Effective Practices in Online Collaborative Learning In Campus-based Courses

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Abstract

The aim of this paper is to identify effective practices related to online collaborative learning (OCL) in campus-based courses in higher education. Three different perspectives were selected by instructors as conducive to online collaboration in campus-based courses: the reflective practitioner perspective, the critical thinking perspective, and the project-based learning perspective. Data were gathered in diverse contexts and over a range of periods from three years to one month. Analytical approaches were aligned with the three perspectives identified. Results show that online collaborative learning monitored through discourse analysis can support instructors in their efforts to match intentions with learning outcomes thus leading to more effective practices.

Introduction

The effectiveness of face-to-face synchronous collaboration in the classroom is already well-supported by research (Brookfield & Preskill, 1999; Bruffee, 1993; Cockrell, Hughes Caplow & Donaldson, 2001; Springer, Stanne, & Donovan, 1999). Increasingly, however, online collaborative learning (OCL) is becoming an integral part of a growing number of campus-based courses using hybrid or blended learning environments[1]. Yet, the value and effectiveness of online collaborative learning is less obvious for campus-based courses than for those offered via distance (Aviv & Golan, 1998; Bonk & King, 1998; Dillenbourg, 1999; Harasim, Hiltz, Teles & Turoff, 1995; Henri, 1992; Paloff & Pratt, 1999; Strommen, 1995). Understanding the effective practices related to OCL as part of campus-based courses in higher education can provide insight into the design and assessment of hybrid or blended learning environments in general. This paper provides insight into teacher effectiveness as regards online collaborative learning by combining three separate analytical studies in

[1] Graham, Allen, and Ure (2003) defined blended learning environments as ones that "combine face-to-face instruction and computer-mediated instruction" (p. 7).

three contexts of use of OCL. The aim is to demonstrate that effective practices related to OCL as part of campus-based courses in higher education can be achieved. The objectives are as follows:

1. Describe instructors' practices.
2. Consider ways to improve practice by focusing on the match between intentions and outcomes.
3. Illustrate how instructional intentions can be matched with results to identify effective practices.

To study online collaborative learning, researchers can conduct content analysis, and identify communication themes and patterns. Building on descriptive results regarding communication patterns observed in electronic forums (Brandon & Hollingshead, 1999; Koschmann, Myers, Feltovich, & Barrows, 1994), this paper presents an analysis that aligns itself with process-product research on teaching. In this regard, it identifies communication patterns that resulted from instructors' intentions and strategies. Instructional intentions involve engagement of students in reflective practice, critical thinking, or project-based learning. Teacher effectiveness is approached using Schön's (1983) model. It refers to the instructor's ability to match results with intentions. The studies described in this paper illustrate how results can be matched with intentions in order to promote more effective learning in a collaborative context.

This paper advances teacher knowledge beyond descriptive studies of online communication patterns by addressing effectiveness issues in relation to computer-supported collaborative learning. Research in this area is difficult but needed in order for effective learning environments to exist (Bowden & Marton, 1998; Briggs, 1996). Results presented in this paper can also be useful in a context of design or assessment of hybrid or blended learning environments in campus-based courses in higher education.

Theoretical framework

The main assumption of the analysis is that a technology of use must complement advances at the software and hardware levels. In this case, the technology of use under study involves the engagement of students in online collaborative learning. Collaborative learning is defined as the acquisition by individuals of knowledge, skills or attitudes through group interaction in which group members work together to achieve common learning goals and related tasks. The collaboration-oriented teaching approaches under study here have already been discussed in previous studies (Campos, 2004a; Murphy, 2004; Murphy, 2004b; Nizet & Laferrière, 2005), and in other works in the field (e.g., reflexivity: Harrington, 1995; critical thinking: Newman, Webb & Cochrane, 1995; project-based learning: Ponta, Donzellini, Markkanen, 2001). The exchange of research findings related to learning in the context of collaborative activity and the exploration of how such learning might be augmented through technology is an emerging research domain, namely, computer-supported collaborative learning (CSCL).

Access to technology is important and participation in engaging collaborative activities is also important (Brett, 2004; Pawan, Paulus, Yalcin, & Chang, 2003). Socio-technical designs are reflective of the idea that technologies do not exist and operate in isolation from the individuals that use them (Mumford, 1996). For instance, Blanton, Moorman, and Trathen (1998) pointed to the lack of studies that examine the actual discourse patterns as opposed to the technical affordances of specific online tools that support collaborative learning. Teaching effectiveness being the object of inquiry here, the alignment of learning aims, learning process and learning outcomes is addressed. Schön (1983)

defined teaching effectiveness as the adequacy between instructional intentions and results. Instructional intentions considered in this paper are those of engaging students in online collaborative learning through reflective practice, critical thinking, or project-based learning.

Methodology

The design research mode (Collins, 1992; 1999) is applied in that the understanding of online collaborative learning is built on the results of three different studies conducted in three distinct socio-cultural contexts. Previous iterations included earlier studies of online content analysis in a collaborative context conducted at Laval University, University of Montreal, and Memorial University. Online conferencing systems were chosen according to instructors' knowledge and local circumstances of use (WebCT, Knowledge Forum). Diversity was sought in terms of experiment iteration(s), course content, group size[2], teaching strategies, and learning activity duration. Questionnaires were administered to students and self-reports were provided by instructors in order to gather information about the circumstances of use and results (e.g. level of engagement, level of collaboration, sense of achievement, and level of satisfaction) of online asynchronous communication (OAC).

Analyses of online asynchronous communication were conducted by assessing OAC patterns using content analysis categories aligned with instructional intentions related to reflective practice, critical thinking, and project-based learning. Identified asynchronous communication patterns were compared with instructors' OAC collaboration-oriented instructional intentions of reflective practice, critical thinking and project-based learning.

For each of the studies, a three-level collaborative learning scale is applied (Campos, Laferrière & Harasim, 2001): 1) vague: at this level, the concept of collaboration is more closely identified with the definition of company (etymological meaning of the Latin word *compania*) denoting being with someone but not necessarily participating in a given activity/task, or working together; 2) modest: at this level, students co-participate in the same activity, but do not necessarily show indications of working or building knowledge together. Here, the concept of collaboration is more closely identified to the definition of cooperation (etymological meaning of the Latin word *cooperatio*) meaning acting together, 3) strong: high levels of collaborative learning are implemented (etymological meaning of the Latin word *collaborare*) denoting working together.

Results

Results are reported separately for each of the three studies. Following the presentation of the individual results is a discussion of the three studies.

Study One

Regarding reflective practice, a three-year study of the engagement of pre-service teachers in collaborative reflective practice was conducted (6 participants per year). Van Manen's (1977) three levels of reflective practice were used for analyzing discourse: techne, phronesis,

[2] Full informed consent was easy to get from participants in small groups (Study One and Study Two) once but not from participants in the large groups (Study Three).

critical/emancipatory reflection. The following observations, which were made through successive identification of recurrences in the data, indicate progress:

- All three groups of students were concerned with level one, *techne*: the first-year group focused on how to be a guide in the networked classroom (secondary level); the second-year group focused on how to proceed with regard to the evaluation of student learning in networked classrooms (secondary level); The third-year group focused on how to create individual and "collective" cognitive conflicts in networked classrooms (secondary level). None of the three groups discussed in any length computer technology.

- All three groups of students exchanged with one another at the second level of discourse, *phronesis*: the first-year group debated the values at play in a learning community whereas the second-year group took the learning community concept as granted and was concerned with student engagement (motivation) in a networked classroom. The third-year group reflected on the application of specific concepts such as the zone of proximal development to appreciate the value of their practice. Deliberative judgment was exercised in all cases, but the second-year group was less concerned with the learning environment and more concerned with student success in a learning community and the third-year group went further as members reflected on their own successful gestures using the accommodation principle as a criterion of success in their work with students in networked classrooms. Therefore, practical (or moral) judgment manifested itself at a more specific level in the second-year group than in the first-year group, and the third-year group went even deeper in terms of understanding of their practice.

- As regards the third level of discourse, (critical/emancipatory reflection), all three groups demonstrated movement in this direction. The first-year group had to understand the learning community concept and move away from more traditional classroom views and traditional views of the roles of teachers and learners. The second-year group took a critical stand as regards traditional views of classroom organization and management. The third-year group members distanced themselves from their own learning process by taking a metacognitive perspective on their own cognitive conflicts as newcomers in a professional community involved in designing innovative learning environments.

Similarities were also observed between the three groups regarding 1) the quantity of contributing notes, 2) the number of challenges raised during collaborative reflective practice, 3) the number of theoretical perspectives referred to, and the level of collaboration observed (level 3, *collaborare*).

Study Two

The second study engaged a group of eight, pre-service French teachers in a one-month long collaborative discussion centered around a key issue or problem related to their practice – that of the use of the target language in the second-language classroom. The instructional intention was to engage students in collaborative and progressive resolution and formulation of a problem through a process of critical thinking. The definition adopted for the construct was taken from Norris and Ennis (1989) who described critical thinking as "reasonable and reflective thinking that is focused upon deciding what to believe or do" (p. 1). The construct was operationalized in terms of a hierarchy of five phases the lowest or first of which was simple *Recognition* or identification of an issue, problem or perplexity needing clarification. The culminating phase of *Creation* involved production or implementation of

strategies, solutions, decisions, or conclusions. In between were the three phases of understand, analyze and evaluate. For the five phases, a total of 25 indicators illustrating actual behaviors were identified from the relevant literature on critical thinking.

Content analysis of the transcript of the discussion revealed that students engaged in critical thinking processes that fell neither in the "recognize" or "create" phases but instead in one of the three phases between these first and last phases. In this regard, students did not propose issues or problems on their own. This lack of engagement in recognizing an issue or problem can be explained by the fact that the issue was provided for them in the online discussion. They did not reach the phase of *Creation.* In fact, there was only one message that was coded for in this phase. Nearly half the indicators or 11 out of 25 were not identified as behaviors present in the discussion. Thus students' behaviors tended to reflect engagement in a limited number of processes related to critical thinking such as evaluating information or perspectives or exploring related evidence, information or perspectives as well as identifying what was relevant to the issue.

After uncovering these results, we considered the online discussion in terms of comparing the prompts and tasks on one hand with the five critical thinking phases and the 25 indicators on the other. In this regard, we were interested in determining their value in promoting collaborative engagement in critical thinking. In terms of collaborative efforts, student engagement in critical thinking remained at the level of cooperation or level 2. The opportunity for students to identify their own issue even within the context of a more general issue was not present. We concluded that, in future discussion, there needed to be a more specific intention to encourage students to identify aspects of the issue or related issue as this represents an important behavior related to critical thinking. In terms of the final phase of *Creation*, the discussion very explicitly intended to promote engagement in this phase. However, the fact that no indicators of engagement in this phase could be identified in the transcript suggests that other types of prompts or tasks may be required for this phase. The finding that nearly half of the indicators were not accounted for in relation to the behaviors of participants in the discussion may be related to the limited number and variety of tasks or prompts that were presented in the discussion. In this regard, if the instructional intention is to engage students in a variety of behaviors related to critical thinking then a correspondingly wide variety and number of tasks and prompts may need to be presented.

Study Three

Regarding project-based learning, a three-year study was conducted on the integration of electronic conferencing in five consecutive sessions of an undergraduate communication course as a means to achieve collaborative learning goals. Argumentation analysis was applied (Campos, 200b) in the *evaluation* of the progressive discourse of all students for marking goals as well as for *research* purposes with the objective of deepening understanding of the knowledge co-construction process on a limited number of teams that provided full informed consent.

Progressive discourse evaluation for course marking as well as for research purposes was based on an instrument developed to identify arguments and the level of collaborative argumentation. The instrument allowed quantitative and qualitative categorization of argumentation and the presence or not of knowledge-building, following the levels of collaborative learning of the scale presented in the Methodology section of this paper (see above). Seventy-six teams (three to five people) from five

consecutive sessions (fall 2002, winter 2003, fall 2003, winter 2004, and fall 2004) were studied. The teaching strategies were as follows:

- All 76 groups of students were assigned with the same task, one of choosing a communication product (a film scene or whole a film, a publicity poster, a TV documentary or news, a journal article, etc.) and analysing it from the point of view of one or many cognitive theories, or one or many cognitive notions. They had to establish a clear communication question arising from object and draw a collective strategy to solve the problem related to the question (sometimes demanding an empirical study, sometimes a theoretical one) in order to better understand the communication process at stake;

- The assignment was called *progressive assignment*, meaning that they would be evaluated on the grounds of the progression of the collaborative discourse built around the discussion concerning the projects. Assignments were developed online (in the fall 2002 and winter 2003 sessions, the conferencing system available was WebCT and, from the fall 2003 on, it was Knowledge Forum);

- For the evaluation as well for the research on the consented data, students were instructed to formulate hypotheses about the problems they faced concerning their questions, and try to answer them building knowledge upon ideas making use of the threading features of the software.

The discourse of all 76 groups of students presented at some point one of the three levels of collaborative learning. The marks ranging from 40 to 60/100 were categorized as having the *compania* level prevailing in the discourse. The marks ranging from 60 to 80/100 revealed different degrees in which the *cooperatio* level prevailed while those from 80 to 100/100 demonstrating that most discourse was built in the *collaboratio* level. When analysing which level prevailed, we found that most teams worked mostly cooperatively (*cooperatio*): 55.26% (42 teams). However, the percentage of teams that worked more collaboratively (*collaboratio*) than cooperatively was also high: 43.42% (33 teams). Just one team (1.31%) had interactions that were mostly informational and were then categorized as being at the *compania* level. These figures can still change because in the fall 2004 session students had three projects and we only included the marks for the first assignment because evaluation is not completed at this point. Fine-grained qualitative analysis with verbatim of each of the levels found will be provided in a later paper.

Discussion

Study One demonstrated that the instructor gained in effective practice over the three years of the experiment. The content analysis performed at the end of each year, and, according to Schön's model, is likely to have been a contributing factor to the gain in effectiveness. What might have played a key role, however, with regards to student collaboration, is the reification of the collaborative learning artifacts over the three-year period. Incoming students such as the second-year and the third-year students could access these artifacts.

Study Two provided an opportunity to demonstrate how critical thinking results can be matched with the instructor's intentions and strategies. In this case, the lesson learned was that, to effectively engage students in collaborative critical thinking, there needed to be a better match between processes and

indicators related to critical thinking on one hand and the design of tasks and prompts. In other terms, a better alignment was needed between learning aims, learning processes and learning outcomes.

Study Three demonstrated the power of electronic conferencing when used in the context of a project-base teaching strategy and with the intent of fostering collaborative learning. Successive iterations led to a socio-technical design that is meeting the instructor's intentions at a satisfactory level. Further development is needed for a shift toward more collaboration than cooperation can be observed.

In summary, Study Two results revealed a need to more explicitly engage students in a variety of specific processes related to critical thinking. Study One and Study Three results, grounded in different iterations of the same experiment over a three-period, revealed greater matching between instructional intents and outcomes. Course content and group size did not reveal apparent differences: course content in Study One and Study Two related to teacher education and to Communication Studies in Study Three; group size in Study One and Study Two was alike. Teaching strategies and learning activity duration varied but all seemed conducive to online collaborative learning.

Our working hypothesis is reinforced: Through the study of online collaborative learning using diversified but complementary theoretical perspectives, higher-education instructors can gain control over the online dimension of blended learning environments. An emerging specific hypothesis is that three iterations or more, including data analysis of online discourse, are associated with higher levels of effective practice.

Next steps and conclusion

The aim of this paper was to identify effective practices related to online collaborative learning (OCL) in higher education. More specifically, the objectives were to describe instructors' practices; consider ways to improve practice by focusing on the match between intentions and outcomes and illustrate how instructional intentions can be matched with outcomes to identify effective practices. Three different perspectives were selected by instructors as conducive to OCL in campus-based courses: the reflective practitioner perspective, the critical thinking perspective, and the project-based learning perspective. Effective socio-technical designs were intended through successive iterations in two out of three cases.

The above specific hypothesis and others that may emerge as we look into the data in greater depth will be tested (quantitative and qualitative analysis). We anticipate that this research will advance the practice of pedagogical use of electronic conferencing systems as means of supporting collaboration among campus-based students for learning purposes.

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