INTERDISCIPLINARY, TEAM-TAUGHT, UNDERGRADUATE BUSINESS COURSES: THE IMPACT OF INTEGRATION

Sandra J. Smith Ducoffe
Cheryl L. Tromley
Michael Tucker
Fairfield University

Given the widespread use and success of cross-functional teams in industry and the American Assembly of Collegiate Schools of Business's focus on the importance of interdisciplinary education, many business schools have incorporated interdisciplinary elements into their curricula. This study examined current student and alumni perceptions of the value of interdisciplinary, team-taught, undergraduate business courses. Of specific concern was the impact of perceived integration. Overall, the courses were perceived to have value. In addition, the more integrated the course, the more positively it was evaluated on every dimension. Practical and research implications are discussed.

Keywords: *interdisciplinary; team teaching; integration; pedagogy; undergraduate*

In 2001, the American Assembly of Collegiate Schools of Business (AACSB) International Board of Directors created a Management Education Task Force. Its charge was to examine current and future issues critical to management education. In its final report (AACSB, 2002a, p. 2),[1] the Task Force identified "curricular relevance" as a "critical priority." To ensure curricular relevance, the Task Force recommended that business schools "blur boundaries between educational disciplines. Cross-disciplinary programs

Authors' Note: Please address correspondence to Cheryl L. Tromley, Dolan School of Business, Fairfield University, Fairfield, CT 06430; e-mail: cltromley@mail.fairfield.edu

JOURNAL OF MANAGEMENT EDUCATION, Vol. 30 No. 2, April 2006 276-294
DOI: 10.1177/1052562905284663

facilitate market relevance by encouraging boundary spanning teaching and thinking" (AACSB, 2002a, p. 2). The current study examines current and alumni student perceptions of an interdisciplinary, team-taught course designed to blur such disciplinary boundaries.

COURSE CONTEXT

At the time of the current study, the course in question had been offered for 7 years. What follows is a brief description of the context and objectives of that course that grew out of a major redesign of the undergraduate business curriculum at a private university in the Northeast.

Introductory courses in finance, marketing, and organizational behavior, previously taught at the junior level, were replaced by a sophomore-level, interdisciplinary, team-taught, two-semester course sequence (Fall semester: BU100, Business Decision Making; Spring semester: BU200, Creating a Competitive Advantage). Typically, six sections of the course were offered per semester. In the 7 years included in the current study, 13 different teams taught the course. Although there are many varieties of team teaching (Davis, 1995), the courses described here all involved at least three faculty members planning and teaching one course with a common body of knowledge. Whereas different faculty teams used different approaches, including the nature and degree of collaboration among the team, and the organization and integration of the content material, the learning objectives for these courses were the same for all sections as follows:

- develop an understanding of the theories, concepts, and skills relevant to finance, marketing, and management and how these interrelate;
- develop an understanding of business practices and the complexity of organizations;
- experience the interrelationships between the different parts and functions of a business and develop a vision of the business entity as a whole;
- work in a decision-making group and improve team skills;
- critically assess information and think about the consequences of different decisions; and
- enhance written and oral presentation skills.

It was clear from our experience that there were significant costs associated with the delivery of interdisciplinary, team-taught courses. The question we kept coming back to was "Are the benefits, as supported by AACSB, worth the costs?" The current study used current and alumni student feedback on the courses described above. The purpose was to evaluate the perceived value of interdisciplinary, team-taught undergraduate business

courses and to determine what elements of the course affected those perceptions. The major elements of the current study are interdisciplinary, integration, team taught, collaboration, and student perceptions. The following sections address each of these and the costs and benefits of interdisciplinary education.

INTERDISCIPLINARY EDUCATION AND INTEGRATION

Davis (1995) defined *interdisciplinary courses* as "the work that scholars do together in two or more disciplines, subdisciplines, or professions, by bringing together and to some extent synthesizing their perspectives" (p. 5).[2] In addition, he stressed that integration, although not always achieved, is an inherent part of the definition of interdisciplinary courses. *Integration* is the degree to which the disciplines are woven together from two (or more) separate disciplines, or subdisciplines, into a single larger discipline (Davis, 1995). Integrated courses go beyond simply presenting material from different disciplines within a course. They merge the disciplines demonstrating how they are interrelated—how understanding each discipline enhances one's understanding of the other and the questions that each seeks to address. Interdisciplinary courses can be placed on a continuum of integration. On one end of the continuum we would find separate courses taught with no real relationship to one another (e.g., finance, marketing, organizational behavior as traditionally taught in silos). On the other end of the continuum would be courses and/or disciplines interwoven in a manner that produces a new synergistic discipline (e.g., astrophysics).

IMPORTANCE OF INTERDISCIPLINARY EDUCATION

Supporting AACSB's current focus on interdisciplinary education, Davis (1995) made a strong case for its importance. He divided this case into two categories. The first involves problems resulting from overspecialization in most academic disciplines. From this perspective, interdisciplinary education reduces isolation between disciplines; creates a critical, broad, and holistic perspective; and increases focus on questions of worth. The second category involves the adequacy of our current disciplinary structure in the face of the rapid technological and other changes that students will face. From this perspective, interdisciplinary education teaches how to gain and use knowledge, rather than just transmitting information. It also teaches comprehensive, broad problem-solving skills that correspond more closely to the inter-

disciplinary nature of most professions. In addition, it can increase the understanding of cultural diversity and encourage personal growth and reflection (Davis, 1995).

Interdisciplinarity in organizations. The work of most organizations is interdisciplinary and integrative. A wide variety of industries, from telecommunications (Louwrens, 1997) to the oil industry (Badgett, Hill, Mills, Mitchell, Vinson III, & Wilkins, 1994) have incorporated interdisciplinary, cross-functional teams and practices. This has resulted in a number of benefits in a range of industries. These benefits range from decreases in product development time in high-technology industries (Zirger & Hartley, 1996) and improvements in patient care in hospitals (Cabello, 1999) to enhanced job satisfaction, motivation, productivity, and quality in manufacturing organizations (Bursic, 1992).

Interdisciplinarity in education. Given the widespread use and success of cross-functional teams in industry, the importance of students having an education that prepares them for this interdisciplinary world cannot be overstated. Many schools have taken up this challenge.

For example, the University of Denver has developed an integrated MBA ("IMBA") comprising interdisciplinary, team-taught core courses plus electives (Slater, McCubbrey, & Scudder, 1995). Babson moved its MBA from a discipline-specific focus to an interdisciplinary focus (Zolner, 1996). The University of Idaho has created an interdisciplinary curriculum to deliver its junior-level business core courses (Miller, 2000). On a more limited basis, an even more diverse variety of specific courses and programs have also been integrated; for example, marketing and bioresource engineering (McKeage, Skinner, Seymour, Donahue, & Christensen, 1999) and engineering and writing (Shwom & Hirsch, 1999).

When student evaluations of these courses are provided, the outcomes are generally positive. Students perceived the courses as worthwhile and a positive contribution to their learning. In general, students rated interdisciplinary courses as slightly more challenging and interesting than traditional discipline-specific courses (Davis, 1995).

Team teaching and collaboration in interdisciplinary education. One common part of interdisciplinary courses has been team teaching. Ph.D.s are typically trained and rewarded (in graduate school and later on the publication road to tenure and promotion) for depth in a narrow area of expertise. Interdisciplinary education requires a broader perspective and knowledge base. Most faculty have specialized disciplinary knowledge, and given the

amount of knowledge that is contained in any given discipline, it would be unrealistic to expect any given faculty member to have mastered more than one (Davis, 1995). Therefore, most truly interdisciplinary courses, which interweave disciplines to create the integration discussed previously, may require more than one instructor.

Although interdisciplinarity can be placed on a continuum of integration, team teaching can be placed on a continuum of collaboration (Davis, 1995). On one end are classes that are jointly planned but delivered individually. On the other end are courses that are jointly planned and delivered. In this latter kind of class, all faculty members involved take responsibility together for the entire class, its delivery, evaluation, and grading.

Collaboration is not independent from the interdisciplinarity discussed previously—they are positively related. In fact, one of the criteria on which Davis (1995) evaluated the level of collaboration is the resulting level of integration of the material. The others are level of involvement of all faculty in planning the course and grading the outcomes, and participation in teaching.

Thus, it is possible to place interdisciplinarity and team teaching on a single collaboration-integration continuum. On one end would be a course with individual faculty members planning and grading material that is taught sequentially, from different perspectives that are distinct and serial. At the other end of the continuum would be a course in which faculty members are equally and consistently involved in planning, teaching, and grading the course and in which the course material is completely integrated and synthesized into a new way of thinking.

THE COSTS OF INTERDISCIPLINARY TEAM TEACHING

Interdisciplinary curricular changes require a major commitment from all involved constituents including administrators, faculty, and the business community (Pharr, 2000). Pharr (2000) described the significant foundation that must be in place and the continued commitment necessary for integrated programs to be successful. These include (a) sufficient resources (time, effort, and money), (b) commitment of all constituents, (c) scheduling and other flexibility, and (d) a mission statement, faculty development and hiring practices, and reward systems that support the integrated curriculum (Pharr, 2000).

Team teaching is resource intensive and takes more time and effort than teaching alone (George & Davis-Wiley, 2000; Sorensen & Wittmer, 1996). This increased time and effort comes from many sources. For example, increased planning and coordination is required (Bakken, Clark, & Thompson,

1998; Heimovics, Tayor, & Stilwell, 1996; Wenger & Hornyak, 1999). This involves everything from deciding what topics will be covered to how grading will be handled. Teaching teams must practice or learn new skills; develop new, joint pedagogical strategies; and manage their own egos (George & Davis-Wiley, 2000). Rather than making decisions individually, decisions must be made by the team with all the additional time and process issues that this involves (Silver & McGowan, 1996). Like all teams, a teaching team must resolve conflicts, communicate effectively, negotiate, develop an open and trusting climate, and practice effective interpersonal skills (Bakken et al., 1998; Sorensen & Wittmer, 1996). In addition, team teaching has other costs that include the opportunity cost to other activities (Heimovics et al., 1996) and the psychological costs of giving up control and stepping outside of one's comfort zone (Armstrong, 1980).

All of these costs demand an increase in administrative resources, planning, support, and time. The main areas in which this is required are faculty development, scheduling and selection, and assessment and rewards.

Faculty development. Team teaching requires an increased focus on faculty development to help those teaching such a course develop the necessary skills. As described above, the skills necessary to be an effective team teacher go well beyond those in which most faculty are trained.

Scheduling and selection. There is increased complexity in scheduling the courses and in the recruitment and selection of those who are suited to and want to teach the class (Sorensen & Wittmer, 1996).

Assessment and rewards. Team teaching is labor intensive (Watkins, 1996) and not very cost-effective (Mullins & Fukami, 1996). As such, serious resource issues must be addressed. New and flexible ways of measuring and/or assessing teaching loads must be developed. Issues of equity are particularly problematic (Sorensen & Wittmer, 1996). It is also important that the university promotion/tenure/assessment/rewards system be aligned with demands of team teaching (Young & Kram, 1996).

Thus, team-taught, interdisciplinary courses have costs for faculty and administration. The difficulty and complexity of team teaching requires a high and consistent level of commitment from all those involved in its implementation. The closer the course is to the highly integrated and/or collaborative end of the continuum, the greater the commitment required from all constituents, especially the faculty involved. The more interdependent and collaborative the course, the more investment, energy, and time required (Mullins & Fukami, 1996).

IMPORTANCE OF EVALUATING STUDENT PERCEPTIONS

If we believe that interdisciplinary programs and courses have something to contribute to business education, how can we determine if the benefits are worth the cost? In addition, given the costs, how can we maximize the learning experience for students? One way to begin this process is to determine ex post student perceptions of this type of curriculum. We recognize that there are important limitations to the questions that can be answered with student and alumni perceptions. However, they are a good place to start. They provide one measure of effectiveness and benefit and give us an idea of what affects this effectiveness from one perspective. Furthermore, student and/or alumni perceptions have a significant impact on many faculty and administrative behaviors and decisions. As discussed above, there is a significant commitment and resource requirements for the successful implementation of an interdisciplinary, team-taught curriculum. For better or worse, there is often a relationship between the levels of commitment and resources expended and the perception of our students and alumni. Because of this, student and alumni perceptions must be of concern.

Impact on faculty commitment. Faculty are often evaluated for promotion or merit pay based, at least in part, on student evaluations. If students view these types of courses unfavorably, faculty will be less willing to team teach. If persuaded to do so, they may reasonably focus their energies elsewhere and not give themselves the time and energy necessary to make the course truly integrated. When this happens, integration cannot survive, and there is no reason to go through the difficulties endemic to interdisciplinary team teaching described above. Junior faculty are especially burdened by the trade-off between research and the time it takes to team teach (Mullins & Fukami, 1996)—and they are especially vulnerable to student evaluations.

Impact on administrative commitment. In addition, because highly collaborative and integrative team teaching is so time intensive there must be flexible reward structures and scheduling to support this process. As noted by Pharr (2000), it requires sufficient resources for faculty development and hiring practices, and reward systems that support the integrated curriculum. This requires a consistent high level of commitment of deans and other administrators. Furthermore, it is unlikely that administrators will make the necessary commitment if they are getting less than positive feedback from students—current and alumni. In addition, administrators are concerned with enrollment that can be affected by how worthwhile students perceive the course offerings to be. At our school at least, the dean pays special attention

to the feedback he receives from students. For example, at our school we have a Student Advisory Committee that meets with the dean and whose input is taken very seriously. Administrators are also very concerned with alumni giving that is likely to be influenced by alumni perception of the usefulness and quality of their education. Thus, student perceptions can have a significant impact on whether faculty and administrators will make the commitment and dedicate the resources necessary to create a truly integrated interdisciplinary curriculum.

PURPOSE OF THE STUDY

The current study was designed to determine current student and alumni perceptions of the value of interdisciplinary, team-taught, undergraduate business courses. Of specific concern was the impact of perceived integration.[3] The following research questions were investigated:

How will an interdisciplinary, team-taught, undergraduate business course be viewed overall?
Will the level of perceived integration of the business disciplines affect student perceptions of the course?

Method

The sample selected for the current study included all business students who had taken this course in the 7 academic years since its inception. This included sophomores who had just completed the course, juniors, seniors, and alumni. Letters from the dean of the business school were sent to all alumni and current students who had completed the course as full-time students during their undergraduate business education from the fall of 1994 to the spring of 2001. The letter explained that the purpose of the current study was to evaluate the business school curriculum and invited the individual who had completed the course to participate in an online survey. This recruited Internet survey technique was selected to attempt to gain greater participation than a traditional mail survey and to avoid errors in keying data because data entry would be automatic. Such surveys also lack interviewer bias and, thus, should elicit more honest responses; because the questionnaire is under the control of the respondent, answers to questions on the Web should more closely resemble those from mail questionnaires in this sense (Dillman, 2000). Each letter included an individual code for the participant to enter to log on to the Web site to prevent duplicate responses and random responses from outside the sample; passwords such as this are typically used

to restrict access to the questionnaire (McDaniel & Gates, 1999). This system also allowed for pairing responses with a coded database of course grades. Participants were informed that the data would be used only in aggregate form and that their individual personal demographic information would not be reported in connection with their responses in any way. Four reminder postcards were mailed to all nonrespondents periodically as this technique has been shown to help boost the numbers who complete surveys (McDaniel & Gates, 1999).

The online questionnaire was developed primarily from the learning objectives of the course. Literature from studies of team-taught courses, interdisciplinary courses, and student attitudes toward business education in general was also consulted. Respondents were first asked a series of simple questions about their education, including their major, minor, and year of graduation; this technique is often cited as a way to ease participants into a survey (Alreck & Settle, 1995). Next, a series of 12 statements was presented followed by 6-point Likert-type scales designed to measure perceptions of the value of the course. The scale range included the following points: 1 (*strongly disagree*), 2 (*mostly disagree*), 3 (*somewhat disagree*), 4 (*somewhat agree*), 5 (*mostly agree*), and 6 (*strongly agree*). An even scale was used rather than a scale with a midpoint to force respondents to express either a positive or negative attitude; however, a "no answer" category was provided as this prevents creating ill will among respondents (McDaniel & Gates, 1999). These statements were divided into three major categories based on the variable they measured: team teaching, interdisciplinary nature of the course, and general attitudes. An additional set of five questions was developed that compared the course to other courses with more traditional methods of delivery. A separate scaled question was included to measure perceptions of the extent of integration of the three business disciplines in the course. This question utilized a 7-point semantic differential scale ranging from 1 (*not at all integrated*) to 7 (*completely integrated*). Finally, demographic questions were included to allow for measurement of sample characteristics to ensure the respondents were representative of the population of alumni and current students who had taken the course. The questionnaire was pretested with a group of 20 undergraduates to uncover any problematic or unclear questions or sequencing.

Results

A total of 1,831 alumni of the course were identified and sent the invitation to participate. A total of 567 respondents with valid addresses completed

the online survey for a 32% response rate, considered substantial for a survey of this type (Malhotra, 1996; Sheehan, 2001).

Demographic characteristics of the respondents are included in Table 1. Sample percentages were compared with the characteristics of the overall population of students who had taken the course on key demographics to ensure that the respondent characteristics were not substantially different from those of the population. Although the population of alumni was weighted more toward men, respondents were fairly evenly split between males and females indicating that females were somewhat more willing to log on and complete the survey. Information systems majors were the only majors responding in greater percentages than they represented in the overall population, perhaps because of the Web-based nature of the survey. More alumni from more recent years responded than their proportionate population percentages. This may be because of a more recent familiarity and interest with the course. Respondents had a mean age of 22.1. Slightly more students who had received higher grades in the course responded. The average course grade for the population was 2.95, whereas for the respondents it was 3.07.

Table 2 includes the 12 statements used to measure overall perceptions of the course and the mean rating on the 6-point scale for each statement. In all cases, a vast majority of respondents agreed with the statements with agreement ranging from 67.1% to 91.1%. The highest mean ratings occurred for the team-teaching variables, specifically, that having more than one instructor in the course was "valuable to my learning at the time" followed closely by the students having "enjoyed having more than one instructor in the classroom" for the course. Approximately 90% of students expressed agreement with these statements.

Key demographic variables were analyzed to determine any significant perceptual differences based on respondent characteristics. ANOVA was used to compare the differences between means on the responses to the survey questions. Cell sizes varied between the means being compared, so Tukey standardized *t* tests that adjust for cell size differences were used. Results significant at the 5% alpha level or better were accepted as statistically significant as reported in Table 2.

Few significant differences were found for any of the demographics measured against the 12 variables. Gender was significant on three variables. Women found having more than one instructor more "valuable" than did men and felt the course gave them a "sense of how the business disciplines work together" more than did men. Women, however, also rated the course significantly more "challenging" than men did.

TABLE 1
Demographic Characteristics of Respondents

	Percentage Survey Respondents	*Percentage Overall Population*
Gender		
Males	52.6	59.3
Females	47.4	40.7
Age distribution		
Younger than 20 years	7.1	3.3
20 to 24 years	78.3	63.4
25 to 29 years	14.1	32.9
30 years and older	0.5	0.4
Graduation year		
2004	0	0.4
2003	23.1	12.9
2002	14.3	14.8
2001	12.6	12.7
2000	12.2	14.9
1999	9.4	13.6
1998	6.6	11.3
1997	0.2	8.7
1996	0.2	7.0
Major		
Accounting	17.2	21.7
Finance	18.4	19.7
General business	0.4	0.2
Information systems	12.9	7.3
International business	4.4	7.8
Management	8.0	12.2
Marketing	29.6	31.1
Other	9.0	—
Average course grade		
Less than 2.00	1.2	4.5
2.00 to 2.49	8.6	8.8
2.50 to 2.99	27.1	32.7
3.00 to 3.49	36.5	33.8
3.5+	26.5	20.1

ANOVA on each of the 12 questions by major produced only one statistically significant result—the course "challenged me intellectually." Further examination using post hoc *t* tests of individual paired comparisons by major showed that the only significant differences were between marketing and finance majors and marketing and accounting majors (with marketing majors finding the course more challenging in both cases).

TABLE 2
Overall Ratings for BU100/BU200

	Percentage Agreeing	*Mean Rating*
Team teaching		
Having more than one instructor in BU100/BU200 was valuable to my learning at the time I was taking the course.	89.0	4.94[a,c]
I enjoyed having more than one instructor in the classroom for BU100/BU200.	90.3	4.90
The instructors provided different perspectives or points of view in presenting the material in BU100/BU200.	91.1	4.79[c]
Having more than one instructor in BU100/BU200 was confusing for me. (Reverse coded)	83.6	4.74
The BU100/BU200 instructors seemed to contradict one another. (Reverse coded)	71.3	4.20
Observing the BU100/BU200 instructors working as a team helped me better understand teamwork.	67.1	3.92
Interdisciplinary nature		
Having three different business areas (e.g. finance, management, marketing) discussed in BU100/BU200 helped me better understand business.	88.1	4.78
BU100/BU200 gave me a sense of how the business disciplines (e.g. finance, management, marketing) work together.	88.5	4.60[a]
Overall attitude		
The BU100/BU200 course challenged me intellectually.	81.1	4.45[a,b]
I liked BU100/BU200.	76.2	4.23
The teaching methods used in BU100/BU200 helped me develop an in-depth understanding of the course material.	73.6	4.14
Even if the BU100/BU200 course was not required, I would recommend it to others.	69.5	4.04

NOTE: BU100 = Business Decision Making; BU200 = Creating a Competitive Advantage.
a. Significant difference by gender at .05 level.
b. Significant difference by major at .05 level.
c. Significant difference by time elasped since taking the course at .05 level.

A regression found time elapsed since taking the course was statistically significant for only 2 of the 12 variables: having more than one instructor "was valuable to my learning at the time," and the instructors "provided different perspectives" in presenting the course material. The more time that had elapsed since taking the course, the more positive the perception of having more than one instructor with differing perspectives.

Average grade received across both semesters of the course yielded no significant results among the 12 variables. Similarly, although 9% of respondents indicated that they had attended graduate school since completing their

TABLE 3
Level of Perceived Integration of Business Disciplines (1 = *not at all integrated*, 7 = *completely integrated*)

Rating	*Frequency*	*Percentage*
1	3	.5
2	36	6.4
3	71	12.5
4	81	14.3
5	190	33.5
6	132	23.3
7	54	9.5

undergraduate business degree, no significant differences occurred for any of the 12 variables measured based on graduate school attendance.

Thus, very few significant differences occurred based on gender, major, years since the course was taken, average course grade, or graduate school attendance, indicating that most perceptions of the course appear to be consistent across respondents.

The distribution of responses to the question measuring the extent that the three different business disciplines were integrated in the course is included in Table 3. The overall mean rating was 4.82 on the 7-point scale. When analyzed against the 12 attitudinal questions, integration significantly explained variability of the responses to every one; in each instance, the higher the perceived amount of integration, the more positive the rating of the course, as shown in Table 4. Coefficients for all variables were positive with the exception of perceived levels of confusion or contradiction. The regression coefficients for these variables were negative and significant, though with lower adjusted R^2 than other variables. These significant results indicated that the more integrated the course, the less confused were the students and the less the students perceived instructors contradicted each other. Perceived integration accounted for a substantial amount of the variance in responses to the 12 questions.

Results for the questions comparing the course to more traditional courses similarly indicated that the course was viewed as successful, as indicated in Table 5. Whereas overall mean ratings were somewhat lower, all were positive, and only one question resulted in many significant differences by demographics. Specifically, gender, major, and years since taking the course affected the rating of the course as "more challenging" than more traditional courses. Here, women and marketing majors again found the course more challenging. Those who took the course longer ago rated it less challenging

TABLE 4
Regression Analysis for Level of Perceived Integration

	Adjusted R^2 *for Overall Model*
Team teaching	
Having more than one instructor in BU100/BU200 was valuable to my learning at the time I was taking the course.	.34
I enjoyed having more than one instructor in the classroom for BU100/BU200.	.24
The instructors provided different perspectives or points of view in presenting the material in BU100/BU200.	.31
Having more than one instructor in BU100/BU200 was confusing for me. (Reverse coded)	.14
The BU100/BU200 instructors seemed to contradict one another. (Reverse coded)	.11
Observing the BU100/BU200 instructors working as a team helped me better understand teamwork.	.22
Interdisciplinary nature	
Having three different business areas (e.g., finance, management, marketing) discussed in BU100/BU200 helped me better understand business.	.29
BU100/BU200 gave me a sense of how the business disciplines (e.g., finance, management, marketing) work together.	.38
Overall attitude	
The BU100/BU200 course challenged me intellectually.	.34
I liked BU100/BU200.	.40
The teaching methods used in BU100/BU200 helped me develop an in-depth understanding of the course material.	.42
Even if the BU100/BU200 course was not required, I would recommend it to others.	.36

NOTE: BU100 = Business Decision Making; BU200 = Creating a Competitive Advantage. All models and β coefficients significant at $p < .0001$. Regression Model: (survey question response) = $\alpha_i + \beta_i$ (perceived integration). In the interest of brevity constants, regression coefficients, F, and t statistics are not reported. We relied on summation reporting of the overall R^2 of the model for each variable regressed and level of significance that was the same for all models.

than those who had more recently completed it. With respect to the course being one that students "remember" more than others they had taken, average grade significantly affected responses, with those who received lower grades remembering the course more than those who received higher grades.

Again, the perceived amount of integration in the course positively affected ratings for all five comparison-type questions as Table 6 shows. Integration explained 30% of the variance in responses to the course helping stu-

TABLE 5
Comparison to Other Types of Courses

	Percentage Agreeing	*Mean Rating*
BU100/BU200 is a course I remember more than most courses I took in the School of Business.	74.6	4.25[d]
BU100/BU200 is a course that helped me understand business more than most courses I took in the School of Business.	67.0	3.92
BU100/BU200 was a more valuable course than courses I took that were taught by one faculty member and were based on a single discipline.	60.4	3.74
BU100/BU200 captured my interest more than courses I took that were taught by one faculty member and were based on a single discipline.	58.5	3.73
BU100/BU200 was more challenging than courses I took that were taught by one faculty member and were based on a single discipline.	53.1	3.59[a,b,c]

NOTE: BU100 = Business Decision Making; BU200 = Creating a Competitive Advantage.
a. Significant difference by gender at .05 level.
b. Significant difference by major at .05 level.
c. Significant difference by time elapsed since taking the course at .05 level.
d. Significant difference by average grade in course at .05 level.

dents "understand business more than most courses" they took in the School of Business and 29% of the variance in the course being "more valuable" and in its "capturing interest" more than traditional courses.

Discussion

Overall, perceptions of the course were positive, as prior studies of these types of interdisciplinary courses have also indicated (Davis, 1995). Demographics failed to significantly affect perceptions on more than a few variables, indicating that this course was universally positively perceived by both genders, all majors, all graduation years, those who had or had not attended graduate school, and by students who had received any grade in the course.

The course compared favorably with traditional one-instructor, single-subject courses. Former students are possibly somewhat more aware post-course of the complexity of the world that is less well reflected in single-subject, single-instructor courses than a course that attempts to model the complexity of different perspectives and the interaction of different personalities.

TABLE 6
Regression Analysis for Level of Perceived Integration for Comparison Questions

	Adjusted R^2 *for Overall Model*
BU100/BU200 is a course I remember more than most courses I took in the School of Business.	.22
BU100/BU200 is a course that helped me understand business more than most courses I took in the School of Business.	.30
BU100/BU200 was a more valuable course than courses I took that were taught by one faculty member and were based on a single discipline.	.29
BU100/BU200 captured my interest more than courses I took that were taught by one faculty member and were based on a single discipline.	.29
BU100/BU200 was more challenging than courses I took that were taught by one faculty member and were based on a single discipline.	.14

NOTE: BU100 = Business Decision Making; BU200 = Creating a Competitive Advantage. All Models & β coefficients significant at $p < .0001$. Regression model: (survey question response) = $\alpha_i + \beta_i$ (perceived integration).

The most powerful aspect of the course was the integration itself. Again, the level of success in weaving the subject matter together into an integrated presentation was crucial to postcourse perceptions. The extent of integration of the course material significantly affected those perceptions across every variable tested.

LIMITATIONS OF THE STUDY

Although the sample was fairly representative across demographic categories, nonrespondent perceptions may have differed from those who participated in the study reflecting the self-selection bias inherent in the survey method used here. Furthermore, relying on student recollections of one course taken among several dozens of courses and time elapsed since taking that course could have had an impact on their responses. However, this is a limitation of all studies examining recalled perceptions. In addition, because the focus of the current study was student perceptions, the degree of integration was measured only from their perspective.

PRACTICAL IMPLICATIONS

We can draw two preliminary conclusions. First, from the perspective of current students and alumni, interdisciplinary, team-taught courses have a

benefit. Second, the more integrated the course, the more benefit it is perceived to have. There are a number of practical and research implications that can be drawn from these conclusions.

If a business school is to meet the needs of its students, and those influenced by the perceptions of students, it should consider designing its interdisciplinary programs to be as integrated as possible. Interdisciplinary courses taught using processes that are relatively less collaborative do not seem to work as well as those courses taught using processes that are relatively more collaborative.

Likewise, for a business school to allocate its resources for maximum impact, it should consider designing its interdisciplinary programs to be as integrated as possible. The AACSB Management Education Task Force pointed out that one of the challenges facing business schools is a scarcity of human and financial resources (AACSB, 2002b). As discussed earlier, team teaching is resource intensive and expensive on many different levels—for the administration and the faculty involved.

If a school of business decides to heed the advice of the AACSB Task Force and use interdisciplinary courses as a way to ensure the relevance of its curriculum, it should commit the resources necessary to fully support an integrated and/or collaborative program. The main areas in which this is required are faculty development, scheduling and selection, and assessment and rewards.

IMPLICATIONS FOR FUTURE RESEARCH

Again, we return to the basic question: Is the benefit of this type of course worth the costs? Although the benefit is supported by the current research, future research would further help answer this question.

This research should take two different tracks. The first is to investigate the perceptions of other constituent groups—specifically the perceptions of the teaching teams, the administration, and the organizations that hire our students. This would provide a broader, more nuanced understanding of the perceived value of interdisciplinary, team-taught courses. The second track is to investigate the learning that actually takes place in interdisciplinary, team-taught courses. Although the perception of students is important for the reasons described earlier, it provides only one view of effectiveness and value. It is important to develop more objective measures of effectiveness and the variables that affect effectiveness. This research should also include an empirical examination of the relationship between integration and collaboration. Although we put them on a single continuum in the current study, the exact nature of their relationship needs further exploration. For example, are there circumstances in which they are not positively related?

If future research shows that interdisciplinary team teaching is perceived to have benefits to all constituent groups and to objectively create more learning, then we will be able to state even more affirmatively that yes, the costs are worth the benefits.

Notes

1. Complete information about the AACSB Management Education Task Force is available at www.aacsb.edu/members/metf/default.asp.

2. *Interdisciplinary education* has gone by many different names (e.g., transdisciplinary, multidisciplinary, cross-disciplinary). For a complete history and description of the various terms used to describe methods of combining disciplines see chapter 3 of Klein (1990).

3. We did not directly measure perceived collaboration. As discussed previously, much of what differentiates team teaching, in terms of level of collaboration, happens outside of class and without the students' knowledge. Therefore, it was not possible to directly obtain a meaningful measure of student perceptions of collaboration. However, we were able to get some indirect indication of perceived collaboration. As discussed previously, we would expect integration and collaboration to be positively related, and questions were asked about team teaching, which would be the most visible component of team teaching.

References

Alreck, P. L., & Settle, R. B. (1995). *The survey research handbook*. Chicago: Richard D. Irwin.

American Assembly of Collegiate Schools of Business. (2002a). Management education at risk: A report from the Management Education Task Force, executive summary, August, 2002. Retrieved April 10, 2003, from www.aacsb.edu/publications/metf/METFReport-ExecutiveSummary.pdf

American Assembly of Collegiate Schools of Business. (2002b). Management education at risk: A report from the Management Education Task Force, final report, August, 2002. Retrieved April 10, 2003, from www.aacsb.edu/publications/metf/METFReportFinal-August02.pdf

Armstrong, F. (1980). Faculty development through interdisciplinarity. *Journal of General Education*, *32*(1), 52-63.

Badgett, K. L., Hill, P. L., Mills, W. H., Mitchell, S. P., Vinson III, G. S., & Wilkins, K. L. (1994). Team combines technologies to target horizontal wells in Gulf of Mexico oil field. *Oil & Gas Journal*, *91*(11), 44-48.

Bakken, L., Clark, F. L., & Thompson, J. (1998). Collaborative teaching: Many joys, some surprises, and a few worms. *College Teaching*, (Fall), 154-159.

Bursic, K. M. (1992). Strategies and benefits of the successful use of teams in manufacturing organizations. *IEEE, Transactions on Engineering Management*, *39*(3), 277-289.

Cabello, C. C. (1999). Six stepping stones to better management. *Nursing Management*, *30*(4), 39-40.

Davis, J. R. (1995). *Interdisciplinary courses and team teaching: New arrangements for learning*. Phoenix, AZ: American Council on Education and Oryx Press.

Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method*. New York: John Wiley.

George, M. A., & Davis-Wiley, P. (2000). Team teaching a graduate course. *College Teaching*, *48*(2), 75-84.

Heimovics, D., Tayor, M., & Stilwell, R. (1996). Assessing and developing a new strategic direction for the executive MBA. *Journal of Management Education*, *20*(4), 462-478.

Klein, J. T. (1990). *Interdisciplinarity: History, theory and practice*. Detroit, MI: Wayne State University Press.

Louwrens, M. (1997). The importance of a common project management method in the corporate environment. *R & D Management*, *27*(3), 189-196.

Malhotra, N. (1996). *Marketing research: An applied approach*. Upper Saddle River, NJ: Prentice Hall.

McDaniel, C., & Gates, R. (1999). *Contemporary marketing research*. Cincinnati, OH: South-Western College.

McKeage, K., Skinner, D., Seymour, R. M., Donahue, D. W., & Christensen, T. (1999). Implementing an interdisciplinary marketing/engineering course project: Project format, preliminary evaluation, and critical factor review. *Journal of Marketing Education*, *21*(3), 217-231.

Miller, J. R. (2000). Economics in the integrated business curriculum. *Journal of Education for Business*, *76*(2), 113-118.

Mullins, J. W., & Fukami, C. V. (1996). Stage 4: The raging debates. *Journal of Management Education*, *20*(4), 446-461.

Pharr, S. W. (2000). Foundational considerations for establishing an integrated business common core curriculum. *Journal of Education for Business*, *76*(1), 20-26.

Sheehan, K. (2001). E-mail survey response rates: A review. *Journal of Computer-Mediated Communication*, *6*(2). Retrieved January 30, 2006 from http://jcmc.indiana.edu

Shwom, B., & Hirsch, P. (1999). Re-envisioning the writing requirement: An interdisciplinary approach. *Business Communication Quarterly*, *62*(1), 104-107.

Silver, W., & McGowan, R. P. (1996). Stage 3: Adventures in team teaching. *Journal of Management Education*, *20*(4), 435-445.

Slater, J. S., McCubbrey, D. J., & Scudder, R. A. (1995). Inside an integrated MBA: An information system view. *MIS Quarterly*, *19*(3), 391-407.

Sorensen, J. E., & Wittmer, D. P. (1996). Stage 2: Designing team-taught transdisciplinary courses—Where do we begin? *Journal of Management Education*, *20*(4), 422-434.

Watkins, T. L. (1996). Stage 1: Creating a new MBA core with team teaching. *Journal of Management Education*, *20*(4), 411-421.

Wenger, M. S., & Hornyak, M. J. (1999). Team teaching for higher level learning: A framework of professional collaboration. *Journal of Management Education*, *23*(3), 311-327.

Young, M. B., & Kram, K. E. (1996). Repairing the disconnects in faculty teaching teams. *Journal of Management Education*, *20*(4), 500-515.

Zirger, B. J., & Hartley, J. L. (1996). The effect of acceleration techniques on product development time. *IEEE Transactions on Engineering Management*, *43*(2), 143-152.

Zolner, J. P. (1996, Winter). Moving the academic graveyard: The dynamics of curricular change. *Selections*, pp. 1-10.