

Information access through the discussion boards during the project development demonstrably facilitated the process because of the work consolidation. In other words, it was possible for the students, teacher, and monitors to view all of the project tasks in a single space. Moreover, there were fewer opportunities for confusion and misunderstanding because all of us—the teacher, the monitors, and the students—were able to help, to collaborate, and to communicate.

On the discussion boards, it was possible to see when the team was formed, the number of team members, who created the team, who had read the team information, and who contributed. It was a very organized way to manage the projects' data and to see who accessed what, when, and at what time.

The discussion boards were a common place where the teacher and the monitors could attach other "learning objects"; a clear example is the GoogleDocs document we attached once the students' teams were formed. GoogleDocs became another complementary tool for the collaborative construction of the project. An additional advantage of this tool was that everyone could attach files to this document and the students could also meet virtually and synchronously to edit the document simultaneously (see Appendix D).

Finally, with the discussion boards, the teacher, the students, and the monitors found it easier to develop the project because of the boards' ease in terms of place and time for participation. Several authors ratify the benefits of discussion boards with regard to time. Following McNeely (2005), "distance education—through internet and video courses—helps those who have to work and go to school at the same time better schedule their learning opportunities" (p. 4.5). Related to McNeely's assertion, one student said that the discussion boards were a tremendous help "because of my schedule I was hard to me to attend tutorials face to face, or meet with my partner [*sic*]."

Nearly all of the students were too busy to have meetings face to face because of their university

schedules, their jobs, or their family occupations. The virtual modality makes learning flexible for students because "place and time are not limiting factors" (Bikowski & Kessler, 2002, p. 28). Hence, discussion boards as tools in a virtual environment helped the students with time limitations.

With the teacher's and the monitors' mediation, discussion boards were a pedagogical tool by which the class projects came about. They facilitated the concentration of information in a single space, and in this way, all members involved in the project could communicate, interact, monitor the progress, and participate. It is worth mentioning here that the students could see and follow the sequence of the projects through the discussion boards from the time they began. They observed how their projects began with a topic and later developed into subtopics, which led to the creation of a draft and finally the virtual socialization of the projects. The sequential order of the tasks on the discussion boards allowed the teacher and the students to assess and evaluate the progress, and most importantly, the students were informed at all times.

Conclusions and Implications

In this research, I explored and described the roles that the students, teacher, discussion boards, and monitors played as the students constructed a class project in a virtual program at a public university in Bogotá (Colombia).

As for the students' roles, I came to the conclusion that conducting collaborative project work in a virtual environment demands that students relate with others and be active knowledge constructors rather than passive information receivers. In a virtual environment, students also need to become autonomous and responsible for their own learning. Hence, students need to play the role of team workers who participate in tasks to communicate and share ideas with the purpose of completing class projects.

In relation to the teacher's and the monitors' roles, I concluded that teachers in a virtual environment have to play multiple roles. However, developing project work with students is a challenging experience because it demands that teachers to play additional roles. To help students to fulfill their project objectives, the teachers and monitors must play shared roles. Playing shared roles imply that the teachers and monitors need to work together in the project planning, development, and assessment phases.

Virtual education programs should support teachers in terms of their professional development. More opportunities should be given to teachers to learn about the most recent and effective approaches to teaching in virtual environments. This could be beneficial for teachers and for students. Furthermore, there should be spaces in which teachers and monitors can get together to share and to learn from their meaningful pedagogical experiences.

Finally, looking at the role of the discussion boards, I came to the conclusion that they are a useful tool for maintaining interaction and communication among teachers and students. When working on projects in a virtual environment, discussion boards come to serve as facilitating tools in this process. However, it is important to note that this tool does not stand by itself. In other words, in order for this tool to be optimal, the teachers' intervention and careful planning and implementation are necessary.

The implementation of the project-based approach, along with collaboration and the use of discussion boards, should be carried out by most teachers in virtual education programs because of the benefits they bring. The development of projects needs to be given more importance because it reflects the process that the students follow throughout the course and the final results reflect their ability to integrate contents.

Alternatively, working collaboratively helps students, teachers, and monitors to bridge the

gap of isolation generated by distance in virtual environments, bringing about more interaction, knowledge sharing, and responsibility. However, for collaborative learning to be effective in a virtual environment, teachers and monitors need to play several roles depending on the needs and dynamics within teams. Finally, the adequate use of synchronous as well as asynchronous tools such as discussion boards can enrich the process of working and learning collaboratively in a virtual environment.

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Appendix A: Standards-Focused Project Based Learning

1. How the technology chosen for the project helped in achieving the project goals.

2. The ISTE standards that students met in this project:

2.1. Creativity and innovation

2.2. Communication and collaboration

2.3. Research and information fluency

2.4. Technology operations and concepts

2.5. Critical thinking, problem solving and decision making

2.6. Digital citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

3. Key skills students learned in this project.

4. Assessing the Project

Step 1: The products for the project. What was assessed?

Early in the Project:

During the Project:

End of the Project:

Step 2: The criteria for exemplary performance for each product.

Product: Draft

Criteria:


Product: Video


Criteria:

5. Key dates and important milestones for the project.

Adapted from the Buck Institute for Education (<http://174.123.25.183/ProjectPlanning/PlanningForm.htm>)

Appendix B: Forum: Introducing Yourself

 **Tablero de discusión**

Foro  Buscar

Orden de presentación	Foro	Total de publicaciones	Publicaciones no leídas	Participantes totales				
1	INTRODUCING YOURSELF	51	51	25	Modificar	Administrar	Eliminar	Copiar

In this forum you are going to introduce yourself so that we get to know each other. Write your ideas in a paragraph and include the following information:

Name, age, career, semester, place where you work, reason why you decided to take this virtual course, what you like about virtual technologies, your favorite free time activities and your favorite web pages. You can attach a photograph if you want to.

You can start your paragraph like this:

Hello everybody, my name is.....I'myears old, I study.....etc.....

Este foro no se encuentra disponible en este momento.

Appendix C: Cultural and Academic Meeting Evaluation and Self-Evaluation Form

Virtual Cultural and Academic Meeting Evaluation

Dear student:

Your opinion is very important for us in regard to the project that you developed during the virtual course. Please respond to the following questions, in which you self-evaluate and evaluate the activity. Thanks for your opinion.

Name and surname: _____

Group: _____

1. What did you like the most about the development of the project?

2. What did not you like about the development of the project?

3. Was the project motivating or de-motivating for you? Why?

4. What was your experience working in groups?

5. Throughout the development of the project, were the instructions clear for you?
If not, what was unclear for you?

6. Were the discussion boards a useful means for developing your team project?

7. Did the project contribute to your learning process? Yes/No Why?

8. Please write your suggestions to improve this activity in future courses.

Appendix D: GoogleDocs Sample

The screenshot displays a Blackboard Academic Suite interface. At the top, the 'UNvirtual' logo is visible, along with navigation links for 'Universidad Nacional' and 'Cursos'. A sidebar on the left contains various course-related tools such as 'Anuncios', 'Actividades', 'Guía Estudiante', and 'Herramientas ALEX'. The main content area shows a Google Docs document titled 'GROUP 2 SPIDER WEB SUMMARY (1)'. The document text is as follows:

TOURIST PLACES IN CUNDINAMARCA, TOLIMA AND BOYACA

INTRODUCTION (Yennifer)

Colombia is one of the most beautiful countries in the world, Colombian beaches are the most frequently visited by all the tourist from around the world, nevertheless there are many natural paradise for visit, specially in the zone of Tolima, Cundinamarca and Boyacá. In this places you can make many activities from Canotage(WW) to Rafting. You can also visit the desert or the coldest places as the Nevado of Ruiz.

PRETTIEST VILLAGES (Luis)

- Villa de Leyva (Boyacá)

Villa de Leyva is one of the most beautiful and preserved colonial cities in Colombia. There are a lot of places that we can visit, for example:

- PARIHS CHURCH: it was built in 1604; built of rocks and bricks, it has two windows crowned with arches with a colonial style.