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Teaching innovation: equipping students to overcome real-world challenges

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ABSTRACT

Business students beginning their careers find that they must innovate to solve nebulous problems, work in interdisciplinary groups and environments, and effectively communicate their knowledge to colleagues and clients with diverse backgrounds. Addressing this, researchers devised a flipped classroom cross-disciplinary (CD) client-based project (CBP), in which two different business classes, containing students from two different fields, worked together on a semester-long project. The project aimed to address three areas in which students tend to be weak as they attempt to begin their careers: innovativeness, interdisciplinary collaboration, and real-world experience. The flipped classroom CD CBP was centered around two different innovation methods (Design Thinking and Productive Thinking) in order to create an appropriate learning environment. Results showed that students recognized the value of the process, perceived improvements in their communication skills, and were left feeling more prepared for real-world workplace environments. As an exploratory case study, this paper provides insight into student perceptions of flipped classroom CD collaboration, and serves as a starting point in developing more real-world experiences in the classroom.

KEYWORDS

Innovative teaching;
collaborative teaching;
creative thinking; active
learning; flipped classroom

Introduction

As globalization continues to shape national and international marketplaces, employers' workforce needs are constantly changing. Today's employees must be able to communicate and work effectively in cross-functional teams (Geissler, Edison, & Wayland, 2012). According to Spence (2012), cross-disciplinary (CD) teams allow professionals from diverse but related disciplines to accomplish goals within environments that are very complex and often chaotic. To help ensure a successful transition to their careers, Hopkins, Raymond, and Carlson (2011) suggest a need to strengthen students' communication skills, both interpersonal and professional. Business educators should work to create classroom experiences that better address the needs of the changing marketplace and prepare students for modern

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employer expectations. Recognizing this, several business programs, in the mean time, are starting to focus on CD experience, entrepreneurship, innovation, problem solving, and creative systematic thinking (Czuchry, Yasin, & Gonzales, 2004; Gomes & Yasin, 2011).

Since both Marketing and Fashion Merchandising are applied disciplines, students in both fields need practical experience in order to actually gain proficiency applying learned concepts (West, 2011). In addition, students need exposure to multiple perspectives to cultivate innovativeness (Hurson, 2007). To address these needs, the authors redesigned curricula for two of their respective classes, Creative Marketing (for Marketing majors) and Product Development (for Fashion Merchandising majors). First, the instructors developed a client-based project (CBP) that used a real client and collaboration between disciplines. This CBP aimed to provide students with a challenging real-world learning experience and allowed them to strengthen their communication and collaboration skills. Then, the instructors worked to create a learning environment appropriate for such a project. A hands-on, 'flipped classroom' format was used, allowing instructors to act as coaches for student groups who were tasked to develop innovative solutions and products for real clients.

The purpose of this paper is to introduce the flipped classroom CD CBP model utilized by the instructors, to explain the theory and pedagogy supporting the project design and implementation, and to examine the efficacy of the project as a teaching mechanism to enhance students' innovativeness, comfort with interdisciplinary collaboration, and preparation for real-world work environments. The paper begins by discussing three key problems facing recent business graduates. Following this, sections outline the pedagogical framework and curriculum redesign process. The paper concludes with sections reporting the methods and results of the case study and with a discussion of the findings, their implications, and directions for future research.

Key problems faced by recent marketing and fashion merchandising graduates

In designing this project, both researchers approached the flipped classroom CD CBP as an opportunity to present students with a challenge indicative of what they will face in authentic work contexts. This paper directly addresses three overarching areas in which students are often weak as they enter the workforce: innovativeness, interdisciplinary collaboration, and real-world experience.

Innovativeness

In today's marketplace, innovativeness is required to create new products, to develop successful marketing strategies, and to identify new approaches to marketplace problems. Though creativity is still undervalued by some members of the business community, a growing number of businesses focus on the need to be innovative (Hurson, 2007; Kelley & Kelley, 2012). To be successful, both Creative Marketing and Product Development students are required to be innovative and creative for their jobs (Burroughs, Dahl, Moreau, Chattopadhyay, & Gorn, 2011; Hauser, Tellis, & Griffin, 2006; Karpova, Marchetti, & Kamm, 2013). Unfortunately, true innovation cannot occur without utilizing creative thinking and considering multiple perspectives (Hurson, 2007), which are skills that are seldom developed in conventional classrooms. The flipped classroom CD CBP pushed student teams

to innovate while working together to develop creative ways to accomplish both individual and group goals. Additionally, the instructors integrated two systematic methods of problem solving into their respective classes: Design Thinking (DT) was taught to Product Development students, while Productive Thinking (PT) was taught to Creative Marketing students.

Interdisciplinary collaboration

Interpersonal and professional communication are often weak areas for recent graduates (Geissler et al., 2012). While business classes are known for group projects, professors often must deal with students who do not know how to work in groups and who struggle to develop original ideas (e.g. Sojka & Fish, 2008; Wooldridge, 2008). When asked to elaborate on their understanding of class concepts, in both written and oral communication, students often struggle to use appropriate terminology when explaining their ideas; which, in a professional setting, could come across as incompetence. Furthermore, businesses today commonly utilize cross-department teams in strategy development and for problem solving (Ramsey, 2013). However, few students currently get the opportunity to work on comprehensive projects with anyone outside of their own discipline. This can lead to one-path thinking, in which students are not encouraged to examine issues from multiple perspectives (Hurson, 2007). Additionally, collaboration requires that individuals with different perspectives and competing goals work together to be successful (Wojahn, Dyke, Riley, Hensel, & Brown, 2001). Without experience collaborating across disciplines, or working with actual clients, students do not learn to balance the goals or needs of multiple stakeholders.

The flipped classroom CD CBP was designed to allow students to practice communicating their ideas to diverse recipients (group members, instructors, clients), both in speaking and writing. Through coaching, instructors were able to help groups and individuals identify and correct breakdowns in communication among members, and address weaknesses in effectively communicating ideas to clients. In addition, groups were required to visit on-campus communication resources (e.g. a Student Speaking Center or a Business Academic Success and Excellence Center).

Real-world experience

Use of collaboration and integration of real clients are both currently lacking in many business courses, meaning students can often graduate without gaining exposure to real-world scenarios. Many students graduate without ever learning to be comfortable while dealing with problems that are complex and ill defined (Lombardi, 2007). For students to be successful in the business world, they must be prepared to handle real-world ambiguity, and also to engage in complex interaction, communication, and high order analysis (Dede, Korte, Nelson, Valdez, & Ward, 2005). The flipped classroom CD CBP was designed to help bridge the gap between 'student project' work and the experience of working in real-world professional groups and teams. For students, tasks tend to exist within a single classroom and group of students. The interdisciplinary group work required by the project was meant to take students out of this frame of thinking and force them to consider projects as a whole, rather than just as tasks within a single class. Through the project, students could gain a

better understanding of the realities of collaborating in real work groups, under pressure, while managing complex, ill-defined tasks and divergent goals.

Pedagogical framework and curriculum redesign

Two pedagogies (CBPs and flipped classrooms) and two innovation methods (DT and PT) were considered in developing a comprehensive project to address students' postgraduate problems (i.e. to help students prepare for successful transitions into careers as innovators and leaders within collaborative group settings). First, both instructors redesigned their curricula around a CD collaborative CBP such that students in both classes (Creative Marketing and Product Development) would work in groups with each other on a joint project using real-world clients. Second, the instructors created a less-structured learning environment by 'flipping' the classroom and using in-class time to coach students through the project. Both instructors developed extensive course resources, which allowed students to review information outside of class, and thus freed class time for hands-on learning and group work. After designing out-of-class learning materials, the course instructors outlined class-specific adaptive coaching techniques to help guide each student group through the challenges they would face.

Designing a CD CBP

By definition, CBPs include real-world clients, thus giving students near real-world working experiences. CBPs provide students with rich hands-on learning experiences and opportunities to apply their knowledge to the needs of real clients before graduation (Lopez & Lee, 2005). Several studies report benefits of CBPs for students, including: allowing students to take ownership of their learning (Lopez & Lee, 2005), fostering needed workplace skills (Cooke & Williams, 2004), improving students' motivation (Fox, 2002), facilitating active and experiential learning (Razzouk, Seitz, & Rizkallah, 2003), adding realism to the classroom (Razzouk et al., 2003), and bringing class concepts to life (Lopez & Lee, 2005). Using a real-world client increases students' sense of accountability for their knowledge, ideas, choices, and actions.

This project expanded CBPs by adding a CD element where students from both classes (therefore separate disciplines) worked together on interrelated sub-projects while managing goals that were at once compatible and simultaneously differing in focus. A major hurdle for the instructors was finding a real-world client with appropriate needs willing to work with student groups. Another challenge involved orchestrating crossover in the curricula of both classes.

Students from both classes were divided into four CD groups of 7–8 students, with each group having 5–6 Creative Marketing students and 2–3 Product Development students. The primary project goal for the Creative Marketing students was to develop an innovative solution for one or more of the client's marketing problem. Product Development students were tasked with developing product lines that: (1) promoted and encouraged people to visit the Front Street businesses, as a destination, (2) showed the uniqueness of the Front Street businesses, (3) were appropriate to individual business target markets, and (4) were appropriate to individual business brands. Both classes met together several times in order for groups to get to know each other, share ideas, discuss issues regarding the clients, define

problems, establish group directions, solve group discrepancies, and work on activities/workshops (e.g. brainstorming and prototyping). At the end of the semester, the mixed groups presented their ideas to the clients through a short 'pitch,' a 2-page report, a product mock-up, and a Q&A session. Other than the time and page limit, the students were given few parameters. The lack of specificity of the final assignment was an essential component of the flipped classroom CD CBP. This open-ended assignment format allowed each group the freedom to emphasize what they thought was most important, thus making the project a closer match to real-world working scenarios.

Finding an appropriate real-world client

An initial client visit to the joint classroom at the beginning of the semester was used to jump start the flipped classroom CD CBP. The client for the semester was 'Front Street,' a collective of businesses located in a downtown area currently going through a revival. Students were required to visit Front Street and complete independent research on the businesses. In addition, students were encouraged to attend Front Street events and several business owners made themselves available to students via email and social media. Finally, two Front Street business owners visited the class during the semester, and six attended the final presentation.

Interdisciplinary collaboration

CD projects provide numerous benefits for students, including: learning experiences similar to real-world postgraduate work (Collin, 2009; Finholt, Sporoull, & Kiesler, 1990; Katzenbach & Smith, 1993), incentives and opportunities to strengthen skills they are less confident with (Tchudi, 1994), experience dealing with problems that are open-ended, vague, and messy, rather than cleanly laid out and clearly defined (Wojahn et al., 2001), and experience interpreting and analyzing clients' intentions and needs, even when communication is sketchy and/or through long distance or asynchronous channels (Wojahn et al., 2001). However, the use of CD collaboration does involve numerous challenges for students. These include, but are not limited to, (1) students are challenged to communicate with group members who do not share their field-specific knowledge base, and with their clients, clearly and without relying on jargon; (2) students must settle upon methods of communication that are mutually suitable for all group members (Spence, 2012); (3) students must confront differences between team members regarding to concepts, perspectives, project objectives and protocols (Collin, 2009); (4) students must allocate and agree on team roles and pay constant attention to relationships (Choi & Pak, 2007); and (5) students must overcome misunderstandings and mismatched expectations among team members (Dewulf, Francois, Pahl-Wostl, & Tailliey, 2007).

Creating an appropriate learning environment

To arrive at innovative solutions, students must feel comfortable enough to share their creative ideas. For the flipped classroom CD CBP to be successful, the learning environment must fulfill several needs, including: fostering creativity, allowing time for collaborative group work, improving student communication skills, and increasing student initiative and self-confidence.

Flipping the classroom

While there is no single model for flipped classroom theory, direct instruction is typically delivered outside class through the use of technologies (online documents, podcasts, videos, etc.), while class time is instead used for exercises, discussion, and hands-on activities (EDUCASE, 2012; Hamdan, McKnight, McKnight, & Arfstrom, 2013). Currently, research on flipped classrooms is limited (Hamdan et al., 2013); however, faculty have reported that flipped classrooms have a positive impact, offer a better learning environment, and improve students' performance, understanding of class content, and development of specific skills (Papadopoulos & Roman, 2010; Warter-Perez & Dong, 2012).

For this project, both faculty utilized the flipped classroom pedagogy and reversed their classes from a focus on lecture to a focus on discussion and coaching. Materials previously delivered via lecture were instead delivered outside class through assigned reading, videos, homework, or other modes. Documents were provided to outline the flipped classroom CD CBP process, including expectations regarding oral/written communication and presentation practice and skills, and the requirement for an innovative project outcome. Both a grading rubric and project guide sheet were used to reinforce the overall goals of the project. Students were given a process handout, which included a visual map of the process and a brainstorming guide. Because students were required to learn class content outside of class, before it could be applied in class, the instructors had to make themselves available outside of class to answer questions for students who were having difficulty.

Since content was presented outside of class, at least one half of class time was allocated for group work. Students were able to collaborate with their peers and engage in hands-on projects while faculty provided guidance, inspiration, and one-on-one assistance. This enabled the instructors to guide each group on a personalized level. Discussion time at the beginning of the semester was devoted to deepening students' understanding of the systematic innovation methods (DT and PT) used throughout the project. Both instructors utilized in-class mini cases to walk students through the innovation methods before work began on the semester-long project.

Teaching innovation: coaching students through the process

Research in the areas of systematic innovation methods (DT and PT) demonstrates that creative thinking skills are a necessary prerequisite for innovation. Therefore, the second step in creating an appropriate learning environment for the flipped classroom CD CBP was to develop a coaching process, both to help students learn creative thinking through the DT and PT methods, and to help students overcome common challenges inherent in interdisciplinary group work.

According to Razzouk and Shute (2012), DT is defined as 'an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign' (p. 330). While engineering schools have been integrating DT into their curricula for some time in order to connect concepts and knowledge to real-world applications (Razzouk & Shute, 2012), DT has recently received increased attention in several other areas (Broß, Noweski, & Meine, 2011; Lindberg, Noweski, & Meinel, 2010) including both business settings and business schools (Dunne & Martin, 2006). The DT process varies depending on disciplines and specific fields of innovation. For this project, Product Development students used a DT method consisting of five basic steps: (1) understand, (2) observe, (3) visualize, (4) evaluate/refine, and (5) implement (see Kelley, 2001).

For this project, Creative Marketing students were coached through the PT systematic innovation method. Hurson (2007) defines PT as ‘a disciplined framework for addressing problems that combines, balances, and orchestrates creative thinking and critical thinking’ (p. 90). In general, PT models employ a two-step method of reaching truly innovative solutions: (1) use creative thinking to quickly come up with many ideas, and (2) use critical thinking to gauge the quality and applicability of the generated ideas. Hurson (2007) outlined six stages, which can be applied with the PT process: (1) identify the problem, (2) state the target future, (3) identify key questions, (4) propose potential solutions, (5) forge the selected solution, and (6) align necessary resources.

The common element uniting the DT and PT models is the requirement that users first employ creative thinking, and then critical thinking, in order to arrive at truly innovative and functional solutions. Both the DT and the PT model are intended to help guide learners, or problem-solvers, to efficiently conceptualize and overcome obstacles and achieve difficult goals in any industry or situation. For the project discussed herein, though each instructor’s in-class coaching tactics varied slightly, both aspired to use similar processes and terminology. Additionally, the instructors utilized a variety of in-class coaching techniques, including: verbalizing objections to the group’s ideas, asking challenging questions, and suggesting opposing approaches. Use of diverse coaching techniques was designed to: (1) encourage innovativeness and foster student creativity; (2) push students through roadblocks in the innovative process; (3) help guide students out of their comfort zones; and (4) reflect various types of supervision students might encounter in their futures.

In order to allow students to be self-guided in their group work, the flipped classrooms, by necessity lacked a rigid preset structure. Because of this, it was necessary for both instructors to meet regularly, 2–3 times a week, to discuss problems and coordinate both classes’ learning and activities. During meetings, the instructors: (1) strategized about flipped classroom activities; (2) developed coaching techniques and methods; (3) brainstormed for solutions to problems occurring during flipped classroom and regular class sessions; (4) ensured that individual classroom goals and activities remained compatible; and (5) worked to maintain the compatibility of the systematic innovation methods taught in each class.

Method and results

This project marks the first interdisciplinary teaching collaboration between a Creative Marketing and a Product Development class. Because of the exploratory nature of this case study, qualitative data were collected both in the form of instructor observation and student feedback. In addition, each instructor kept observation notes after each CD group meeting.

Instructor observation

Due to the free-form open structure of the flipped classroom learning environment, the instructors were able to observe students’ interactions, strategies, and approaches as well as the difficulties, issues, and obstacles they encountered while working through the CD CBP. Specifically, the researchers noted common patterns over the course of the semester regarding the development of students’ collaborative communication, conflict resolution, and mastery of the creative process. To record this process, the instructors took notes on students’ difficulties, strategies, and development, and held regular meetings in order to

Table 1. Summary of faculty's observation notes.

Areas of change	Flipped classroom CD CBP		
	Beginning	Middle	End
Collaborative communication	<ul style="list-style-type: none"> • Students were surprised and irritated to be working with students from another class • Groups tried to separate tasks 	<ul style="list-style-type: none"> • Some groups shifted focus from division of labor to collaboration on tasks • Groups began formalizing methods of communication • Students became more vocal during group discussion • Groups started to acknowledge and work with other discipline 	<ul style="list-style-type: none"> • Some groups worked on their pitch together to make sure it was cohesive • One group still maintained a division, which hurt the final project • Most students were more appreciative of the input of the other discipline
Conflict resolution	<ul style="list-style-type: none"> • Some groups hit conflict right away • Some groups showed no signs of conflict • Dominating members made others' uncomfortable and defensive 	<ul style="list-style-type: none"> • Each group developed their own way of dealing with conflict • Groups that worked through conflict successfully (a) were quicker to work toward cooperation and (b) showed evidence of bonding and team-building • Groups that avoided conflict shared few ideas between members 	<ul style="list-style-type: none"> • The group that avoided confrontation completely had the least cohesive ideas • Groups that successfully resolved conflict had more cohesive ideas • Groups with unresolved conflict were more likely to give negative evaluations of their group members
Mastery of the systematic innovative process	<ul style="list-style-type: none"> • Students jumped to solutions instead of first identifying problems • Students thought that differing perspectives would be an obstacle to brainstorming • Students were very critical of members' ideas 	<ul style="list-style-type: none"> • Students started to appreciate the value of unique perspectives • Students became more accepting and encouraging of others' ideas • Brainstorming sessions became more effective 	<ul style="list-style-type: none"> • Students had a better understanding of the creativity process, especially in brainstorming • Students acknowledged that working as a team with other disciplines helped them to be more innovative

compare their observations. Results are shown in Table 1 and reflect overarching issues as observed by the researchers.

Collaborative communication

At first, students from each class ignored the overall goal of the project and were focused only on their own class-specific goals, i.e. either developing a new marketing strategy *or* developing a new product design. Initially, during group work, students from both disciplines tended to dismiss ideas offered by group members from the other discipline, viewing them as problematic rather than helpful. Initially, overall, students tended to be vocal only during separated class meetings, and very quiet during combined classes.

As the semester progressed, instructors reminded students that the project was collaborative and required communication. This caused more students to become vocal during group sessions and to remind others that teamwork was necessary. Groups began to shift focus from entirely divided labor toward more collaboration on tasks. The instructors noticed that groups began formalizing communication methods to facilitate the sharing of ideas. Students began to feel more comfortable vocalizing their ideas during group sessions.

Additionally, students began to take more time and effort to explain their ideas in terminology that was clear for group members from the other field. In other words, students became more aware of their communication problems, especially regarding use of discipline-specific jargon. Students began to acknowledge the important role of the other discipline, which further facilitated effective communication across disciplines.

By the end of semester, most students from both disciplines showed greater appreciation for the knowledge and contributions of students from the other discipline. Many sub-groups were actively attempting to include comments and ideas from the other discipline into their part of the project to make sure that the marketing strategy and the developed product were compatible, interconnected, and complimented one another. However, faculty noted that one group out of the four was still divided and working separately, resulting in separated ideas for marketing campaign and product.

Conflict resolution

When the flipped classroom CD CBP was first introduced, students exhibited signs of disappointment, anger, and stress upon learning that they would have to work with students from another discipline. During initial CD meetings, many students complained and acted annoyed; group members from different disciplines tended to take opposing positions. Most groups initially took a 'divide-and-conquer' strategy in which groups maintained single-discipline subgroups, dividing labor to avoid cross-discipline collaboration, and assigning tasks immediately to avoid communication across disciplines. Additionally, the instructors noted that when some students took leadership roles and dominated group discussions, students from the other discipline were often appeared uncomfortable and defensive.

As the semester progressed, all four CD groups experienced confrontations. Three groups attempted to openly discuss and resolve small conflicts as they occurred, while one group ignored small conflicts, deciding simply to divide labor or resolve differences by voting, in which the opinions of the students from the minority discipline were disregarded. Groups that faced and resolved conflict early tended to be more productive overall and showed evidence of bonding and team building. Many students even began to express excitement about working with their partners from the other discipline. On the other hand, students from the group which avoided dealing with small conflicts continued to be unhappy with the idea of CD collaboration.

At the end of the semester, the instructors found that groups that had successfully resolved conflicts through the semester had more cohesive ideas. This was evidenced by final pitches where marketing strategies and the new products were successfully interconnected. Groups that had avoided conflicts often appeared to work together peacefully, but members were more likely to give their group members negative feedback. The group that avoided confrontation completely had the least cohesive final project, resulting in a marketing campaign and new product that were unrelated and failed to promote each other.

Mastery of innovative process

Both DT and PT teach that the first step to developing an innovative 'better' solution to a problem involves first brainstorming to identify the deep underlying causes or issues behind the apparent problem. Initially, students from both disciplines tended to immediately suggest generic solutions to clients' problems, based on their single-discipline perspectives, rather than focusing on first identifying underlying causes. Initially, several factors interfered with

students' ability to brainstorm. First, many students perceived that the differing perspectives offered by two disciplines would be an obstacle to creating an innovative solution, and considered the necessity of considering another perspective to be a hindrance to their creativity during brainstorming. Consequently, students tended to instantly shoot down most ideas rather than withholding judgment until later. Additionally, students reported feeling that the short sections of time devoted to brainstorming created too much pressure and prevented them from generating many ideas.

As the semester progressed, students began to appreciate the input of other group members and started to see how multiple perspectives helped to increase the quality and quantity of generated ideas. Many group members shifted from judging and discounting others' ideas to encouraging and considering others' ideas. Overall, student discussions became more positive, allowing for the brainstorming process to become easier, faster, and more productive, even under time constraints.

By the end of the semester students showed increase understanding of and appreciation for systematic innovative methods in general and brainstorming in particular. Students' perceptions of their own competence and creativity improved. Rather than being defensive of their ideas, student began to welcome the critiques from other disciplines, in order to strengthen their final projects. In fact, the instructors began to overhear students acknowledging the significance of the contributions of group members from the other discipline in ensuring more creative and innovative final projects.

Student feedback

At the end of the semester, data regarding students' perceptions of different aspects and outcomes of the flipped classroom CD CBP were collected through open-ended questionnaires and guided reflection papers. Instructors evaluated students' feedback to determine the extent to which students believed that the project had helped them overcome the key problems faced by recent marketing and merchandising students. Responses (see Table 2) suggest that students believed the flipped classroom CD CBP: improved their ability to be creative and innovative, strengthened their skills in collaboration and communication, and provided them with real-world experience, all of which helped them prepare to transform from students into professionals.

Students in both classes reported that the project helped them become more open to creative thought, which they understood to be a key prerequisite for innovation. Students valued the experience of learning to work with practitioners from another discipline, and reported that access to knowledge from another field was beneficial for their final projects. Students also acknowledged that the experience reflected what they would experience in the real business world. The real-world applications of the project experiences were frequently mentioned. Students felt that the project experience would help better prepare them for their future careers. Finally, students in both classes reported that working with another class was challenging, but beneficial. Illustrative student quotes are included in Table 2.

Discussion

The flipped classroom CD CBP was conceived as an exploratory case study. Because the flipped classroom pedagogy is relatively new, ideal scales have not yet been developed to

Table 2. Students' reflection and feedback on three key problems.

Problems overcome	Illustrative quotes
Innovativeness	'... helped me learn how to think outside of the box.' 'So in working with the marketing group it made me realize that all ideas are acceptable, and that no idea is too much.'
Interdisciplinary collaboration	'The ideas from the bigger group did help us in the final solution.' 'It was a bumpy road in the beginning, because I wasn't sure if I would like working with another group from another class. The peers' feedback from the marketing class was great. I'm pleased with the outcome of working with the marketing team.' 'I've learned working on this final project with another class is very time consuming, frustrating, interesting, and meaningful at the end. The thing that stood out to me was the fact that we were teaming up with a marketing group, I didn't know how that was going to fit in but it did.' 'Working with a different class was challenging... even though we were working as a group, we wanted to prove our point that we knew what we were doing as well and that they weren't going to run over us. I think a lot of us felt intimidated when we first stepped foot in that classroom.'
Real-world experience	'Not only did I learn the concepts and ideas of Creative Marketing, but I got the chance to put them in use for a real customer.' 'This was new to me because it was a real life project. I had to more serious about it and take out more time on it because I did not want to be embarrassed. The thing that excited me the most was that the product that we came up with had a possibility of actually being sold on Front Street.' 'I was able to apply things I learned ... Practicing these principles will make it easier in the future ... to tackle new projects or ideas at my job.'

examine the efficacy of the project. As such, instructor observation and student feedback were the primary means of evaluating the project. From the perspective of the instructors, though the flipped classroom CD CBP experience was initially rough on the students, the journey ended well. During the course of the semester, the instructors noted that students struggled in particular with three areas of development: collaborative communication, conflict resolution, and mastery of the creative process.

Conflict is an expected and common occurrence during group work, and particularly in any innovative process (West, 2002); however, students initially found the prospect of conflict to be so intimidating that they avoided sharing ideas for fear of inspiring disagreements. The instructors determined that, to manage a successful flipped classroom CD CBP, it is critical that teachers both: (1) help students recognize that conflict is integral and inevitable in collaborative work and innovation; and (2) equip students to welcome conflict and tackle it in a peaceful and productive way. This approach of seeking out problems is also advocated in the innovation process (Hurson, 2007).

As Geissler et al. (2012) pointed out, students are often weak in the areas of professional and interpersonal communication; this was illustrated during initial CD class sessions, group

discussions, and brainstorming sessions. The instructors observed that students tended to self-segregate by field of study and interact in a polarized fashion. For example, students would often communicate well only with students from the same class and did not welcome feedback from students outside their discipline. To help alleviate this problem, during CD class sessions, the instructors modeled positive interactions in which they demonstrated how to build on different ideas and how different perspectives helped improve previous ideas.

Hurson (2007) noted that true innovation cannot occur without considering multiple perspectives and utilizing creative thinking. The flipped classroom CD CBP pushed students to take advantage of group members' various perspectives. This led to more creative ideas being explored, which meant that the end results were more innovative than expected. Additionally, students' initial confusion regarding CD collaboration was replaced with appreciation for how the two disciplines fit together. By the end of the project, student's frustration in their inability to effectively communicate with members of another discipline was replaced with confidence in their ability to share their discipline-specific knowledge.

As the semester progressed, students began to understand that the added responsibility of working with the other class and working with a real client helped them gain real-world experience. Secondly, since students were coached through their communication issues, rather than being told how to resolve them, groups learned how to correct problems on their own. This allowed group members to develop their communication and collaboration skills. Additionally, the cumulative effect of these experiences resulted in a shift in student behavior, such that the students began to behave like professional work groups. In fact, many groups pushed themselves and went beyond the project requirements in order to stand out and impress the clients. From the perspective of the instructors, the final presentations of students who participated in the flipped classroom CD CBP were more polished, refined, and more clearly and effectively expressed to clients than the final presentations of students from previous semesters where the CBP was not collaborative across disciplines.

Future research

While the pilot experience of running a flipped classroom CD CBP was initially somewhat overwhelming for students and demanding for faculty, the two researchers perceived their joint effort as being filled with opportunities to enhance student learning. Both instructors and students were very satisfied with the outcomes. However, after the experience of orchestrating the flipped classroom CD CBP, the researchers intend to implement the following improvements in future research: (1) require students to complete journal entries and reflection papers across the semester, (2) coach students in identifying and marketing both their own discipline-specific contributions and their individual abilities, (3) encourage students to utilize available Web 2.0 collaboration and communication tools, (4) solicit clients to be more involved in the educational process, and (5) include a quantitative component in the data collection.

Other instructors are encouraged to explore flipped classroom CD CBPs. As guides, there are several informative and inspiring articles available about CBPs (e.g. Hagan, 2012; Lopez & Lee, 2005; West, 2011). Additionally, it is useful to think about CD collaboration, not as extra work, but as a way to add another layer to existing class projects. Considering this, when designing CBPs, it is advantageous to reach out to colleagues in various fields/disciplines who may already have compatible projects within their own classes.

Conclusions

Orchestrating a flipped classroom CD CBP can present challenges for the involved instructors. Among other difficulties, the created learning environment is complex and can be chaotic. However, these very factors mean the flipped classroom CD CBP closely aligns with real-world work environments. The flipped classroom CD CBP provided students with opportunities to gain experience working in cross-functional teams and to gain more awareness of common workplace challenges – all while facing the additional challenge of meeting the needs of real clients. Through their experience in a near real-world work environment, students were able to better understand how to work under pressure and become more comfortable dealing with vagueness and uncertainty. Students were also able to improve their interpersonal and professional communication and gain experience overcoming and resolving various conflicts.

Additionally, because systematic innovation methods (DT and PT) were integrated into the coursework and objectives of the flipped classroom CD CBP, students were able to improve their confidence and ability coming up with creative ideas and innovative solutions. This outcome is significant. Students had a particularly difficult time mastering the process of innovation. However, due to the open nature of flipped classroom pedagogy, the instructors were free to devote time to working on specific students' needs, and were able to coach students to overcome the various struggles that presented as they attempted to learn focused creativity. From the instructors' experiences in this project, modeling and demonstration may be an ideal coaching strategy when teaching both innovation, and CD collaboration.

Finally, experience running a flipped classroom CD CBP has led the instructors to believe that lack of interdisciplinary experience may be a key factor in students' general inability to communicate their knowledge effectively. Results from this study show that through working with students from another discipline, students can improve their communication skills, learn to appreciate different input and opinions, and turn their differences into innovative ideas and products. For all of the reasons herein described, the instructors believe that flipped classroom CD CBPs, though more difficult to design and manage than standard curricular strategies, are an ideal method to prepare business students for their future careers.

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