The Role of the Business Major in Student Perceptions of Learning and Satisfaction with Course Format

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Abstract

This study examines the association between course format (face-to-face, blended, and online) and students' perceived outcomes (perceived learning and satisfaction) for accounting, finance, management, and marketing majors. This analysis revealed that for management majors, the online format was positively associated with perceived learning, while face-to-face classes were positively associated with learning satisfaction. In contrast, marketing majors indicated that the face-to-face format was negatively associated with perceived learning. Accounting and finance majors indicated that the online and face-to-face formats did not associate with either satisfaction or perceived learning. While our findings suggest a striking contrast between the results for each major, different students perceive course formats uniquely. Thus, our analysis does not support a claim for superiority of one format over another. All respondents were enrolled in the strategic management capstone course.

Keywords: course format, online learning, learning outcome, perceived learning, business discipline majors

Introduction

The challenges in effectively using new technologies to deliver quality education tailored to each student are widely recognized (Carlson, Aust, Gainey, McNeill, Powell, & Witt, 2012; Howsen & Lile, 2008). Optimal protocols for student-faculty interaction, student-student interaction, grading, content presentation, and support lack a consensus and remain subjects for future study (Arbaugh, Desai, Rau & Sridhar, 2010; Nguyen, 2010; Salazar, Wang, & Hallock, 2009; Schmieder, 2008). Our research shows that consideration of a student's academic major has potential for improving our understanding of the effectiveness of online and face-to-face course formats.

The choice of a college major is an important activity in the life of every college student. Students choose their major based on a combination of interests (Kaynama & Smith, 1996, Strasser, Ozgur, & Schroeder, 2002), expected earnings (Kim, Markham, & Cangelosi, 2002), job availability (Beggs, Bantham, & Taylor, 2008), and pressures from parents (Kumar & Kumar, 2013), among other factors. Students stick with a chosen major because they not only like the major's content, but also because they eventually learn to master and excel at the activities associated with the major (Downey, 2011). As a result, students are differentially educated by the time they take the capstone course.

Choice of major also associates with students' preferred pedagogical strategies (Kolb, 1984; Neumann, 2001; Neumann, Parry & Becher, 2002). Ulrich (2005) found that marketing majors differed significantly from accounting majors in terms of the former's preference for role playing, talks by experts, and experiential exercises. Marketing majors also more highly valued case studies and cooperative learning pedagogies than did management, finance, and accounting majors. Accounting majors rated problem-oriented exams more highly than did management, marketing, and finance majors (Ulrich, 2005). In this article, we extend our understanding of how a business major differentially associates with students' perceptions of their educational experiences. We investigate specifically how a chosen major associates with students' experiences with online and face-to-face course formats, and how this choice explains differences in students' perceived learning and perceived course satisfaction.

Despite many unanswered questions regarding the efficacy and attractiveness of alternative course formats, university and college administrators have applied continuing pressure to increase the number of online courses (Harrison, Leitch, & Chia, 2007; Nguyen, 2010). This pressure is particularly troubling when deciding relevancy and rigor issues in business management capstone courses, since capstone courses are critical to successfully completing a business education (Friday, Friday-Stroud, Green, & Hill, 2006; Ross & Rosenbloom, 2011). While research has focused mostly on MBA graduate programs, these issues are also critical in undergraduate education (Arbaugh, 2011; Salazar, Wang, & Hallock, 2009). Therefore, we think the factors that determine the effectiveness of course formats need to be better understood. With respect to student majors, our investigation can help program administrators tailor course format decisions to suit each field of study.

Literature Review

While much of the interest in face-to-face, online, and blended delivery formats has been directed towards the mechanics of the delivery format, limited attention has been paid to the determinants of students' responses to these different delivery systems (Dzakiria, Wahab, & Rahman, 2012). As Arbaugh (2010; 2013) has shown, specifically in relation to online and face-to-face learning, business disciplines differ in fundamental assumptions about how disciplinary knowledge is created. He divides business knowledge into hard science and soft science in order to compare the challenges of designing online and blended courses within these two contrasting domains of science. Embedded within the hard versus soft science dichotomy are assumptions about pedagogy (Biglan, 1973). If knowledge is objective and the field of study in question has a dominant paradigm, as is the case for the hard sciences, then course pedagogies should reflect that fact. For soft sciences, knowledge is not objective, multiple "truths" can exist, and the field does not have a dominant paradigm. Pedagogies should provide students with the tools to evaluate the relative merits of such contingent and co-constructed knowledge (Arbaugh & Benbunan-Fich, 2006; Leidner & Jarvenpaa, 1995). Although all business disciplines have elements of hard and soft sciences, for the purposes of this paper we follow Arbaugh's (2013) categorizations. Accounting and finance will be designated as hard sciences because of their largely quantitative orientation and established paradigms. Marketing and management will be designated as soft sciences because their content is largely behavioral, and they typically are based on multiple paradigms

Media richness theory informs the primary differences between face-to-face and online course formats (Daft & Lengel, 1986; Kahai & Cooper, 2003). The richest medium is face-to-face. The "leaner" media include video conferencing, asynchronous video communication, and text messaging. Richer media enable multiplicity of cues between the sender and receiver, such as voice intonation, paralanguage, gestures, and the like. Richer media also facilitate immediate feedback. Notably, research in media richness theory has found that richer media associates with enhanced clarity of communication, socio-emotional communication, positive and supportive communication, ability to judge the expertise of others, and ability to judge others' deception.

Our research builds upon media richness theory. Face-to-face learning may improve teacher-student interaction, thereby increasing learning related to socialization into the field (Offir & Lev, 2000; Offir, Lev & Bezalel, 2008). Face-to-face communication, precisely because it is both multidimensional (verbal and nonverbal) and flexible (spontaneous, humorous, didactic, and recursive), contributes to a strong faculty presence. Students in face-to-face classes may appreciate the learning advantages that such faculty presence brings (Daymont & Blau, 2008; Daymont, Blau, & Campbell, 2011). Moreover, professors can take advantage of available course media to support course content (Ross & Rosenbloom, 2011). Thus, face-to-face classes can use online capabilities to communicate with students, facilitate group processes, discuss issues, refer students to supplementary course content, and record grades, just as online courses do.

Online formats also have advantages. Course convenience, and its attendant perceived greater flexibility for managing time conflicts of school versus job versus home, is often the most important student motivation for enrolling in online courses (Arbaugh, 2000; Benbunan-Fich & Hiltz, 2003; Offir, Lev, & Bezalel, 2008). Online courses give students greater control over their learning because students can pace their efforts optimally (Offir, Lev, & Bezalel, 2008). These benefits, however, tend to apply more to high-level students who are socialized in the field and who have high intrinsic motivation to learn, as would be expected in a capstone course of the type investigated in this research (Henri, 1992; Oliver & McLaughlin, 1996). If convenience and flexibility are important student motivations for selecting course format, then, *ceteris paribus*, students would be most satisfied with online courses and least satisfied with traditional format courses (Daymont, Blau, & Campbell, 2011).

Prior research indicates that students' motivation to learn is a key variable in improving their perceived satisfaction across related course outcomes (Klein, Noe, & Wang, 2006; Stizman, Kraiger, Stewart, & Wisher, 2006). For example, Nemanich, Banks and Vera (2009) found that for students with strong personal drive and capability, learning effectiveness is more or less the same online as face-to-face. As a result, highly self-motivated students may be equally effective in both online and face-to-face formats.

In an extensive review of the literature comparing online and face-to-face formats, Russell (1999) found no significant difference in student learning across these two formats. This conclusion may reflect the fact that online courses have become increasingly effective in capturing the cognitive, social, and teaching presence found in face-to-face courses (Arbaugh & Hwang, 2006; Ary & Brune, 2011; Baker, 2010). Alternatively, students may compensate for the differences in course format by developing behaviors which mitigate whatever disadvantages are associated with online learning (Kock, Verville, & Gaza, 2007).

With respect to the perceived learning in hard fields versus soft fields of study, we note that the soft fields more likely require students to construct knowledge than do the hard fields. Students in soft fields are expected to interpret and internalize knowledge in a manner unique to them, such as developing a personal, effective leadership style. This knowledge may require emotional involvement, supportive feedback, and effort to overcome existing preconceptions. Therefore, reliance on message clarity, supportive communication, and socio-emotional communication may be more useful for perceived learning in the soft fields than in the hard fields.

Considerations regarding the perceived learning in hard fields of study versus soft fields of study suggest the two following hypotheses:

- H1. Perceived learning will be higher for business students in an online course who have a "hard" background in finance and accounting.
- H2. Perceived learning will be higher for business students in a face-to-face course who have

a “soft” background in management and marketing.

With respect to course satisfaction, some research indicates that students may learn more in a face-to-face format than online, although this learning may not be associated with student satisfaction in a technology course (Scherrer, 2011). Nemanich, Banks, and Vera (2009) found that students enjoyed the face-to-face format more than online. These results suggest that the richer medium may facilitate socio-emotional communication that can be both positive and negative. We note that students who do not like the professor or some of their classmates may dislike attending class. Students also may not value the positive and supportive environment of a face-to-face class if their studies focus on objective knowledge from hard fields of study, relative to co-constructed knowledge from soft fields. For co-constructed knowledge, students may learn to enjoy the socio-emotional communication in class, in part, as an adjustment. They may adapt to the class environment, and enjoy it more than other majors, because the payoff of greater understanding is worth the effort.

These considerations regarding course satisfaction in relation to a student’s field of study suggest the following two hypotheses:

- H3. Perceived satisfaction will be higher in an online course for business students who have a “hard” background in finance and accounting.
- H4. Perceived satisfaction will be higher in a face-to-face course for business students who have a “soft” background in management and marketing.

Research Design

We investigated the association between course formats and course outcomes in terms of students’ perceived learning and students’ perceived satisfaction. Figure 1 shows our research framework. We focused on explaining students’ perceived learning and course satisfaction, on the right of Figure 1. We controlled for student characteristics that could influence perceived learning and satisfaction: (1) age; (2) gender; (3) experience with online and blended format courses; (4) hours worked in outside employment per week; (5) international student status; (6) imminent graduation; and (7) perceived importance of the professor. Previous research (Astin, 1984; Carini, Kuh, & Klein, 2006; Eom, Wen, & Ashill, 2006; Swan, 2001) suggests that convenience and interpersonal interaction are important determinants of satisfaction and perceived learning, so we included them and course format as our independent variables. We tested our hypotheses by comparing models run on subsets of students in each area of study, using best practice multivariate analytical techniques (Arbaugh & Hwang, 2013).

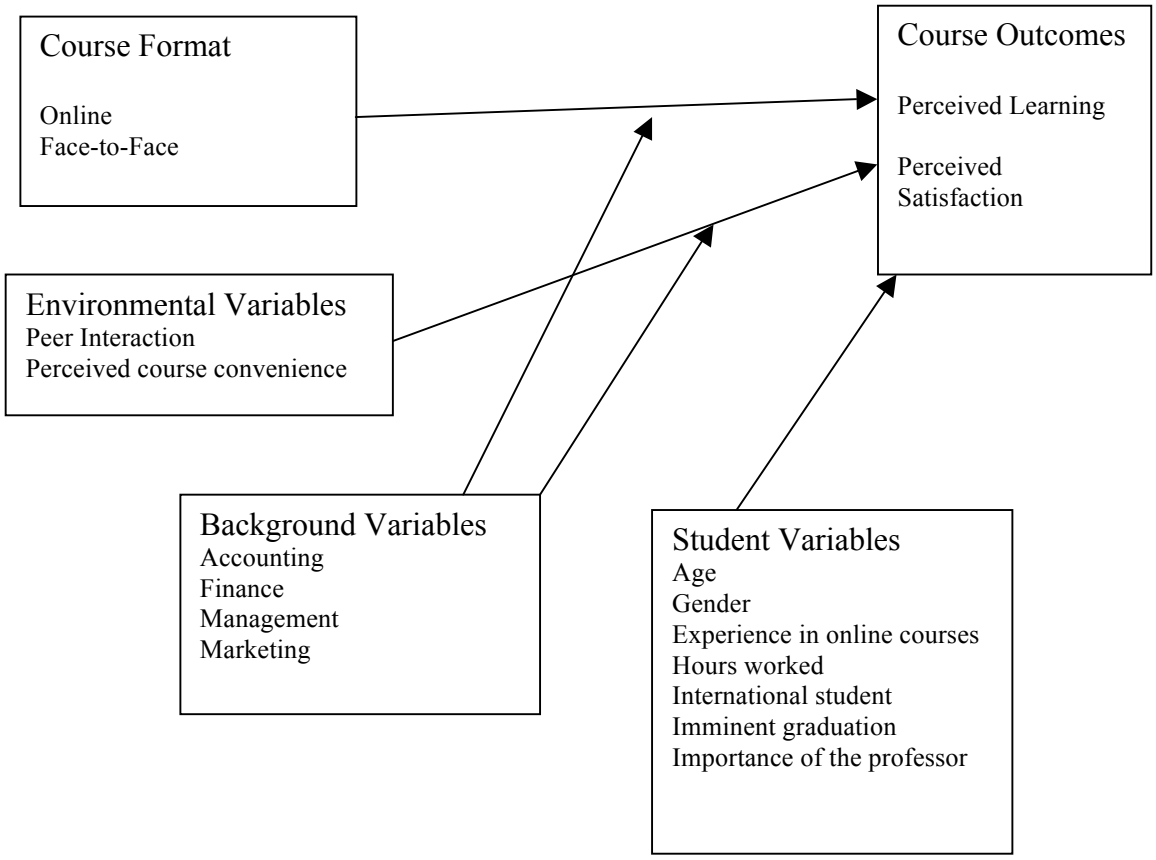

Figure 1. Research Framework

We developed our analysis of online and face-to-face learning formats through a survey of undergraduate students taught by three professors at two institutions during academic year 2011-2012. These institutions shared a number of characteristics. They both: (1) offered multiple sections of the capstone course; (2) offered the capstone course in online, hybrid, and face-to-face formats, with the format decision being made at the department level; (3) had large undergraduate populations of over 1,000 students; (4) had a Master of Business Administration program; (5) enrolled a mix of full-time and part-time students, with part-time students working an average of 23.5 hours per week; (6) were AACSB International accredited; and (7) had historically offered their curriculums in the classroom, until about 10 years ago when they increased their online and blended course offerings. Furthermore, students at both institutions self-registered for the section that fit their schedules. In terms of experience with taking online courses, 59% had taken at least two, and 27% had taken five or more.

The two institutions also were characterized by differences. One offered more online courses throughout its program, typically giving students a choice between online and face-to-face formats for each course and in each field of study. The other offered primarily face-to-face sections for the required courses and elective courses in each major, yet also provided some opportunities to take online courses for electives and lower-level degree requirements. Despite these differences, we decided to combine the subsamples from each institution because students' experiences with taking online courses will be largely a function of individuals' past choices, and because our model controls for this factor. Results from our analysis of the combined subsamples will be more robust than each one considered separately, and the results will apply to students who have had a range of online experiences.

Strategic management is the capstone course in traditional business education programs. It draws upon

concepts from all core courses in the program to develop and implement strategies that enable organizations to succeed. In the course, students are exposed to concepts pertaining to business environment, business strategy, corporate strategy, international strategy, and functional strategies. Teaching methods involve case analyses and lecture. All professors use a standard strategic management text.

The questionnaire we developed was a classroom-focused, rather than a technology-focused, assessment instrument. Arbaugh (2008) observed that, to date, scholars with strong groundings in technology-mediated learning have been the primary drivers of research on the effectiveness of online courses. To shift the emphasis to student response, our format evaluation survey instrument included items on the following topics: (1) assessment of student-to-student and student-to-instructor interactions; (2) evaluation of class activities in terms of perceived "greatest learning"; (3) evaluation of the workload in this class compared to other school of business classes; (4) motivations for taking the course, including scheduling flexibility and convenience; (5) student satisfaction with the course; and (6) recommendations for course improvement. In addition, the questionnaire included demographic questions. It specifically allowed for the control variables that Arbaugh, Hwang and Pollack (2011) suggest are needed to account for background effects "which may or may not be of primary interest to a study but nevertheless could impact on learning outcomes" (p. 47).

Data were collected towards the end of each semester. Professors in the surveyed courses provided a small incentive of extra credit (0.5% or less of a course) for completing the online questionnaire. The extra credit was given only for completion of the survey. Students were told that professors would not look at students' survey responses, except for the purpose of giving the extra credit, until after grades were assigned. Students' general willingness to share negative information on the survey, further assured us that students were not biased in their responses. Response rates for each section were over 90%. The questionnaire was consistently administered to all students online. The final sample included 528 complete responses.

We analyzed our data through the use of ANOVA and linear regression models (SPSS, Ver. 19), which enabled the incorporation of a variety of independent and control variables (Greene, 2012; Kmenta, 1997). The linear regression models in the present study use a binary indicator variable as the independent variable of interest (Kutner, Nachtsheim, Neter, & Li, 2004). To test for multicollinearity, we inspected the variance inflation factors for each variable in each model (Kraemer & Blasey, 2004). Our models had no VIF values above 3, which indicate that multicollinearity was not a problem.

Our focus was only on direct relationships between course format and the outcome variables. Since the moderating effects of the background variables are complex, the model was tested on each subset of students. Each subset of students should have different patterns of preferences for course format, convenience, and interaction. We used this approach rather than a test of moderating effects that relies on interaction terms, on the large differences in patterns between each subsample.

Our aim was to compare students' perceptions across majors. Each model included independent variables for course format, course convenience, and course interpersonal interaction. Therefore, the coefficient for course format measured aspects of course format that are in addition to these other variables. We were investigating aspects of course format, such as socio-emotional content of interaction, clarity of material presented to and absorbed by students, and supportive environment. Some research has suggested that social interaction during online courses may be comparable to that of face-to-face courses (Redpath, 2012). We were interested in aspects of course format that are independent of course convenience and level of interpersonal interaction.

Another consideration in our research was endogeneity. Students may choose their course format in a non-random manner, which can violate the assumption of non-stochastic independent variables in linear regression. We addressed endogeneity in two ways. First, we noted that endogeneity is an omitted variables problem (Greene, 2012). Our inclusion of variables for convenience and interpersonal interaction reduced model misspecification. If students choose their course formats based on convenience or level of interpersonal interaction, then endogeneity is controlled. Second, we surveyed students on why they chose to register for specific classes. The top two reasons were to fit their schedules and to accommodate their job and non-job activities. These results suggest that students choose their course formats for reasons that either are already controlled in our model, or are dependent

on students' other life activities and likely to be random.

Testing the hypotheses required us to develop measures for satisfaction with the course format, perceived learning, convenience, interaction, and importance of the professor. We adapted perceptual measures from the existing literature. A primary source was a publication from the Sloan Consortium (Aycock, Mangrich, Joosten, Russell, & Bergtrom, 2008). The items for interpersonal interaction were adapted from Arbaugh (2000). Tables 1, 2, 3, and 4 report the wording of the items used for our four multi-item perceptual measures. All items used a balanced Likert scale of 1=strongly disagree to 5=strongly agree. Multiple items were used for these perceptual measures in order to reduce bias and accurately measure the latent construct – satisfaction with course format – across the heterogeneous student groups (Gregory, 2007).

We created the variable for satisfaction with course format using principle component analysis because the composite variables best capture the variance of the individual items (Wang & Li, 2010). We derived weights for each item, also shown in Table 1 below. The variable is the standardized form (mean of 0, standard deviation of 1) of the weighted average of these items. Our Cronbach's alpha scores below show that the items are highly correlated, and thus, our measures are reliable.

Table 1.

Questionnaire Items for 'Satisfaction with Course Format' Variable

	Weight
• I would recommend taking Strategic Management in this format to others.	.570
• The advantages of taking this class in this format outweighed any disadvantages.	.796
• I am satisfied with my decision to take this course in this format.	.856
• If I had an opportunity to take another course in this format, I would gladly do so.	.809
• My choice to take this course in this format was a wise one.	.889
• Conducting the course in this format improved the quality of the course compared to business courses in other formats.	.764
• I will take as many courses in this format as I can.	.765
• The quality of this course's format compared favorably to my business courses in other formats.	.683

The Cronbach's alpha for these combined items is 0.895. Questionnaire items were adapted from Babb, Stewart and Johnson (2010).

For 'perceived learning', we used the following six items listed in Table 2.

Table 2.

Questionnaire Items for 'Perceived Learning' Variable

	Weight
• Taking this course increased my skill in critical thinking	.901
• Taking this course increased my ability to integrate facts	.886
• In this course, I gained the ability to critically analyze issues	.863
• In this course, I became more confident in expressing ideas	.811

• In this course, I learned to value other points of view	.808
• In this course, I learned to interrelate important topics and ideas	.867

The Cronbach's alpha for these combined items is 0.926. Questionnaire items were adapted from Alavi (1994).

For 'interaction', we used the following five items listed in Table 3.

Table 3.

Questionnaire Items for 'Interaction' Variable

	Weight
• Student-to-student interaction was more difficult in this course than in other business courses. (reverse scaled)	.659
• Class discussions in this class were more difficult to participate in than in other business courses. (reverse scaled)	.753
• Student-to-instructor interaction was more difficult than in other business courses. (reverse scaled)	.736
• I felt that the quality of class discussions was high throughout the course.	.574
• It was easy to follow class discussions.	.653

The Cronbach's alpha for these combined items is 0.701. Questionnaire items for this variable were, as noted above, adapted from Arbaugh (2000).

For 'convenience', we used the following four items listed in Table 4.

Table 4.

Questionnaire Items for 'Convenience' Variable

	Weight
• Taking this class in this format allowed me to arrange my work for the class more effectively.	.848
• Taking this class allowed me to spend more time on non-work-related activities.	.758
• Taking this class in this format allowed me to arrange my work schedule more effectively.	.847
• Taking this class saved me a lot of time commuting to class.	.744

The Cronbach's alpha for these combined items is 0.805.

In addition to these multi-item perceptual variables, we included in our model variables for course format and control variables. Our sample included students taking the course in online, blended (hybrid), and face-to-face formats. We used dummy variables to indicate the course format. As shown in Table 5, 26% of the overall students took the course face-to-face and 37% took it online. The remaining 37% took the course in the blended format. We also included the following control variables:

- Dummy variable for students who are graduating this semester,
- Dummy variable for female gender,
- Natural log of student age,

- Dummy variable for students who report having taken two or more courses online,
- Dummy variable for students who have taken 5 or more courses online,
- Variable indicating the number of hours per week that students work,
- Dummy variable for foreign student, and
- Importance of the professor – a Likert survey item indicating agreement with the item, "What mattered most in this course was the professor."

Table 5 below shows descriptive statistics for each subsample and for the aggregated sample. The proportion of students in each major reflects the enrollment at the two institutions. The first institution accounted for 33% of the sample, and had a heavy emphasis on finance and management. The second institution had relatively more students in accounting and marketing. The samples from each institution show this distribution pattern. We compared the proportion of majors across our sample with the complete enrollment data from the second institution. The enrollment data showed that the proportion of students with accounting, finance, management, and marketing majors was 22%, 10%, 22%, and 21%, respectively. The proportion in our sample was 18%, 8%, 21%, and 29%, respectively. Means difference tests showed that our sample did not have a significantly different proportion for the accounting, finance, and management majors. However, our sample had a higher percentage of marketing majors. This difference could be due to random factors such as alignment of marketing students' schedules with the teaching schedules of professors in this study. Or the greater proportion could reflect self-selection among marketing majors due to perceived learning or satisfaction, which might indicate possible selection bias in our sample. This bias could be reduced by our controls for endogeneity, as we describe below. Possible uncorrected bias in our sample suggests that we should interpret our findings cautiously with respect to marketing students.

Table 5 contains mean values of variables used in the regressions and in the sample size for each major. We noted significant differences between the values for each major, which supports our analysis of each major separately. Also, we noted that the aggregate sample is larger than the sum of the four majors, which reflects the fact that other majors (i.e., Human Resource Management, International Business, Entrepreneurship, and E-Business) exist in addition to the four from the study.

Table 5.

Mean Values of Variables

	Aggregate sample	Accounting majors	Finance majors	Management majors	Marketing majors
Graduating this semester	.66	.77	.71	.57	.76
Female	.50	.49	.47	.49	.52
Log of age	3.18	3.18	3.20	3.21	3.12
Online experience (2 or more classes)	.59	.43	.53	.70	.52
Online experience (5 or more classes)	.27	.19	.29	.38	.21
Hours worked per week	23.5	19.6	22.7	28.6	21.9
Foreign student	.05	.06	.06	.03	.03

What mattered most in this course was the professor.	3.31	3.32	3.42	3.18	3.31
Interpersonal interaction	.00	.01	.20	-.10	-.15
Convenience	.00	-.14	-.02	.18	-.07
Face-to-face format	.26	.43	.18	.23	.27
Online format	.37	.23	.40	.54	.29
Perceived learning	.00	-.32	.04	-.07	.13
Satisfaction with the course format	.00	.05	-.03	-.00	.04
N	528	69	62	138	124

Research Findings

Table 6 shows the regression tests for the hypotheses H1 and H2. We noted that most of the control variables for student characteristics, including age, gender, experience with online and blended format courses, hours worked per week in outside employment, international student status, imminent graduation, and importance of the professor, lacked significant explanatory power for the dependent variable, and are therefore not included in the regression.

Table 6.

Course Format's Association with Perceived Learning by Business Major

	Constant	Interaction	Convenience	F2F Format	Online Format	Adjusted R^2
Accounting	.49	.33*	.39**	-.31	.48	.44
	(.23)	(2.62)	(3.47)	(-1.14)	(1.43)	
Finance	.26	.18	.56**	.12	-.57	.50
	(.10)	(1.21)	(4.73)	(.39)	(-1.70)	
Management	2.55*	.38**	.26**	.30	.59**	.34
	(2.17)	(4.20)	(2.93)	(1.41)	(2.82)	
Marketing	-2.32	.31**	.14	-.91**	.11	.26
	(-.77)	(3.32)	(1.45)	(-4.20)	(.50)	
All students	1.96*	.33**	.30**	-.32**	.08	.32
	(2.59)	(7.51)	(6.87)	(-3.17)	(.73)	

t values in parentheses, * significant at p < .05, ** significant at p < .01

As expected, interpersonal interaction was found to be important for perceived learning by those with a management and marketing background. Surprisingly, this was also true for accounting majors, although not as strongly as for management and marketing majors. Interaction was not associated with perceived learning for finance majors.

Convenience proved to be strongly associated with the hard science majors of accounting and finance. In contrast, convenience was not a significant factor for marketing majors in their perception of learning. This result may reflect the fact that, while convenience is an important factor to all students, they may be willing to sacrifice convenience when completion of a specific course is required, such as a capstone course. The challenge marketing majors may feel to comprehend the heavily quantitative concepts that underpin accounting and finance classes may make marketing majors willing to deal with any inconvenience in course format.

The perception of learning among accounting and finance majors was not influenced by whether the course was face-to-face or online. For those majors, course format did not appear to be a relevant variable. In contrast, management majors found the online experience positively associated with the perception of learning. Flexibility of access to different information sources in the online environment may have enhanced their educational experience. As Table 6 also makes clear, marketing majors reported no significant association between the online format and perceived learning. Yet, the face-to-face format clearly associated with lower learning. This finding again may reflect the marketing majors' perceived shortcomings in mathematics expertise when they are physically juxtaposed in a face-to-face class with accounting and finance majors who are more proficient with difficult financial and quantitative concepts.

Table 7 shows the regression tests for the hypotheses H3 and H4.

Table 7.

Impact of Course Format on Learning Satisfaction by Business Major

	Constant	Interaction	Convenience	F2F Format	Online Format	Adjusted R^2
Accounting	.85	.47**	.54**	.23	-.22	.58
	(.51)	(5.02)	(6.31)	(1.10)	(-.85)	
Finance	1.25	.24*	.63**	-.00	-.17	.64
	(.56)	(2.01)	(6.46)	(-.01)	(-.61)	
Management	1.28	.17*	.80**	.40*	-.06	.57
	(1.23)	(2.07)	(10.35)	(2.10)	(-.35)	
Marketing	5.23*	.24**	.62**	.24	-.10	.52
	(2.47)	(3.68)	(9.30)	(1.52)	(-.67)	
All students	1.07	.29**	.64**	.29**	-.24**	.56
	(1.78)	(8.26)	(18.97)	(3.59)	(-2.97)	

t values in parentheses, * significant at p < .05, ** significant at p < .01

Table 7 reveals that the strongest factor in determining perceived satisfaction with a course is its convenience. As expected, this result suggests that idiosyncratic factors, such as course location, course time of day, or a student's schedule determine course convenience. For accounting, finance, and marketing majors, course format does not appear to be a significant factor in determining perceived satisfaction. Management majors did find higher satisfaction with the face-to-face format. Aggregated data showed that all students found greater satisfaction with the face-to-face format and lower satisfaction with the online format. Evidently, the online format is not the dominant determinant of convenience for today's student. Interaction with other students is significant for perceived satisfaction for students in all majors. The relationship between interaction and perceived satisfaction may reflect either a positive value for social interaction for its own sake or the positive association interaction has with learning.

The analyses show the following degrees of support for our hypotheses.

- H1 is rejected for accounting and finance majors. Perceived learning was not more strongly linked to the online format for these hard science majors than for the soft science majors.
- H2 is strongly rejected. For both management and marketing majors, perceived learning was lower in the face-to-face format than online. Marketing majors had a strong negative association between perceived learning and the face-to-face format. Management majors had a strong positive relationship between perceived learning and the online format.
- H3 is rejected for accounting and finance majors. No association was found between course format and satisfaction.
- H4 is weakly supported. Only management majors showed a positive association between the face-to-face format and satisfaction.

In general, these findings suggest that the relationship between course format and perceived learning, and the relationship between course format and perceived satisfaction both vary across academic majors. The online course format is not a magic "pill" that automatically confers convenience or enhances student perceptions of learning and satisfaction. Consequently, the determination of an appropriate course format seems to depend more on the details of that format than on the format itself.

Discussion

This investigation of students' perceived differences between course formats yielded some unexpected findings. Perceived learning and satisfaction of undergraduate students in online sections of a strategic management capstone course largely occurred independently of course format. The exceptions to this generalization were for management majors who found face-to-face courses to have a positive association with learning satisfaction, and marketing majors who felt that face-to-face classes had a decidedly negative association with learning outcomes. This pattern of results suggests a tradeoff in students' perceptions of the benefits regarding the various course formats.

Our investigation raises new questions about our expectations based on media richness theories. For perceived learning, the richer media course formats associated with lower perceived learning for the management and marketing majors than for finance and accounting majors. Management and marketing students may have thought that class time was filled with busywork, or perhaps they judged professors to have low expertise, and therefore, discredited their communications. Alternatively, students may have appreciated the extra flexibility and opportunities for reflection offered by online courses. Further research into this possibility could shed light on our understanding of course format differences.

With regard to satisfaction, we found a positive relationship with the face-to-face format for management majors. This finding supports our expectation based on the positive socio-emotional environment of the classroom. For management majors, the richer medium associated with less perceived learning and greater satisfaction. We note that a similar pattern holds for students in the aggregated sample.

Our study has limitations. The methodology used has partial ability to distinguish the effect of interpersonal interaction and convenience from course format. The study also is missing variables that represent students' perceptions of classroom and online learning environments. Perhaps unidentified negative perceptions of classmates or professors that influenced students' perceived learning and satisfaction were not measured in our model. The current study's results are problematic to generalize,

as the experience of students in their majors is likely to be institution-specific. Also, selection bias may exist in our sampling, especially with respect to marketing majors. Further strengthening and adjusting of our methodology, as well as replicating our results, remain topics for future investigations.

Still, our results draw attention to a striking contrast between the results for each major. Different types of students perceive course formats uniquely. Our analysis does not support any claims about one course format being better than another for any one major.

As a follow up to this study, interesting observations emerged from anecdotal discussions with students and with other faculty regarding the patterns in our results. These discussions generally confirmed our findings. Many students with jobs suggested that convenience drove their decisions to take a course, regardless of its particular format. Nonetheless, this result did not show up in the regression analysis. Most students expressed the thought that convenience was the driving factor in determining a successful course from their perspective. While a small minority of students expressed a strong preference for either face-to-face or online classes *per se*, the clear majority of students felt that factors other than the delivery format were critical to course outcomes.

In sum, an active collaboration of faculty and administrators is needed to move from mere data collection to the analysis and use of data to "guide changes that improve student engagement, learning and persistence… in order to strengthen the institution's teaching and learning environment and culminate in improvements" (National Survey of Student Engagement, 2012, p. 15). The aim of our research is to make a modest, yet concrete, step in using data to strengthen learning environments.

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