Student Satisfaction with Team-Taught Interdisciplinary Courses

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ABSTRACT: This article presents the results of a survey of student and alumni experience with a team-taught interdisciplinary curriculum introduced in one university's restructured Masters in Business Administration (MBA) program. As more institutions of higher education look for innovative methods to assure learning and keep pace with the demands of the job market, interdisciplinary learning and team-teaching have evolved as viable tools to enhance and enrich the learning experience and to complement the single-disciplinary approach to teaching. To determine students' satisfaction with the redesigned MBA program, researchers developed a 22 question survey in *Question Pro* which they administered in spring, 2020. The survey focused on students' satisfaction with the two key elements in the redesigned program: team-teaching and an interdisciplinary curriculum. Eighty-five respondents, 74 current students and 11 alumni, participated in the survey. While results indicated satisfaction with both team-teaching and interdisciplinary courses, students were more satisfied with the interdisciplinary curriculum than they were with team-teaching of that curriculum. The study's results, coupled with a steady increase in enrollment and positive exit survey data, point to a successful redesign. This study's exploration of students' satisfaction with team-taught interdisciplinary courses supports earlier studies of students' experience with similarly redesigned MBA programs.

KEYWORDS: curriculum development, integration, interdisciplinary, satisfaction, team-teaching

I. STUDENT SATISFACTION WITH TEAM-TAUGHT INTERDISCIPLINARY COURSES

In their 2005 study of team-teaching in an MBA program, Helms et al. highlighted the opportunity for students to learn from multiple viewpoints, as well as from differing teaching skills and teaching styles. The authors also noted that opportunities for interdisciplinary scholarship and enhanced communication and teamwork are benefits of interactive team-teaching (i.e., both instructors in front of the class simultaneously). Dugan and Letterman (2008) surveyed students and instructors on their experience with three types of team-taught courses as compared with their attitudes toward traditional classes. Their study results focused on student responses. The authors found that, depending on the type of team-teaching, whether it was co-teaching when both instructors taught simultaneously, or alternate teaching when the instructors alternated their roles, or a panel of three or more instructors, there were "no real differences" between team-teaching and traditionally taught classes. However, there were differences in student attitudes toward the type of team-teaching. Students preferred the co-teaching model to the alternate and panel models.

Students in the 2008 Dugan and Letterman study commented on the difficulty with communication in team-taught courses. "…a notable pattern emerged that indicated difficulties with communication and organization…Some students were concerned that the lack of communication between professors translated into barriers to good grades." (Dugan & Letterman, 2005, p.14).In their study of student perceptions of team-taught courses, Simons et al. (2020) identified similarly expressed advantages and disadvantages of team-teaching, such as rich and varied lessons and different perspectives as being advantages, and confusion of different teaching styles and the lack of clarity of the ownership of responsibility as being disadvantages. Killingsworth and Xue (2015) assessed students' perspectives on team-teaching, specifically with regard to satisfaction with the class experience and their perception of competency gained. Their findings indicated that "…the learning climate established by the instructors co-teaching a course has an impact on students' perceptions of their own competencies as well as the level of satisfaction they have with the course..." (Killingsworth & Xue, 2015, p.5).

Acknowledging that interdisciplinary education was a "hot topic," Klaassen (2018) argued that the best interdisciplinary curriculum should focus on three variables, i.e., choice of problem, level of interaction between the different disciplines, and constructive alignment. He concluded that the most important of these was the choice of problem, that is, the subject matter to be learned.

The Science Education Resource Center (SERC) (2020) highlights four distinct educational benefits of interdisciplinary learning: students' gaining the ability to recognize bias, thinking critically, tolerating ambiguity, and acknowledging and appreciating ethical concerns. Recognizing the need to keep pace with a rapidly changing global business environment and the need to meet market demands for tomorrow's business leaders, a core group of business faculty at one university in Southwestern Pennsylvania was charged with reviewing and revitalizing its Masters in Business Administration (MBA) program. Representatives from the business community, as well as students were asked to contribute their perspectives to the process. Capturing the essence of an interdisciplinary curriculum was a key element in the proposed review.

II.   PROGRAM DEVELOPMENT

The redesigned MBA program evolved from a traditional 36 credit ground program to one with 30 credits delivered primarily online. This adjustment in curriculum was achieved through the use of interdisciplinary curriculum within a School of Business that required team-teaching across departments. The University began its part-time MBA program in the late 1980's. For much of the first 30 years, it was a popular part-time program with a healthy enrollment of approximately 200 students. However, in preparation for its initial AACSB accreditation in the early 2000's, the University's School of Business streamlined its MBA program and reduced its elective options. The elimination of several elective courses, coupled with the implementation of more rigid entry requirements, resulted in a period of enrollment decline for the program. By 2015, fewer than 60 students were enrolled. Recognition of the need to re-evaluate the MBA program began in late 2015 with a small task force that began to investigate all graduate programs within the School of Business (SBUS), including the MBA program. Through this process it became apparent there were significant issues with the MBA program that needed to be addressed. Included in these were issues related to how the current 36 credit hour program, in its current form, lacked competitiveness with other rival MBA programs and the need to re-evaluate the curriculum to increase its marketability. In November, 2016, a task force with representation from all areas within the SBUS was launched to directly address the issues associated with the MBA.

The Development of Interdisciplinary Curriculum: The MBA is the centerpiece of management education and holds the promise of systematically preparing graduates for future leadership and managerial roles. It is typically an applications-based degree that focuses on providing the necessary building blocks for success in the corporate world. There are certain content areas that most MBA programs should and do deliver to students: finance, accounting, marketing, organizational behavior, operations management, and strategic management. In addition, many programs also include business statistics, the legal environment of business, leadership, and, more frequently today, a focus on analytical skills. The traditional approach is to teach this content to students within disciplinary silos. For example, the accounting department is responsible for one or two courses in an MBA program; the finance and marketing departments for others; the management department for those courses in its field of expertise. What this approach does not address is the increasingly complex nature of business where a number of the content areas referenced above are intertwined in decision-making. Business schools have been criticized for too often delivering content that does not adequately prepare students for the integrated nature of the real world; a criticism noted in a series of articles in 1996 (Fukami et al.; Mullins & Fukami; Silver & McGowan; Sorensen & Wittmer; Watkins) documenting the University of Denver's redesign of its MBA program.

Despite this criticism, higher education has not responded as comprehensively as it could to prepare students to learn and work in interdisciplinary ways. As Jacob (2015) observed, even with "consistent calls for an increase in [interdisciplinary] activities in higher education," efforts are often stymied by "the traditional nature of the institutions" in which faculty work and students learn. Issues around faculty teaching loads, research expectations, course ownership, dual course listings and the siloed nature of faculty departments have allowed for the development of separate, unique departmental cultures and have created artificial walls dividing the disciplines on most university campuses and making it difficult to offer an integrated curriculum (Pharo et al., 2012, 2014). Amidst these challenges, colleges and universities have been developing courses, programs, centers, as well as majors designed to teach interdisciplinary skills to students (Fortuin & Bush, 2010; Franks et al., 2007; Spelt et al., 2009). This is a reasonable approach since practical problems often require not only a single discipline of expertise but also collaboration across multiple fields. However, what is surprising is that despite evidence supporting the benefits of interdisciplinary learning, faculty and universities still struggle with how to effectively undertake interdisciplinary teaching. The task force recognized in the early stages of the redevelopment process that in order for the MBA program to be competitive, it would have to move from a 36 credit program to one with 30 credits. To better mirror the real world and navigate this six-credit reduction, it was decided to pursue the integration of content across functional areas. The redesigned courses would need to

combine information across school departments and, in order to maintain sufficient expertise. This would require team-teaching. Using a process similar to that outlined by Watkins (1996) in describing the University of Denver experience, the SBUS engaged in a rigorous process involving faculty feedback, workforce assessments and expectations, input from local industry contacts, and a competitive assessment of peer and rival MBA programs. From that process, an initial list of required competencies was developed along with revised objectives. Both were vetted through the SBUS Graduate Curriculum and AOL Committees, as well as the University's Graduate Curriculum Committee. After months of work, the blend of integrated courses that would best suit the MBA program was finalized, resulting in seven new core courses that were introduced into the program in the fall semester of 2017. Each of these courses were to be delivered by teams of two faculty members. To round out the development of the revised program, new electives in the areas of business analytics, project management, and supply chain and logistics management were designed and placed in the MBA program to be delivered in a traditional manner by a single faculty member. Table 1 presents the redesigned core curriculum.

Table 1

MBA Core Curriculum

Course Number	Course Title	Content Areas integrated
6010	*Leading the Business Enterprise*	Organizational behavior and legal studies
6110	*Financial Management and Accounting for Decision Makers*	Finance and accounting
6215	*Analytical Methods for Decision Makers*	Business statistics and marketing analytics
6240	*Understanding Today's Business Environment*	Finance and economics
6020	*Creating Customer Value in a Digital World*	Human relations and marketing
6510	*Global Operations and Supply Chain Management*	Operations management and logistics management
6990	*Strategic Knowledge Integration*	Strategic management (capstone) with an in-depth project requirement

Integration and Team-Teaching Implementation: Needless to say, there were many challenges associated with these changes to the core courses. Faculty who had always taught independently were now expected to partner with a colleague to develop and deliver a joint curriculum. This required them to generate support for their ideas and negotiate course content, none of which had they done previously. As Shibley (2010) noted in his discussion of interdisciplinary team-teaching, differences in pedagogical style and objectives between instructors creates challenges.One of the most important methods used to overcome challenges in these interdisciplinary efforts was by cultivating personal relationships between partners. This process began with faculty training and committee meetings, but with most of the real work happening in one-on-one discussions between partners as they worked through course development. It is also important to recognize the requirement for continuous innovation in this process, as all partners made changes to course content over the first few semesters of team-taught interdisciplinary delivery. Many still are honing and adjusting curriculum as they seek to improve the integration of course content and the pedagogical manner in which they deliver it. Reporting on their experience with reengineering an MBA program at the University of Denver, the authors (Fukami et al., 1996; Mullins & Fukami, 1996; Silver & McGowan, 1996; Sorensen & Wittmer, 1996; Watkins, 1996) described a collaborative development process for the new curriculum and detailed the frustrations and rewards of team-teaching a transdisciplinary MBA program. As in this case, their goal in redesigning the MBA program was to address changes in the business environment and to prepare students to meet the demands of a global marketplace. As Tantalo and Priem (2016) found in their own interdisciplinary efforts, as relationships between partners developed so did a sense of joint ownership for the course. The more faculty engaged together to solve problems that arose throughout the course development and delivery process, the more these relationships deepened and enhanced the mutual respect held for each other's ideas. This generated willingness to compromise on points of disagreement and allowed for novel and mutually beneficial solutions to be developed and implemented. Ultimately, barriers that existed between traditional business school departments were reduced as faculty relationships deepened and the cohesiveness of the entire school of business increased.

III.   ADDITIONAL FACTORS TO CONSIDER

An important part of successful enrollment in any higher education program is the set of strategies associated with student recruitment and the acceptable standards for admission. For the purposes of recruitment, the MBA program has a limited budget, resulting in the majority of advertising occurring via word of mouth or through LinkedIn. The Graduate Admissions Department partners with the MBA Director to host targeted "Lunch & Learn" presentations at company sites, open houses on campus, and other MBA-related events. These recruitment activities have remained constant throughout the duration of this study. Regarding admission requirements, these have also stayed the same with no recent change in the minimum GMAT score or the requirements for references[1]. It is important to mention that GMAT waivers for relevant and sufficient work experience were introduced at the same time as the revised 30 credit curriculum. These are managed on a case-by-case basis by the MBA Director and have likely contributed to an increase in enrollment. The result has been that, for recent academic years, less than 50% of all enrolled students have had to complete the GMAT for admission.

Measures of Success: Each year, the University participates in a standardized exit survey developed by Skyfactor Benchworks consisting of 110 questions, grouped according to overarching concepts (factors).[2] On the questions that measured overall program effectiveness, the factor mean for the University's redesigned MBA program was greater than the factor mean for overall program effectiveness for all participant schools for each of the three years that it was administered. Appendix A presents the comparative exit survey data. Over the three academic years since undergoing these significant changes, the MBA program enrollment has significantly improved. Within the first year, enrollment increased almost threefold and at the start of the fall semester 2018, there were more than 200 registered students in the MBA program. This level of student enrollment has been maintained throughout the last two academic years with approximately 100 students enrolling in the program annually and maintaining more than 200 registered part-time MBA students. Figure 1 presents the enrollment figures over the seven-year period.

Figure 1
MBA Enrollment Figures 2012-2019

Purpose of the Study: In the interest of maintaining, if not growing the enrollment figures, researchers wanted to learn how satisfied students were with the team-teaching model and the interdisciplinary curriculum design. To determine if students found their experience with team-teaching and the interdisciplinary approach to be valuable, researchers surveyed current MBA students and program alumni/ae. Survey questions focused on participants' satisfaction with both components. Selected responses were transferred into SPSS for analysis.

Research Questions

RQ 1: How satisfied have students been with team-taught courses?
RQ 2: How satisfied have students been with interdisciplinary courses?
RQ 3: Which modes of instruction do students prefer?

IV.   METHOD

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[1] The minimum GMAT score was raised in conjunction with activities associated with initial AACSB accreditation in 2009.

[2] The factors are used to describe a concept more accurately than a single question. Comparative factor means based on all national survey responses are used to determine where a school sits versus rivals.

Sample and Participant Selection: The restructured MBA program uses a rolling admissions process, admitting new students upon successful completion of admissions requirements. The program typically takes two years to complete. The sample was drawn from enrollments between 2017 and 2020. Following approval by the University's Institutional Review Board (IRB), invitations to participate in the study were sent to 250 current and past students in the MBA program by the MBA program director in spring 2020. Two reminder emails were sent at two-week intervals. There were no incentives offered. Eighty-five of the 250 people solicited participated in the survey for a response rate of 34%. Of the 98 who began the survey, 85 finished it for a completion rate of 86.73%. Students who were enrolled in the MBA program in spring 2020 represented 74 (87.06%) of the participants. Alumni/ae of the MBA program made up the remaining 12.94% (11) of the respondents. Males represented 63.53% of the sample, or 54 respondents. Thirty females (35.29%) responded. One participant (1.18%) did not wish to respond. Respondents between the ages of 25 and 34 made up 48.24% (41) of the sample. There were 20 (23.53%) respondents between the ages of 35 and 44. Eleven respondents (12.94%) were between the ages of 45 and 54. Eleven (12.94%) were 18 to 24 years old. Two (2.35%) respondents were between 55 and 64 years old.In response to the question asking how many years of professional experience the respondent had, 27 (31.76%) responded that they had 12 or more years of professional experience. Twenty-five (29.41%) replied that they had between 8 and 12 years of professional experience. Seventeen (20.00%) responded that they had 4 to 7 years of professional experience. Fifteen respondents (17.65%) had a lower amount of professional experience, or 1 to 3 years.   Table 2 presents the participant profile.

Table 2

Participant Profile

Category	No. of responses	Percent of total
Enrollment Status:		
Student	74	87.06
Alum	11	12.94
Gender:		
Male	54	63.53
Female	30	35.29
Age:		
18-24	11	12.94
25-34	41	48.24
35-44	20	23.53
45- 54	11	12.94
55-64	2	2.35
64+	0	0
Yrs. Professional Experience:		
1-3	15	17.65
4-7	17	20.00
8-12	25	29.41
12+	27	31.76

Instrument: Researchers developed a twenty-two question survey in *Question Pro*, the survey tool supported by the university. The first four questions were demographic in nature and included enrollment status, gender, age, and professional experience. Question five asked respondents to identify industries in which they had worked. Questions six through 12 focused on respondents' satisfaction with team-teaching. Questions 13 to 19 focused on respondents' satisfaction with interdisciplinary courses. In question 20, researchers asked respondents which instructional models they preferred with regard to team-teaching, interdisciplinary courses, and, face-to-face versus online instruction. Participants were asked to elaborate on their choices. The final question was open-ended, asking for any comments or suggestions. Selected results were transferred into SPSS for analysis. Independent samples t-tests were run on the first two research questions based on gender, and age. Independent samples t-tests were conducted to examine learners' satisfaction with team-teaching and with interdisciplinary courses based on the number of team-taught and interdisciplinary courses taken.

V.   RESULTS

RQ 1: How satisfied have students been with team-taught courses?

To measure student satisfaction with team-taught courses, researchers used a five point Likert scale with 1 being "very satisfied" to 5 being "very dissatisfied." Thirty- three (39.29%) respondents said that they were "somewhat satisfied." Twenty-four (28.57%) answered that they were "very satisfied." Sixteen or 19.05% of the respondents were "somewhat dissatisfied;" four (4.76%) were "very dissatisfied." Seven (8.33%) of the respondents were neutral. Independent samples t-tests were run based on gender, age, and number of team-taught courses taken on question 7, *on a scale of 1 to 5 with 1 being very satisfied, how satisfied have you been with the team-taught courses you have taken?* There were no statistically significant differences based on gender. There were statistically significant differences at the .05 level (.029), equal variances assumed, between students 25-34 and students 35-44. However, the sample sizes were disproportionate (40:20). There were no statistically significant differences based on number of team–taught courses taken.

Seventy-eight of the 84 participants (92.85%) who responded to the question on satisfaction or dissatisfaction with team-taught courses chose to elaborate on their responses. There were 14 instances in which students expressed satisfaction with exposure to different styles and viewpoints in team-taught courses. The predominant cause for a respondent's expressing dissatisfaction with team-teaching was co-teachers' unclear or inconsistent expectations. There were 30 instances in which the respondent cited expectations when elaborating on his/her satisfaction with team–taught courses. There were seven instances of a respondent's citing communication lacking in team-taught courses.

RQ 2: How satisfied have students been with interdisciplinary courses?

Researchers used the same five-point Likert scale to measure student satisfaction with interdisciplinary courses, with 1 being "very satisfied" to 5 being "very dissatisfied." Thirty-two (37.65%) respondents said that they were "somewhat satisfied." Twenty-nine (34.12%) answered that they were "very satisfied." Twenty-one (24.71%) were neutral. Two (2.35%) of the respondents were "somewhat dissatisfied;" one (1.18%) was "very dissatisfied."

Independent samples t-tests were run based on gender, age, and number of interdisciplinary courses taken on question 14, *On a scale of 1 to 5 with 1 being very satisfied, how satisfied have you been with the interdisciplinary courses you have taken?*. There were no statistically significant differences based on gender. There were statistically significant differences at the .05 level (.018), equal variances assumed, between students 25-34 and students 35-44. However, the sample sizes were disproportionate (41:20). There were statistically significant differences at the .05 level (.014), equal variances assumed between students who had taken 2-4 interdisciplinary courses and students who had taken one interdisciplinary course. However, the sample sizes were disproportionate (56:5).

Sixty-three of the 85 participants (74.11%) who responded to the question on satisfaction or dissatisfaction with interdisciplinary courses chose to elaborate on their responses. Respondents' comments on their experience with interdisciplinary courses were mixed. Thirty-three of 85 (38.82%) comments were generally positive; 16 of 85 (18.82%) comments were negative. Fourteen of 85 (16.47%) comments were neither positive nor negative. Students found the interdisciplinary approach to be more challenging and expressed satisfaction with mixing the two disciplines. Students who were dissatisfied cited the limited exposure to each discipline in the 8 week format.

RQ 3: Which modes of instruction do students prefer?

To determine which modes of instruction students in the MBA program preferred based on their experience to date, researchers asked respondents to choose between interdisciplinary and single disciplinary instruction; between team-taught courses and those with a single instructor; and, between online and face-to-face instruction. Blended courses were also an option. Not all students responded to each part of the question.

There were 179 responses. Thirty-six respondents (20.11%) said that they preferred courses taught by a single instructor versus one which was a team-taught. Twenty (11.17%) responded that they preferred a team-taught course to one taught by a single instructor. Twenty-six (14.53%) respondents chose interdisciplinary instruction over a single disciplinary approach. Seventeen (9.50%) chose a single disciplinary method of instruction over interdisciplinary instruction.

Respondents chose blended learning over both online and face-to-face instruction. Twenty-eight (15.64%) selected blended (online+ face-to-face) instruction; 21 (11.73%) chose online instruction; and, 18 (10.06%) responded that they preferred face-to-face instruction. Eleven respondents (6.15%) had no opinion. Two respondents chose "other," but did not specify which "other." Table 3 presents students' instructional preferences.

Table 3

Students' Instructional Preferences

Instructional Mode	No. of responses	N=179	Percent of total
One Instructor/Course	36		20.11
Team-Taught	20		11.17
Single Disciplinary	17		9.50
Interdisciplinary	26		14.53
Blended	28		15.64
Face-to-Face	18		10.06
Online	21		11.73
No Opinion	11		6.15
Other	2		1.12

Fifty-one of 85 (60%) respondents elaborated on their preferred choices of instruction. Comments were varied. Their comments are set forth in Appendix B.

VI.   DISCUSSION

The context for this study was the learning environment created by a redesigned Masters of Business Administration (MBA) program which rests on a team-taught interdisciplinary curriculum. Researchers were interested in examining how students felt about a nontraditional approach to MBA education, specifically their satisfaction with team-taught interdisciplinary courses. The survey results reinforced the need to refine the approach to team-teaching while enhancing the opportunities for interdisciplinary instruction. In this study, as in the Helms et al. study (2015), students commented positively on the opportunity to hear different viewpoints, and to experience different teaching styles. "I enjoy having the multiple perspectives of different faculty within one course. I also enjoy 'switching things up' when the two professors have different teaching styles, types of assignments, etc." (Survey Q. 8 Student Comment 72)

When asked to choose which modes of instruction they preferred, students chose blended (face-to-face mixed with online instruction) over fully online instruction and classroom teaching. Students in this study also said that they preferred courses taught by a single instructor to team-taught courses. Several students remarked on their frustration with team-teaching where expectations and communication were unclear: "Differing expectations and styles sometimes makes it hard…" (Survey Q.8. #1) "…communication was lacking. Expectations shifted pretty dramatically…instructors should communicate …" (Survey Q. 8. #2).Researchers asked students to evaluate their satisfaction with the interdisciplinary curriculum in the MBA program. Researchers did not pose questions regarding the specific integrated courses. However, in the comments section, students did point out that the better the course was integrated, the more satisfactory the outcome. Communication between instructors was a key element in the integration. Both of these are consistent with Klaassen's (2018) second and third variables, the interaction between the different disciplines and a constructive alignment of the course of study. "I have noticed that some courses have been interconnected regarding subject matter but I do believe there is room for improvement…" (Survey Q. 15, response # 56). It might be argued that comments such as "I feel the course topics effectively complement each other" (Survey Q. 15, Response #2) and "I think putting the similar courses together helps understand both" (Survey Q. 15, Response 23) support each of Klaassen's three key elements. Responses to the survey questions on satisfaction with team-teaching and interdisciplinary curriculum in this study indicated overall satisfaction with both team-teaching (67.86% "somewhat" or "very satisfied") and with the interdisciplinary teaching (71.77% "somewhat" or "very satisfied"). Students commented positively on the exposure to different perspectives, but expressed concern over unclear expectations.

The standardized survey referred to earlier also allowed for additional comments. Selected responses from the Skyfactor (2020) exit survey indicated similar feelings about team-teaching to student responses in this study:

- "The degree was completed on-time and courses were well planned to ensure availability. Having two professors teach the classes were helpful and provided additional insight into the material be covered. "
- "I also loved the dual-teaching style. It was helpful to have access to multidimensional curriculum for each class."
- "When there are two professors teaching a class they should be talking and know what is going on with the other professor/students."
  There were no comments on the interdisciplinary curriculum

The increase in the enrollment and the overall satisfaction with the program as evidenced in the exit interviews, coupled with the survey results indicate that the redesigned MBA program is meeting initial goals. At the same time, survey results support a renewed attention to improving the communication between instructors' team-teaching in order to clarify expectations and to enrich the curriculum.

The University's comprehensive redesign of its part-time MBA program in 2017 was in response to the declining enrollment and the sense that the program was no longer meeting industry needs for tech savvy innovative leaders. The foundation for the redesigned program was a curriculum that was integrated, interdisciplinary, and delivered by instructors teaching in teams. This study was designed to measure the success of the program's redesign from the students' perspective. A future study is planned to measure instructors' satisfaction with the program's redesign.

VII. LIMITATIONS

Future Directions: Covid-19 has created enormous challenges for higher education. It has also presented opportunities, such as educators working together to expand and refine online and blended learning courses, new instructional strategies are being piloted by many post-secondary institutions to address Covid-19. This study provides some insights into the effectiveness of interdisciplinary learning and team-teaching. Yet, as noted earlier, additional factors for future consideration associated with this delivery mode include the perspectives of faculty, as well as the assurance of student learning and the resulting potential career gains by students involved.This article has focused on the students' satisfaction with the two key elements in a redesigned MBA program, that is, team-teaching and an interdisciplinary curriculum. However, it is equally important to examine the satisfaction of instructors with this method of teaching as compared to the traditional method of teaching in isolation, typically limited to one discipline at a time. "Even though collaboration within educational settings has been identified as critical to the development of both instructors and students, highly collaborative approaches to team teaching have not been fully explored." (Lester & Evans, 2009, p. 373). Today, it is more important than ever to explore fully the benefits of collaboration across disciplines and to illicit the input of instructors who have experienced the development and teaching of courses with colleagues in professional fields and environments that complement their own. Further research is essential to determine extent to which teamwork and the interdisciplinary methods of instruction will enhance learning which will inevitably lead to increased enrollment and a vibrant educational setting.

VIII. CONCLUSION

Concerned about summer and fall 2020 enrollment, many graduate schools, including this University's, instituted temporary waivers for GRE/GMAT tests, extended deadlines for enrollment decisions to be made, and altered the manner in which course delivery occurs - all in an effort to be more flexible in this tumultuous time. At this writing, MBA enrollment for fall 2020 remains strong, however Covid-19 has significantly affected the post- secondary education landscape at both the undergraduate and graduate levels. As *The Chronicle of Higher Education* reported, many universities are rethinking their plans for fall: Several prominent campuses recently announced reversals of prior fall   reopening plans as Covid-19 case counts surge across the country. Coming after months of expressed optimism about the possibility of in-person   operations, the announcements signal a retreat from those projections that may grow to a wave. (Ellis, 2020) How a change in plans for returning to campus in the fall will play out for online graduate programs like this MBA program is uncertain (Okahana, 2020; Smith, 2020). As mentioned above, the University's MBA program is composed primarily of students who work full time. With many U.S. corporations grappling with weaker revenue, earnings, and credit metrics compared to pre-pandemic levels, whether companies will continue to provide educational benefits is unknown. There is of course an even larger issue, that is, if continued negative economic results generate even higher job losses, then enrollments will be affected. As more institutions of higher education look for innovative methods to assure learning and keep pace with the demands of the job market, interdisciplinary learning and team-teaching have evolved as viable tools to enhance and enrich the learning experience and to complement the single-disciplinary approach to teaching. Integrative learning, as noted by Klein (2005), is an umbrella term that

covers a range of structures, strategies and activities, of which an interdisciplinary curriculum is one subset. Integrative learning fosters connections among disciplines and interdisciplinary studies. The goal of this redesigned MBA program is captured in Klein's concluding observation on integrative learning and interdisciplinary studies: Students need to tolerate ambiguity and paradox if they are to take grounded stands in the face of multiple and sometimes conflicting perspectives. The relational skills they gain also foster the ability to adapt knowledge in unexpected and changing contexts. The answers they seek and the problems they will need to solve as workers, parents, and citizens are not "in the book." They will require integrative interdisciplinary thinking. (Klein, 2005, p. 10)

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REFERENCES

1. Dugan, K., & Letterman, M. (2008). Student appraisals of collaborative teaching. *College Teaching,* 56(1), 11-15. http://doi.org/10.3200/CTCH.56.1.11- 16
2. Ellis, L. (2020). Colleges hoped for an in-person fall. Now the dream is crumbling. *The Chronicle of Higher Education.* https://www.chronicle.com/article/Colleges-Hoped-for-an/249206
3. Fortuin, I. K. P. J., & Bush, S. R. (2010). Educating students to cross boundaries between disciplines and cultures and between theory and practice. *International Journal of Sustainability in Higher Education, 11*(1), 19–35. https://doi.org/10.1108/14676371011010020.
4. Franks, D., Dale, P., Hindmarsh, R., Fellows, C., Buckridge, M., & Cybinski, P. (2007). Interdisciplinary foundations: reflecting on interdisciplinarity and three decades of teaching and research at Griffith University, Australia. *Studies in Higher Education, 32*(2), 167–185. https://doi.org/10.1080/03075070701267228
5. Fukami, C. V., Clouse, M. L., Howard, C. T., McGowan, R. P., Mullins, J. W., Silver, W. S., Wittmer, D. P. (1996). The Road Less Traveled: The Joys and Sorrows of Team Teaching. *Journal of Management Education, 20*(4), 409– 410. https://doi.org/10.1177/105256299602000402
6. Helms, M.M., Alvis, J.M., & Willis, M. (2005). Planning and implementing shared teaching: An MBA team-teaching case study. *Journal of Education for Business, 81*(1), 29-34. https://doi.org/10.3200/JOEB.81.1.29-34
7. Jacob, W. (2015). Interdisciplinary trends in higher education. *Palgrave Communications, 1,* 15001. https://doi.org/10.1057/palcomms.2015.1
8. Killingsworth, B.L. & Xue, Y. (2015). Investigating factors influencing students' learning in a team teaching setting. *International Journal of Cognitive Research in Science, 3*(2).
9. Klaassen, R.G. (2018). Interdisciplinary education: A case study. *European Journal of Engineering Education, 43*(6), 842-859. https://doi.org/10.1080/03043797.2018.1442417
10. Klein, J. T. (2005). Integrative learning and interdisciplinary studies. *Peer Review, 7*(4), 8–10.
11. Lester, J.N., & Evans, K.R. (2019). Instructors' experiences of collaboratively teaching: Building something bigger. *Institutional Journal of Teaching and Learning in Higher Education, 20*(3), 373-382. http://www.isetl.org/ijtlhe/
12. Mullins, J. W., & Fukami, C. V. (1996). Stage 4: The Raging Debates. *Journal of Management Education, 20*(4), 446–461. https://doi.org/10.1177/105256299602000406
13. Okahana, H. (2020, June). The impact of COVID-19 on graduate education. *CGS Research in Brief.* https://cgsnet.org/impact-covid-19-graduate-education
14. Pharo, E., Davison, A., McGregor, H., Warr, K., & Brown, P. (2014). Using communities of practice to enhance interdisciplinary teaching: lessons from four Australian institutions. *Higher Education Research & Development, 33*(2), 341–354.
15. Pharo, E. J., Davison, A., Warr, K., Nursey-Bray, M., Beswick, K., Wapstra, E., &
16. Jones, C.(2012). Can teacher collaboration overcome barriers to interdisciplinary learning in a disciplinary university? A case study using climate change. *Teaching in Higher Education, 17*(5), 497–507.
17. Science Education Resource Center (2020). Why teach with an interdisciplinary approach? https://serc.carleton.edu/sp/library/interdisciplinary/why.html
18. Shibley, I.A. (2006) Interdisciplinary team teaching: Negotiating pedagogical differences. *College Teaching, 54*:3, 271-274, DOI: 10.3200/CTCH.54.3.271-274
19. Silver, W. S., & McGowan, R. P. (1996). Stage 3: Adventures in Team Teaching. *Journal of Management Education, 20*(4), 435–445. https://doi.org/10.1177/105256299602000405
    Simons, M., Coetzee, S., Baeten, M., & Schmulian (2020). Measuring learners' perceptions of a team-taught learning environment: Development and validation of the Learners' Team Teaching Perceptions

Questionnaire (LTTPQ). *Learning Environments Research, 23,* 45- 58. https://doi.org/10.1007/s10984-019-09290-1

20. Skyfactor. (2018). Benchmarks MBA exit survey. http:// www.skyfactor.com
21. Skyfactor. (2019). Benchmarks MBA exit survey. http:// www.skyfactor.com
22. Skyfactor. (2020). Benchmarks MBA exit survey. http:// www.skyfactor.com
23. Smith, D. (2020, May 6). COVID-19 impacts on graduate education. *NEWSCENTER.* https://news.ucsc.edu/2020/05/covid-19-impacts-on-graduate-   education.html
24. 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. https://doi.org/10.1177/105256299602000404
25. Spelt, E., Biemans, H., Tobi, H., Luning, P., & Mulder, M. (2009). Teaching and learning in interdisciplinary higher education: a systematic review. *Educational Psychology Review, 21*(4), 365–378. https://doi.org/10.1007/s10648-009-9113-z
26. Tantalo, C., & Priem, R. L. (2016). Value creation through stakeholder synergy. *Strategic Management Journal, 37*(2), 314–329.
27. Watkins, T.L. (1996). Stage 1: Creating a new MBA core with team teaching. *Journal of Management Education, 20*(4), 411-421. https://doi.org/10.1177/105256299602000403

Appendix A
Table 4

Comparative Exit Survey Data

Factor 18- Overall Program Effectiveness			
Questions	**2017-2018**	**2018-2019**	**2019-2020**
Q105. Overall Evaluation - Regarding your experience at the MBA School, to what degree: Would you recommend the MBA program to a close friend?	5.85	5.68	5.94
Q106. Overall Evaluation - Regarding your experience at the MBA School, to what degree: Did the MBA program provide a positive academic experience?	5.96	5.88	6.08
Q107. Overall Evaluation - Regarding your experience at the MBA School, to what degree: Were you challenged to do your best academic work?	5.83	5.74	5.97
Q108. Overall Evaluation - Regarding your experience at the MBA School, to what degree: Were you motivated to do your best academic work?	5.8	5.77	5.94
Q109. Overall Evaluation - Regarding your experience at the MBA School, to what degree: Was the information you learned applicable to your future career?	5.98	5.85	6.06
University's Factor Mean	5.88	5.78	6.11
Comparative Factor Mean	5.76	5.68	5.84

Appendix B

Respondents Elaboration on Choice of Instructional Modes

1.   I have not experienced in person classes or individual taught courses so it is impossible for me to compare, but my experience has been good.

2.   I enjoy the creativity required

3.   Online classes at other universities require the professors to be more engaged. Professors are not only required to post a discussion board topic, but they are required to moderate it to ensure the students are learning the intended material. They are required to video themselves giving a lecture and post the video for students to watch. They are required to post different types of learning material; i.e. readings, videos, experiential activities, lectures and essays. At XXX, it was clear that there were very few requirements for the professors when hosting an online course which was disappointing. It was also disappointing that there weren't more on campus offerings for classes.

4.   none

5. I perfer [sic] one instuctor [sic]so that I dont [sic] have to adjust to a different[sic] teaching method/ expectation [sic] weekly.

6. At 48 years old I prefer to take live courses as I can ask questions and create dialog w/ my classmates. There is so much information we are learning in 8-week courses that if you don't understand a concept in week 2 you'll be completely lost by week 4 unless you can fully discuss. If we must do online I'd create windows of time the instructor is sitting at their desk and able to answer Email's fast. It's too bad   we don't have Instant Messaging like have at work where you're light is Green when I'm available...then   I could shoot quick questions to the instructor for quick advise. Currently I'll spend hours watching   YouTube video's or Googling the topic to find the answers.

7. Interdisciplinary instruction allows me to make connections with the world around me and improves my understanding of the material. Team-taught courses work well when done right. In the courses where the instructors were collaborative, I was able to benefit from two different teaching styles and perspectives. This helped "round out" my learning experience. Online instruction is most conducive for my current life style and I think it works best for most working professionals.

8. My choices of single discipline and one instructor are explained by my above responses. As for the blended instruction, I think variety is good in that way because we are expected to do both in the real world. In my job I mostly see my coworkers in the lab on a daily basis, but other days I am communicating with others across the country or overseas.

9. Having two instructors overcomplicates a simple syllabus. Overall it feels that you are competing for a grade between the two professors. Even during online courses, I feel more connected and involved in a class when I interact with my professor and teammates. Even virtual meetings such as Zoom or Google Hangouts makes a big difference.

10. While online courses are effective and convenient, personally I believe that I take in more information when I am able to sit in a classroom with the instructor.

11. I prefer interdisciplinary teaching methods. I don't have a preference as to team taught or individual, in-person or online.

12. If combining disciplines makes sense then I have no problem with that being done. Only when it makes   sense. The ones that I had in the program that were like this and/or classes taught by more than 1   professor were great.

13. Combination of online and on ground provide the best if both. If possible, make both available for many classes.

14. N/A

15. I tend to favor the team taught courses with the interdisciplinary teaching method provided teachers are in contact and aware of what each is presenting (to prevent duplication of effort in teaching and covering topics twice). Lastly I prefer the online option for convenience now that I am working, but do like having the option to face to face (if need be). Flexibility is key, and that is a big part why I chose XXX over YYY. Or ZZZ.

16. I prefer to have on instructor per course because I think that students have a difficult time bouncing between the different expectations of the instructors. I also enjoy personally speaking with or seeing my classmates and/or instructors. I know that when I had to work on teams, I preferred speaking on the   phone rather than just texting.

17. No specific comments

18. I wish I took more face to face courses because I find it easier to ask questions to the professors when they arise. Two instructors is helpful during an online course because I have more than one person to reach out to. Sometimes only one instructor will respond when I ask questions, but I assume that is due   to the format of the team-taught courses. My main goal of this program is to learn as much as possible,   and interaction is very important for me.

19. No significant preference though I have enjoyed the current setup of the program.

20. I think based on some courses and how hard the materials are, offering face to face instruction is helpful

21. My preference would always be a singular focus on the subject area for which I most interested. In my case, that is management, operations, leadership, etc. Having an understanding of how other areas overlap is very good knowledge but I do not require an in-depth knowledge in say accounting. I would prefer to not have multiple instructors which I find detracts from the learning experience because I

have to readjust to professor quirks. For instance, one might be very interested in a specific formatting or discussion board whereas another might not. It becomes confusing after 20 or so professors in a two-year period. Due to work structure, I always prefer an online experience. I simply would not have the time to work 50+ hours per week and attend face-to-face instruction. Having flexibility to "go to school" was an important decision in picking XXX as opposed to other universities.

22. I would have preferred to have some video instruction from the professors in the course to add some additional context to the material. I don't have to be in the classroom to do this, a video or online lecture would have been nice from time-to-time. I did like some of the more detailed feedback we were receiving from the first half of the course where we learned how other teams of students were responding to questions. It would have been nice to have a short follow-up video describing maybe the professors view on the topic after the fact - maybe pointing out flaws in our arguments or other things to consider. I feel like I didn't really learn from the professors - but rather the material they provided us. I wish there was more engagement from them.

23. I would prefer that team-taught courses were administered online by instructors working in parallel versus an alternating model. Particularly with short, eight-week courses I've found the discontinuity with XXX's current Online MBA instructional delivery to be less than optimal.

24. I prefer face-to-face courses, but I had to switch to online. I was pleasantly surprised by the amount I learned. The MBA course Analytical Decision Making was probably the course I learned the most in. It was hard, but if you put the time in it was interesting and manageable.

25. No Comment

26. I enjoy the online courses with a bit of team work but not heavily based on team work. I also enjoy individual assignments. The blend of both is great.

27. If the interdisciplinary courses were better coordinated, I believe it would be more effective. For example, if the professors both attended each class and collaborated on the material. Although it would be an increase on the time per professor, it has the possibility to lead to well rounded outcomes for student engagement and learning

28. Online instruction with one instructor seems much more easier to follow and has worked well with my schedule.

29. I have enjoyed the exposure to working with multiple professors through the online format. This format works best during this stage of my life/career.

30. I prefer one professor and sitting in class learning from them

31. Short video lectures have been helpful towards learning concepts in place of classroom instruction.

32. Having one instructor ensures consistency for the course that is difficult to match with team instruction-- at least for the online courses in which I participated. It ensures the instructions is invested in the entire 8 weeks and, in my opinion, is more likely to be interested in student success as a result. It also ensures the student knows who to contact with questions. The interdisciplinary advantages of team-teaching can be made up through proper instructor preparation. A course may still benefit from having an additional instructor present in some specific topics, but the lead instructor should be invested in every class every week of online instruction. Note: I only participated in online instruction.

33. I really enjoyed several of my ground classes that I attended at Robert Morris. It was great interacting with my classmates and instructors. My Marketing/Management class is a good example. The two instructors brought a large amount of energy to the learning environment that may not have been experienced online. However from an online standpoint, the business strategy class was very demanding and the instructors spent a large amount of time engaging the students. Both of these classes were positive to my learning experience.

34. One instructor provides a consistency that is better suited to my personality type.

35. I prefer the online courses for MBA program. This was helpful with busy work schedules and such. I would have like to see more professors post videos with instructions or teaching. I prefer having one professor since the courses were only 8 weeks. I think it would have been easier to focus and communicate with one professor to expand learning.

36. I believe that face-to-face instruction is more valuable than online instruction. I always felt like I learned more from in-person classes than online classes. Online classes are too easy to do "just enough" to get a good passing grade once you determine expectations. For me there just has always been more knowledge transfer in in-person classes.

37. I like the option of in-person or online instruction. If a class will seem challenging, then a group setting maybe better to get different perspectives on materials. I was a "traditional" student and now I am really enjoying the online courses. They fit into my life a lot better. In class only would have made this MBA program much harder.

38. The online platform is key for many folks to be able to pursue education...especially in todays times. Interdisciplinary team taught seems like a good system. Similarly single instructor single disciplinary might be the way to go in those types of classes. A lot of learning depends on how good the instructor is at teaching.

39. I would like online plus face-to-face, but it's not currently feasible in my life right now. I do prefer the team-taught courses to individual instructors. The team-taught courses benefit from a wider perspective and different approaches to the material.

40. I found benefits from both the interdisciplinary and team taught courses. I am ambiguous as to preferring online or face to face, I see value in both, but also equal drawbacks.

41. One benefit to having a team-taught is if one instructor is mediocre, you're not stuck with them the entire course. In each course I have found I prefer one professors teaching method over the other every time.

42. Having all classes online requires the student to essentially teach themselves. When face-to-face courses are integrated into online work, the class is more productive.

43. Online classes work well for working individuals if the teachers are responsive to questions about the homework. You are unable to contact the XXX help desk for support on the evenings and weekends. You must leave a message and they will call you back the next business day. Usually this is after the assignment is due.

44. The rich discussion of the classroom - and the opportunity to get different points of view from folks with varying backgrounds - can't be replicated in an on line class. I can't see my classmates, and body language and expression is a really important component in communication. For those reasons I prefer on the ground classes. Online learning is missing a valuable component for me. That said, it has become a reality of education and a reality of MY education with this program. In that capacity - it is harder when there are 2 teachers. Each teacher delivers his/her weekly instruction a bit differently, and that can be hard to keep up with for a person who is attempting the program in addition to existing work and family obligations. I love the concept of cross functional teaching/learning ...I question its applicability & benefit in a compressed timeline. (Or maybe I am just too tired to figure out one more thing...)

45. I prefer a single disciplinary method of instruction, I would love a blend (online and face-to-face), however, I live in NYC, so I can't vote against my best interest.

46. I like the online format, I think it's will [sic] suited for working adults and I appreciate the flexibility.

47. In general, it would be nice to have a mix of online instruction and face-to-face, but in order to best suit my work schedule the online curriculum is a great offer (which is why I chose the program at XXX). I have noticed that a course taught by a single professor seems to flow more easily than a team-taught course. For example, a team-taught course seems to jump back and forth between different curriculum. From experience, I have enjoyed the classes that were taught by a single instructor. Also, if the curriculum among the core classes are made to be more interdisciplinary, I feel like the overall program would potentially be stronger than it already is.

48. It really depends on the professors. If you like the teacher during the first four weeks then you don't want it to change.

49. I don't have an opinion because I really feel that the success of a course depends upon the professor/s. If the professor/s is/are clear, organized, enthusiastic, caring, and knowledgeable, then the course it a good one. Format doesn't really doesn't matter to me.

50. NA

51. In several classes that I've taken, weekly reading resources can be extremely bland so i [sic]would prefer a mix of weekly lectures in order to get the most value out of the program. It often feels like I have to rely on Google searches to retain the weekly learning objectives.