

PROJECT MANAGEMENT, CRITICAL PRAXIS, AND PROCESS-ORIENTED APPROACH TO TEAMWORK

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To help alleviate issues of free-riding and conflicts in team projects, this study proposes the systematic incorporation of project management methods to introduce a process-oriented approach to and a critical praxis in team projects. We examined how the systematic use of project management methods influenced students' performance in team projects. The findings demonstrate that such an approach enables the documentation and evaluation of and reflection on both individual and team work. Our findings indicate that project management tools enhance team member accountability and help reduce free-riding.

Keywords: *project management; teamwork; praxis*

SEVERAL YEARS AGO, one of us worked as a fellow in the writing center of a midwestern university and tutored a highly distressed yet intelligent student, Tom, near the end of the semester. Bringing out a stack of paper when sitting down at the desk, Tom looked very upset and pointed out that whereas he had come up with a very well-developed section of data analysis for the team project for his marketing class, his teammates had produced only a short outline of a literature review, one page of bulleted points for marketing recommendations, and an incomplete bibliography. Obviously, his three teammates were not doing their work. He complained, "They don't care about the grade and seldom respond to my email, but I want to get a good grade and have to do all the work for them." When it was suggested that he talk with his professor about the situation, he responded, "He doesn't evaluate how your group works. All he asks for is the final report." Tom's frustration at the free-riding left us with a rather bleak picture about teamwork.

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How do we effectively teach team work and critical praxis in business communication courses? How can we better design, facilitate, and evaluate team projects? This article addresses these two questions by proposing the incorporation of critical management theories and project management methods and by suggesting ways for facilitating a process-oriented approach, critical praxis, and reflexivity in the teaching of teamwork in business communication classrooms. The article starts with a review of theories of critical management studies, critical praxis, and team pedagogies. Next, we introduce several project management methods and their functions as pedagogical tools for process-oriented teamwork. We then present an assessment of the systematic use of project management tools in a classroom situation. Finally, we discuss the pedagogical and theoretical implications of the study.

CRITICAL MANAGEMENT STUDIES

Critical management studies stress the need to challenge the preoccupation with control, performance, productivity, profitability, and efficiency in managerial work as well as the positivist view of management as morally and politically neutral scientific knowledge. Questioning the taken-for-granted alignment between knowledge, truth, and efficiency, critical management studies acknowledge the issues of values and power in management and attend to other long-neglected issues such as the wider public good, justice, equity, participation, employee satisfaction and well-being, interpersonal relationships, individual interests and conduct, communication, conflicts, politics, and feelings (Alvesson & Deetz, 2000; Cheney, Christensen, Zorn, & Ganesh, 2004; Fournier & Grey, 2000; Grey, 2004). To attend to these issues, research in critical management studies has to incorporate philosophical and methodological reflexivity, or critical reflection. Alvesson and Deetz (2000) also stressed the need to employ insight, or local understanding, and critical praxis to support transformative redefinition and social action. Here we define *critical praxis* as informed, thoughtful, and ethical practices with social change as the ultimate goal, which requires critical positioning, prudential reasoning, and reflection in action (see Miller, 1989; Phelps, 1991). This study draws on literature from critical management studies, particularly critical praxis, to

examine issues and problems in the pedagogical use of teamwork. It also proposes the incorporation of project management methods to facilitate open participation and discourse, reflection in action, and responsible collaboration from all team members.

PROBLEMS WITH TEAM PROJECTS

Advantages of teaching with team projects are well documented in the existing literature, including the advantages of collaborative learning and problem solving, interpersonal skill development, enhanced motivation and engagement, understanding about diversity in the workplace, and experience coping with group dynamics (e.g., Boyer, Weiner, & Diamond, 1984; Mello, 1993; Michaelsen, Watson, Cragin, & Fink, 1982; Williams, Beard, & Rymer, 1991). However, problems such as free-riding or social loafing (taking advantage of team members' efforts without doing one's own share of work), group conflicts, and the lack of individual accountability tools pose challenges for instructors teaching with team projects (Bacon, 2005; Bacon, Stewart, & Silver, 1999; Brooks & Ammons, 2003; Joyce, 1999; Strong & Anderson, 1990). One of the main reasons for such problems is the way teamwork functions as a mandatory part of projects and assignments without any formal mechanism of supervision, documentation, or evaluation of individual performances in the final assessment. Such product-oriented teamwork pedagogy considers teamwork as the natural means to get the project accomplished and focuses only on the finished project in the final evaluation without paying any attention to collaborative processes. Although teamwork is implemented as a required component for many business communication projects, no formal evaluation tools are employed to monitor individual or team performance. The ultimate approach to evaluation remains the same as that of individual projects: Only the final product is evaluated. The quality of collaboration and the issue of accountability are seldom addressed in the evaluation processes. This product-oriented approach to team projects is the reason that free-riding persists in many team projects and results in low motivation, low satisfaction, and in some cases group conflicts. Such an instrumental view of teamwork turns the process of collaboration into an unexamined component of teaching; fails to inform students of and prepare them for future team

projects; and results in conflict, frustration, and exploitation of peer efforts during the collaborative processes. Whereas students suffer from inadequate peer support and input, the instructor may also experience student complaints, doubts about the quality of team collaboration, and frustration resulting from the lack of tools to adequately assess individual roles in team projects.

CRITICAL PRAXIS AND A PROCESS-ORIENTED APPROACH TO TEAMWORK

To avoid problems associated with the product-oriented approach to team projects, we propose an alternative process-oriented approach, which requires the use of various project management methods to ensure the integration of critical praxis, or informed, thoughtful, and ethical practices and reflection in action into teamwork. Critical praxis considers social change as its ultimate goal, which can be achieved through reflection in action. As reflective and thoughtful action with critique and questioning built into its operation, critical praxis merges theory and practice and adds to repeatability and transferability a further notion: revision (Miller, 1989; Phelps, 1991). Seeing praxis as the middle ground between practice and theory, Miller (1989) defined praxis as a “higher form of informed and conscious practices” that requires “new critical positioning” and “calls upon prudential reasoning” (pp. 21-22). According to Phelps (1991), reflection-in-action is integral to critical praxis, which “empowers choice and genuine novelty by enhancing the possibilities for exercising doubt, reviewing experiences . . . [and] taking cognitive risks” (p. 873). Critical practice knows and evaluates “its sources of beliefs in broader cultural systems,” whereas naive practice is “susceptible to bad theory” and “easily invaded by fashionable ideas or totalizing belief systems” (Phelps, 1991, p. 874).

We argue that project management methods can introduce critical praxis to teamwork through the use of collaborative decision making, documentation, evaluation, and reflection. These processes introduce to teamwork pedagogy much-needed components such as systematic documentation, clear deliverables, good communication practices, accountability, open participation and evaluation, and critical reflection. Informed by project management theory, a revised

teamwork pedagogy can shift its original preoccupation with outcome and efficiency to a focus on process, accountability, open discourse, team dynamics, and collaborative problem solving.

PROJECT MANAGEMENT AND TEAMWORK

Many efforts to cope with problems in team projects have been made, including numerous studies recommending the integration of various project management tools in team pedagogy. Eastman and Swift (2002) advocated the use of discussion boards and chatrooms as project communication tools in group projects. Various peer-review tools have been suggested to better assess individual participation and contribution in team projects; suggested methods include both summative peer evaluation at the end of the project and more formative, process-oriented peer evaluation integrated throughout the project (Brooks & Ammons, 2003; Dyrud, 2001; Fellenz, 2006; Strong & Anderson, 1990; Tonn & Milledge, 2002). Finally, both Tonn and Milledge (2002) and Baily, Sass, Swiercz, Seal, and Kayes (2005) employed another project management tool—the team contract—which commits team members to contribute positively to team dynamics.

Despite these useful approaches to introducing project management methods to teaching teamwork, no systematic effort has been made so far to examine the connection between project management methods and teamwork pedagogy. The findings of this project demonstrate that numerous project management tools can serve as pedagogical tools to better facilitate, monitor, and evaluate teamwork and introduce critical praxis in business communication classrooms. Therefore, the cross-fertilization between teamwork, project management, and critical business studies offers not only methodical and practical guidance for a process-oriented approach to teaching team projects, but also various tools to better facilitate teamwork and critical praxis.

COLLABORATIVE DECISION MAKING

Collaborative decision making through democratic negotiation is a key component in the process-oriented approach to teamwork. It starts right at the beginning of the team project when all team members work collaboratively to define the goals, scope, personnel, and logistics of the project. The use of project management tools

such as goals, objectives, deliverables, scheduling, role definition and assignment, and a responsibility matrix helps to accomplish this goal (for a comprehensive introduction to project management methods, see Maylor, 2003).

After assigning projects to teams, the first thing the instructor can do is to require each team to produce a project proposal. The entire team should work together to decide the desired outcomes and come up with its own goals and objectives before working on intermediary and final deliverables. Learning to break down the larger project into manageable subtasks and deliverables allows the team to collaboratively decide the pace of and approach to undertaking the project. The scheduling of all subtasks requires the definition of deadlines, milestones, and checkpoints, which specify the schedule to review the work done and to reevaluate future plans.

To hold team members accountable for their work, individual roles should also be discussed and determined at the beginning and recorded in the responsibility matrix in the proposal. Such participatory decision making about individual roles offers team members an opportunity to consider one another's strengths and delegate roles to fully utilize individual strengths. Finally, the instructor can ask students to sign their names in the proposal to indicate their commitment to the project and then use the proposals as group contracts throughout the project. Such formal contracts can be used later as the guideline for individual and team evaluation.

DOCUMENTATION OF COLLABORATIVE WORK

The regular use of project management tools such as project logs, progress reports, and periodic reviews can facilitate better communication and responsible documentation of individual and group work. This, in turn, enables regular and systematic description and evaluation of individual contributions and overall team performance. The regular documentation of individual input helps to push all team members to act ethically throughout the project, that is, to contribute their fair share of work to the project. The frequent use of documentation helps to cultivate the habit of reflection in action by enculturating students to the practice of regularly examining individual and team work and constantly evaluating the amount and quality of

work done. It also facilitates frequent reflection on strengths and weaknesses demonstrated in individual and team work, lessons learned during the project, and possible ways to work more closely and efficiently as a team in future.

Such documentation practices can take the form of either traditional paper-based weekly or monthly logs, memos, or reports, or online blogs or discussion forum threads. For business communication classrooms, the use of online blogs or discussion forums works well because it makes individual documentation and assessment of team performances open and accessible to all team members and cultivates the conscious practice of regularly articulating and reflecting on work accomplished and future goals. Such practices make the process of collaboration transparent by giving equal voice to all team members and by regularly recording individual performances in the project. More important, the fact that such online documentation takes place outside the classroom and in the absence of other team members helps to alleviate the peer pressure to conform, empowers minority students with their own voices, and enhances their participation in class discussions. It changes the existing power relations and group dynamics by facilitating the equal participation of all group members in documenting and evaluating one another's work. Finally, it also allows the instructor to frequently supervise the progress made by each group, to identify group conflicts and existing problems, and to initiate timely intervention whenever necessary.

ASSESSMENT AND REFLECTION

Instead of being conducted at the end of the project in the more traditional product-oriented approach, assessment can be incorporated throughout the project with a process-oriented approach. Regular self- and team evaluation helps to cultivate conscious and thoughtful practice and reflection in action because evaluation requires reviewing one's own and team members' work with a critical eye and coming up with plans to either improve existing work or to keep up the quality of existing work. Project logs and periodic review can be employed regularly to review work done and progress made by individuals and teams. Self-evaluations and individual peer evaluations of team members should be conducted at the end of the project and can eventually become a part of the final assessment of the team project.

Reflection takes the forms of retrospective reviews of past experiences, for instance, the review of acquired knowledge, challenges and difficulties, changes and revisions, and comments on or critique of previous work. It requires conscious review of existing experiences and careful application of acquired knowledge to arrive at revision and better practices. Oftentimes, as a project unfolds, its goals and scope may have to be redefined, and the individual roles of team members become increasingly ambiguous and overlapping. This calls for collaborative negotiation and decision making again about the project and personnel allocation, the timely revision of original plans to reflect on such changes, and the tracking and reporting of revisions. When doing periodic reviews and drafting the status reports, the team again has to collaborate to define and evaluate its actual performance, to compare that with the expected performance for that period, and to revise its future goals and schedules to ensure that the team stays on track. The documentation and reporting of such decision-making processes about revisions help to reinforce the process-oriented approach and cultivate the habit of reflection and critical praxis.

PEDAGOGICAL USE OF PROJECT MANAGEMENT TOOLS

So how can we integrate project management tools into the teaching of team projects to facilitate reflection and critical praxis? To explore possible approaches, we examined the use of project management tools in team projects in two technical writing classes (each with 14 students) in a southeastern American research university. Both classes required two major research and documentation team projects. Students enrolled in the classes were mostly juniors and seniors from various academic departments, with only a few sophomores.

To experiment with the proposed project management methods in teamwork pedagogy, we integrated into both classes major project management tools such as project proposals, team contracts, role definition, deliverables, milestones, project logs, progress reports, periodic reviews, summative team and self-evaluation, and final project assessment/reflection. The assignment prompts clearly described group and individual deliverables and the way each deliverable would be evaluated. Many project management tools were integrated into the

project proposals. For instance, students were required to define the scope, goals, and objectives of their projects. They used flowcharts to identify individual roles and responsibilities, which served as the responsibility matrix. They also developed their own project schedule with Gantt charts to define deadlines for deliverables and the check-points for the project. Finally, after reading, commenting on, and approving the proposals, we asked all team members to sign their names on the proposal and kept those as official group contracts.

Project management tools such as individual project logs, summative project assessment documents, and peer and self-evaluations were used during and at the end of the project to document and assess individual performances in the project. Other documentation tools such as group blogs and progress reports (weekly oral reports) were employed to keep track of group collaboration and performance.

At the end of the two team projects, an anonymous questionnaire was distributed to both classes to examine their previous experiences with team projects and to evaluate their perception of the influence of the use of project management tools on their teamwork experiences. Altogether, 21 surveys were collected, with a return rate of 76%. In addition to analyzing the survey results, we also compiled all weekly group and individual project logs into a corpus and analyzed its documentation, discussion, and evaluation of teamwork, using both statistical analysis and qualitative coding.

SURVEY

The anonymous survey contained three parts. The first part asked four questions to determine whether students had previous experiences working on team projects, whether they experienced free-riding in those projects, whether their instructors took free-riding into consideration in the final assessment, and whether they encountered free-riding in the current class (see Table 1). A 5-point Likert scale was used in this part, ranging from *strongly disagree* (1) to *strongly agree* (5). The average score for each item is presented in Table 1.

The analysis shows that most students had previous experience with team projects and had to deal with free-riding in those experiences. However, they seemed unsure when asked whether the instructors took free-riding into consideration in final evaluations of

Table 1. Previous and Current Experiences With Team Projects

<i>Items</i>	<i>Average</i>
I have participated in team projects in other classes	4.6
I have experienced free-riding in team projects in other classes	4
The issue of free-riding was considered in the final evaluation of previous team projects	2.9
I experienced free-riding in the current class	1.7

NOTE: Based on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5).

the projects. As a strong contrast, they believed that they did not experience any free-riding in the current class.

The second part of the survey asked students to identify project management skills acquired in the current course. Students agreed that they learned some project management skills in class and saw possible use of those skills in future. Table 2 reports the findings regarding students' perception of their acquisition of the seven project management skills used in the class. Students were required to read the list of all project management skills (devised by the instructor) and to check only those they believed they acquired through this class. We then read through the surveys, added the votes for each skill, and divided the total number of votes for individual skills by the total number of survey respondents in both classes to calculate the percentage of students believing they acquired each skill. More than half of the respondents believed that they had acquired project management skills in areas such as proposal and group contracts, evaluation of team performance, self-evaluation, project logs, and defining deliverables, whereas fewer than half chose the skills of documenting collaborative processes and reflection.

The third part of the survey contained one open-ended question asking students how the use of final team and self-evaluation influenced their performance. In their responses, students welcomed the use of final team and self-evaluation, saying that it "influenced the overall team performance" by making equal contribution the key to individual success. They reviewed, defined, and evaluated individual team members' overall contribution in the final evaluation, which "held group members accountable for their work." Students considered the

Table 2. Percentage of Students Believing They Acquired Individual Project Management Skills

<i>Project Management Skills Acquired</i>	<i>Percentage of Students</i>
Proposal and group contracts	93
Group evaluation	82
Self evaluation	71
Project log	71
Defining deliverables	61
Documenting processes	43
Reflection	32

fact that they would be evaluated by peers as a constructive threat, which “was vital to everyone contributing equally” and motivated team members to “contribute often” and do their best work. This finding is consistent with the results from the final team and self-evaluations done by students individually outside the classrooms and submitted to us at the end of the projects. No complaint of free-riding, lack of fair contribution, or low-quality work was seen in any of the evaluations from either class. Students all rated their teammates as either “far above average” or “above average” in terms of contributions to their projects. They also meticulously recorded roles played and work accomplished by individual teammates and commented on the quality of such work very positively. Many students also made explicit claims about the high quality of teamwork and team relations. These claims included comments that they “loved and were very impressed with their team,” “thoroughly enjoyed the entire team project and the good cooperation,” “learned tremendously how to work in teams,” had “the best group experience” in their undergraduate study, considered “the most enjoyable part about the projects as [their] teammates,” and believed the entire team were “very dedicated to doing their best about every aspect of the project.”

WEEKLY PROJECT BLOGS AS A KEY PROCESS-ORIENTED PROJECT MANAGEMENT TOOL

Project blogs from Week 5 to Week 15 (from mid-September to late November) were collected from both classes and compiled into a corpus, with a total of 30,975 words. We started by reading all blogs

to identify major issues and reflective incidents taking place during the two projects. Then we compiled a smaller corpus for coding purposes. To include project logs taken at various stages of the two projects, we included in the corpus blogs posted in Weeks 6, 9, and 12 from both classes, which marked the beginning and end of Project 1 and the middle of Project 2. We coded all project blogs in terms of their project management functions, counted the total number of posts addressing each topic and function, and calculated the average number of occurrences for all topics and functions. The intercoder reliability rate was 82%.

Altogether, 99 blogs were posted during Weeks 6, 9, and 12 in both classes. The analysis of the coding results shows that evaluation was the most frequently used function in the project blogs (with a total of 133 occurrences), followed by documentation (110), collaborative decision making (76), and reflection (30).

More in-depth examination of the four functions of project blogs helped to break down the functions to detailed components. The evaluation function consisted of assessing the amount of work done by bloggers themselves and other team members, the type of work done, and the quality of team collaboration. Students tended to record the amount and type of their own work more frequently (36 and 29 occurrences), followed by those done by their team members (29 and 20), and paid less attention to the quality of team collaboration (19). However, whenever such evaluations of teamwork appeared in the blogs, they were consistently positive and enthusiastic about the team collaboration and offered favorable comments on the overall relations of the team as a whole and the quality of work accomplished.

The documentation function consisted of the documentation of schedules of meetings (43 occurrences); short-term and long-term project goals (36); and roles of bloggers, other team members, and the entire team (7, 16, and 7, respectively).

The most frequently used component in the collaborative decision making function was the goal definition of the team (33), followed by group decision about the project scope and approaches (30) and negotiation about scheduling (11).

Finally, in the reflection function, students paid attention to changes and revisions done to projects (14), critique of team approaches (7),

review of work accomplished (5), and finally explicit statements about knowledge acquired in conducting the projects (4). The most frequently made revisions dealt with making existing schedules more feasible after the team gained a more solid grasp of the scope and nature of the project and with adjusting the responsibility matrix as the team struggled to collaborate more closely to accomplish complicated projects.

Two instances of major reflection and revision were documented in the project blogs. One instance requested all team members to participate in weekly meetings, and the other discussed how to cope with the difficulty of keeping track of revisions done by individual team members when conducting revision mainly via email. The first incident took place at the beginning of Project 2, a research-intensive team project. As a team of five, students attending the first meeting to negotiate about the scope of and approach to the project were extremely frustrated by the absence of two members. As a result, they both delegated work to the two missing members and started the discussion about the absolute necessity for everyone to participate in weekly meetings. Their rationale for implementing this strategy was that doing so would enable the team to get updates about individual research, contribute actively to the completion of weekly deliverables, and come up with quality products. In their weekly blogs, all three students attending the first meeting talked about their frustration at the lack of participation from other members and expressed the need for mandatory participation and contribution. They successfully introduced the desired revision and became the only team in their class with such a mandatory participation requirement.

The second reflective incident took place at the end of Project 1, a long technical documentation project in another team of five from the second class. When trying to compile individual parts of the project into one consistent document, the team decided to revise the document individually and to exchange revisions via email. However, they experienced and documented a lot of confusion and stress during the process. Without any mechanism to track changes made by any of the five members, they quickly found out that they had different versions of the same document circulating in the team, repeated some changes while neglecting others, and experienced difficulty in determining which version was most recently updated. They discussed possible

remedies during their weekly blogs and meetings and decided to use unique file names for revisions done by individual team members as well as word-processing functions such as “Compare Documents” and “Track Changes” to highlight revisions made in individual documents. These measures helped them to effectively monitor revisions and to work as a team revising one single document.

The frequent and open online documentation of individual and team performance also had great impact on student participation in both classes. Several young female students, including two African American students, were very shy and silent at the beginning of the course. Empowered by the opportunity to document the amount and quality of their individual work and reinforced by positive feedback from their team members, they began to gain more voice as the projects developed and assumed more leading roles appropriate to their skills and expertise. In the final peer evaluation, those minority and young female students were all rated as “highly above average” in terms of their contributions and were complimented on their skills related to research, writing, editing, project management, computer skills, and graphic design.

As an important project management tool, weekly project blogs offered students a regular platform to record, describe, and reflect on the amount and type of work done by themselves and their team members; the short-term, often weekly schedules and tasks accomplished on a weekly basis; challenges encountered in projects; team negotiation and collaborative decision making to cope with challenges; and subsequent changes and revisions. Analysis of the total number of occurrences of both the four main project management functions and their components demonstrates that students paid a great deal of attention to equal participation and accountability, as they articulated and evaluated individual and team work most frequently. The weekly blog also helped students to review their own approaches to the projects and to introduce necessary revisions and changes.

DISCUSSION AND CONCLUSION

Our research integrates team pedagogy and project management methods through the use of the theoretical framework of critical praxis. Project management methods can serve as a highly effective bridge between team pedagogy and values endorsed by critical management

theory such as accountability, open participation and discourse, empowerment, reflection, and critical praxis. Employed appropriately, project management methods can serve as the platform for collaborative decision making, systematic documentation, comprehensive evaluation, and careful reflection. We examined the impact of the systematic implementation of project management methods through students' experiences with team projects. Data triangulation was employed through the analyses of surveys, project blogs, project evaluation documents, and summative self- and team evaluations. Our findings point to the high quality of team collaboration, the active participation and contributions from all team members, and a strong sense of collaboration and satisfaction in all teams. Therefore, the systematic and carefully planned implementation of project management tools can help to enhance the quality of team work and facilitate better collaboration and reflection in action.

This study generates insights about possible ways to better integrate project management methods in team pedagogy to facilitate critical praxis. Because of the exploratory nature of the data collection and the small number of participants, it is hard to generalize our findings to the field. Future studies can apply the process-oriented approach to teamwork to a larger student population or to recruit a number of instructors to conduct similar studies. For those interested in using the proposed approach to teamwork, it is important to systematically incorporate relevant project management methods at all stages of the team projects and the evaluation rubrics so that students see those project management components as integral parts of their project rather than as extra or less important parts of the course work.

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