ABSTRACT

This paper discusses the design, development and implementation of a new course model for an online undergraduate degree based on propositions of undergraduate online education requirements. The new teaching model provides for enrollment growth with moderate increases in faculty expenditures, thereby, expanding the student reach of our current faculty. This study tests these propositions through measures of the outcome differences in between online and classroom courses. This study compares course grade distributions (682 student grades) and student course ratings for both undergraduate campus (8) and online (8) courses each course taught by the same professor in both mediums.

KEYWORDS: Online education, Innovative Education, Distance Learning, Program Development

INTRODUCTION

Business faculty are continually being asked to do more with less. Historic funding models are disappearing, administrators are calling for enrollment increases to meet budget gaps and technology is obliterating smaller geographic markets as every business school has the potential for world-wide market reach. This change is evident in the growing number of online AACSB accredited MBA programs. But online programs do not provide a quick fix to budgets. Online education has unique resource needs and presents different challenges.

With all this interest in online MBAs, it is rather surprising that few online undergraduate business programs exist. Many schools offer hybrid courses or online courses, but few AACSB schools offer completely online undergraduate programs especially when compared to the number of MBA programs. Education research follows a similar trend. Most online business education research has centered on MBA students. Few studies provide a comparison of the

This paper discusses the challenges of online undergraduate (UG) education compared to online graduate MBA learning. These challenges lead to the development of a different structure for UG courses than online MBA course which often mirror a more traditional classroom experience.
This study describes the development of a new online UG completion degree program using a different course structure than used on campus. This study compares student outcomes between campus and online course offerings.

**LITERATURE BASIS**

In 2009, our campus challenged colleges to develop distance learning (online, teleconference or other media based) programs in conjunction with our state wide community college network to better serve populations without local access to higher education. Students would complete their first two years of coursework at a community college and complete their Bachelor degree online at our university. Our College of Business had extensive experience with online education at the graduate. Our online MBA began offering course in 1996, but had no undergraduate courses delivered online. Although thoughts of undergraduate online programs were often discussed, faculty had significant reservations about the success of online education at the undergraduate level.

Faculty were concerned that undergraduates didn’t possess the self-discipline or maturity needed for online learning. Faculty believed that undergraduate online education would require a large time commitment on their part without adequate credit or compensation. Faculty feared the challenges of academic dishonesty the online medium. Even with these reservations, our faculty saw a competitive need to offer online courses and wanted to provide this option for our students.

Faculty concerns drove our initial conversations and search for literature. Most of our faculty were familiar with online learning and actively teaching in the online MBA program. While there is an abundance of literature on undergraduate education and learning models, very little literature focuses on business UG students. With our MBA experience, our discussions centered on an examination of the differences between MBA and Undergraduate (UG) learning paradigms. Our faculty were comfortable with the quality of our online MBA program. For most of the online MBA courses, the same faculty member taught the same topic online and on campus. Many of these same faculty taught our campus UG students. The group was drawn to J.B. Arbaugh’s 2010 paper, “Do undergraduate and MBAs Differ online?” This paper provides a theoretical discussion of the difference between online MBA and UG learning. Arbaugh does not draw conclusion but offers propositions developed from literature. These proposition resonated with our online MBA experienced faculty. The following propositions were used in the design of the online UG program:

- P3: Student-student interaction is more likely to predict course outcomes in online graduate business courses than in online undergraduate business courses.
P4: Instructor feedback is more likely to predict course outcomes in online undergraduate business courses than in online graduate business courses.

P5: Instructor facilitation and interaction in class discussions is more likely to predict course outcomes in online graduate business courses than in online undergraduate business courses.

P6: The use of student groups is more likely to predict course outcomes in online graduate business courses than in online undergraduate business courses.

P11: Outcome differences between online and classroom courses in business education will be more likely to occur in undergraduate courses.

Our faculty agreed that in our MBA courses, teamwork was thought to be the main center of learning (P6). MBA students work on group cases and projects and relied on their groups for discussion. Although faculty provided feedback to students, student to student discussions were often highly engaged and interactive. MBA students provide in depth analysis and discussion in online forums (P3). Our faculty supported the proposition that these tools would not be as successful with UG students.

If student-instructor interaction (P3), Instructor feedback (P4) and Instructor facilitation and interaction (P5) needed to be greater than in our MBA classes, faculty workloads would increase dramatically. If this was coupled with less team and more individual graded work, the faculty workload would be even more prohibitive. Faculty recruitment for online courses would be extremely difficult. With ever increasing demands on faculty time and modest resources, the UG online would be difficult to implement in a traditional classroom model.

We decided that online UG class size needed to be smaller than MBA (40 student) classes to provide for more student-instructor interaction. But our campus financial models would not accommodate class sizes smaller than our maximum of 43 while maintaining faculty coverage acceptable to our accrediting body AASCB. To accommodate the needs of UGs raised by Arbaugh, we developed our courses in a faculty lecture hall/ recitation section model adapted to online learning.

Each course would have a faculty member in charge of the overall course with assistant instructors leading the smaller recitation sections. The faculty member develops the online course and teaches the course to an initial section of 25 students. In the following semester, the faculty member teaches a section with 25 students and an assistant instructor teaches an additional section of the course for a total of 50 students. In the third semester, the assistant instructor may take over two sections of the course with oversight of the Faculty Developer.

This staged model implementation provides an opportunity for continuous improvement. The Faculty Developer incrementally develops and refines the course through close interaction with the students and the Assistant Instructor. This model also allowed faculty to judge their workload in the new structure. In all three initial semesters, the
faculty member as given credit for one full course. In future semesters, we assumed that faculty would be given .5 course credits per two section offerings. This decision was made after multiple faculty had worked through the offering stages to better reflect actual workloads.

This structure allows for faculty to oversee and monitor the course content and student responses. Faculty are available to mentor and advise the Assistant Instructors with content, presentation and student issue. Faculty are still engaged in the campus version of this course and can compare the learning of the student in both mediums. The model could easily expand to 4 sections with 100 students.

Faculty Developers were chosen from the faculty currently teaching the campus versions of the course. Many of the developers were considered “course coordinators” for the core classes on campus. These coordinators were responsible for coordination of topical coverage, textbooks, assessment exam questions and general questions about the course from part time Instructors, staff and students (i.e. transfer credit approval).

**Implementation**

Implementation of 20 new online courses would be a drain upon our limited instructional designer, technical staff and faculty resources. Therefore, the online courses were developed in a sequential method with up to 5 new course offered in each semester. This provided a means to assess student skill level, support requirements, provide for changes in the design, and allow us to discontinue the program if any serious issues developed. The initial offering of five courses was listed in the course rosters but not marketed or publicized. We referred to this as our “soft restaurant opening” for “friends and family.” Students were mostly our current students searching for online alternatives with their advisors.

Specific course requirements were detailed in development contracts that required the development of a “Course in a manner that is comparable in depth and breadth to a 16-week on campus course. The Course must be equivalent to an in-person course in terms of topical coverage, course objectives and program assessments. The minimum course deliverables shall include (detailed in Appendix):

- Syllabus
- Interactions
- Blocks of Instruction
- Assignments
- Assessments
- Technological Methods of Instruction

In addition to the deliverables stated above, faculty are required to provide written guidelines for grading all student work, expectations for students taking the course,
appropriate answers to assignments and examinations, and any other materials required for the course. The completed course was submitted for a curriculum check performed by the appropriate team in the College of Business and technical check performed by the educational technologist."

RESEARCH QUESTION

The first courses were offered in Fall 2011. The online UG courses faculty/recitation format described above differed substantially from the campus traditional format of one faculty member in a tiered classroom with a maximum of 43 students, one day per week, for 2 hours and 45 minutes for 16 weeks. At this point we were ready to address Arbaugh's proposition:

- P11: Outcome differences between online and classroom courses in business education will be more likely to occur in undergraduate courses.

Would there be any significant outcome differences between the online and campus versions of these courses? Did our new course structure provide the means to eliminate some of these differences?

METHODOLOGY

This study utilizes existing data compiled by the University from Fall 2011 to Fall 2013. One semester of data was used for each course. Semesters were chosen when the faculty developer was teaching a campus section of the course. In most instances, this was the second or third semester offering of the course. Most of the faculty did not teach the campus version in the first offering of the course online. Courses were taught by tenured, tenure track and non-tenure track faculty. Faculty were mixed in regards to online teaching experience. All of the tenured faculty have previously taught in the online MBA program. Three faculty had not previously taught online.

Eight courses were used in the analysis each with a campus and online offering or 16 sections in total. If a faculty developer taught multiple sections of a campus or online course, all sections were included as one campus or online offering.

Grades were compiled for the online and campus sections taught by the faculty developer in the given semester resulting in 682 student grades. Student grades for both online and campus courses were retrieved with student alphabetic grades (A, A-, B+ etc.) without student names or identification. Grades were converted from alphabetic to numeric using the following: A = 4, A- = 3.7, B+ = 3.3, B = 3.0, B- = 2.7, C+ = 2.3, C = 2.0, C- = 1.7, D+ =1.3, D = 1.0, D- = 0.7, F = 0, and W = missing value. Mean score differences between online and campus sections were tested using ANOVA.
Students evaluate their course in the second to the last week of the course (Week 14 of a 16 week course). This study used Course ratings from publically available information. For student course evaluations, the mean score per course and not the individual student ratings were used. If multiple sections were used, the course average was computed using a weighted average based on number of responses per sections. Difference in mean scores between online and campus courses were tested using ANOVA.

**Results**

When 682 grades were compared between online and campus sections, there was no significant differences. The mean GPA for campus and online course respectively were 2.97 and 2.95 with a 0.818 significance level.

<table>
<thead>
<tr>
<th>section</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camp</td>
<td>2.9707</td>
<td>399</td>
<td>.87023</td>
</tr>
<tr>
<td>ONL</td>
<td>2.9533</td>
<td>259</td>
<td>1.05210</td>
</tr>
<tr>
<td>Total</td>
<td>2.9638</td>
<td>658</td>
<td>.94526</td>
</tr>
</tbody>
</table>

When the sample was spilt to compare each course in the online and campus format, 6 of the 8 courses had no significant differences at the 0.05 level. Three courses showed differences at a 0.10 significance level: 0.100, 0.047, 0.008. The operations management core course and the quantitative methods/operations research focused course showed significant differences at 0.05 while a leadership elective course showed the 0.10 level.

**Table 2: Significant Differences in Online and Campus GPAs by Course**

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus GPA</th>
<th>Online GPA</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUAD</td>
<td>3.28</td>
<td>3</td>
<td>0.156</td>
</tr>
<tr>
<td>ENTP</td>
<td>2.79</td>
<td>3.1</td>
<td>0.285</td>
</tr>
<tr>
<td>FNCE</td>
<td>2.72</td>
<td>2.88</td>
<td>0.420</td>
</tr>
<tr>
<td>INFS</td>
<td>3.26</td>
<td>2.94</td>
<td>0.148</td>
</tr>
<tr>
<td>LEAD+</td>
<td>3.32</td>
<td>3.03</td>
<td>0.100</td>
</tr>
<tr>
<td>MKTG</td>
<td>2.59</td>
<td>2.95</td>
<td>0.107</td>
</tr>
<tr>
<td>OPTM*</td>
<td>3.55</td>
<td>3.27</td>
<td>0.047</td>
</tr>
<tr>
<td>QUANOR**</td>
<td>3.03</td>
<td>2.25</td>
<td>0.008</td>
</tr>
</tbody>
</table>

Figure 1: Mean GPAs for Each Course Compared by Medium
Further evaluation of the mean GPA difference in highly quantitative based courses versus less quantitative based courses showed no significant difference. Similar analysis for faculty experience with online MBA course versus no MBA teaching showed no significant differences.

For student course evaluations, there was no significant difference between the mean scores between online and campus courses. The mean scores for campus and online course respectively were 4.58 and 4.30 with a 0.839 significance level.

<table>
<thead>
<tr>
<th>section</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus</td>
<td>4.5771</td>
<td>8</td>
<td>.70435</td>
</tr>
<tr>
<td>Online</td>
<td>4.3008</td>
<td>8</td>
<td>.52687</td>
</tr>
<tr>
<td>Total</td>
<td>4.4389</td>
<td>16</td>
<td>.61758</td>
</tr>
</tbody>
</table>

Table 3. Campus and Online Student Course ratings ANOVA Descriptive Significance = .389

Figure 2: Mean Course Rating for Each Course Compared by Medium
DISCUSSION

According to Arbaugh (2010), we would expect more outcome differences between online UG than with MBA courses. Although we did not test MBA courses, we believe our findings are valid. We found there were no significant difference between student outcomes of GPA or Course ratings. We attribute the lack differences to our deliberate choices in changing the structure of these online courses to reflect the differences between MBA and UG student learners.

When the counterparts of each course were compared on the outcome of GPA, we found significant differences in three courses: Quantitative Methods, Operations and Leadership. These course share similarities in two meaningful ways. First, Quantitative Methods and Operations tends to be quantitative computational courses, however the Finance class showed no differences. Leadership is more of a qualitative course. Additional analysis to control for the level of quantitative material showed no significant differences.

Second, Quantitative Methods and Operations were taught by faculty with no previous online MBA course experience. Once again, Finance was the third course sharing this attribute, but Finance showed no significant differences. Leadership was taught by an online MBA faculty member. Further analysis showed no significant differences based on previous online MBA experience.

Based on other characteristic of the faculty members in these four courses, we believe that experience is the key driver in this finding. Although the Finance faculty was inexperienced in online education, he took advantage of ore training and development
resources. We plan to further investigate the questions of experience and quantitative content in future analysis of these courses.

This study is a preliminary analysis of the online UG course format designed with Arbaugh’s propositions in mind. Future studies in this area should include analysis of both MBA and UG courses.

This study is limited in scope to the data publicly available. Future studies should include other measures of student success such as assessment measure and content longevity. We understand that many other variables exist that can influence student outcomes, learning styles, technology acceptance, media usage, student interest, levels of motivation etc. Future study need to include more measure that may impact student outcomes as well as difference measure for student outcomes.

Although this study has great depth controlling for faculty member across the mediums, this format is limited to a small number of courses at one institution. Future studies should broaden to other universities.

CONCLUSIONS

This study find no significant differences in grades or student satisfaction between the instruction mediums. However, significant differences in course grades between online and campus sections occurred in quantitative courses taught by the instructors least experience in online education.

REFERENCES

Appendix 1: COB Online Course Checklist

Based upon a 16 week course. Items with an * are required.

The Syllabus:

- Course Title*
- Course Purpose*
- Course and Lesson Objectives*
- Faculty Contact Information*
- Textbook Information*
- Software Requirements*
- Additional Resources/Readings*
- Course Requirements*
- Evaluation Criteria*
- Grading Procedures/Policies*
- Academic Misconduct Statement*
- ADA Statement*
- Office Hours
- Policies and Procedures

Interactions:

- Announcements
- Question/Answer
- Class Discussion
- Small Group Work
- Small Group Discussion
- Peer Reviews
- Feedback on Assignments
- Individual/Group Email
- Grade on Assignment
- Gradebook Access

Blocks of Instruction: (Units, Chapters, Week or Modules, etc.)

- Brief Overview*
- Learning Objectives*
- Content* (ex. Lecture Notes, Presentations, Videos Demonstration, Readings, etc.)
- Focusing event or pre-quiz (focuses the students' attention on the content)
- Progress checks (a quiz, discussions, journal, informal paper, etc.)
- Summary or Closure (how you will end the unit)
- Assessment or Assignment

Assignments:

- Discussions and Questions
- Exams/Quizzes –Knowledge Checks
- Tutorials and Practice Exercises
- Case Studies
- Research, Writing, and Essays
- Journaling
- Guest Speakers
- Peer Reviews
- Team Activities
- Readings
- Articles
- Problem Sets

Assessments:
- Tests and Quizzes
- Participation in discussions
- Collaborative activities
- Case studies
- Product analysis
- Review questions
- Portfolios
- Projects
- Demonstrations
- Presentations

Technological Methods for Instruction:
- Images
- Video
- Text (Lecture Notes, PowerPoints etc.)
- Audio
- Graphs and Charts
- Graphs and Charts with animation
- Simulations
- Flash or Similar Activities (Drag and drop, Hotspots etc.)

Curriculum Check: (Conducted by the appropriate Department)
- Comparable to depth and breadth of face to face course (objectives, topical coverage etc.)

Technical Check: (Conducted by the Educational Technologist. Ed. Tech. will work with the faculty to correct any issues and forward the course on to the Campus Review Committee.)
- All links, images, charts and graphs are working and visible
• Copyright included (where appropriate)*
• Content is Accessible or can be made accessible (For people with disabilities or accommodation requirements)*

Gradable items listed in course have appropriate Blackboard corresponding item*
(Submitted assignments have assignment submission item etc.)
Duray Resource challenged online UG programs