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Flipping the Business Information Literacy Classroom: Redesign, Implementation and Assessment of a Case Study

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Abstract

A team of librarians in the Parrish Library for Management and Economics at Purdue University

transformed a business information literacy course from a traditional lecture, 40 student, computer-

lab class into multiple sections of a flipped, 70 student, non-lab team-based classroom in order to

meet the request of the Krannert School of Management that the successful course be required for

all 500 students. This process required examining the methods by which the class was delivered and

the adoption of flipped learning techniques for better utilization of library teaching resources. This

paper will cover the case study and assessed results of the project, with key insights for others

interested in implementing similar one credit classes or integrating video lectures, quizzes and

screencasts into one-shots or embedded work. This paper will describe the key integration of

blending student learning with online videos, with new methods of teaching to help solve the

scalability issues as well as assess and enhance student success. It will also describe the results

determined through student feedback (focus groups) and student performance (quizzes, pre/post-

tests, and assignments).

Keywords: Instruction, Business Information Literacy, Information Literacy, Flipped Classroom,
Higher Education

Flipping in the Information Literacy Classroom

Introduction

Degrees from university business schools have come to constitute between 21–25% of masters' and bachelors' degrees awarded each year in the United States (Institute of Education Sciences, 2013). Business information literacy, or the ways that students find and use information for specific purposes within the business discipline, is an important concern of academic business librarianship. Integration of business information literacy within academic classrooms is very prevalent with over 80% providing instruction (Cooney, 2005). Key integration of online content, coupled with meaningful synchronous residential student-instructor interaction, can not only support scalable solutions, but can generate benefits for the student, instructor and program.

This paper presents a case study of a flipped information literacy course. It has three primary objectives. The first is to give the history of the MGMT 175 course and the rationale for adopting the selected methods to meet existing resource and scalability needs while maintaining a student centered learning environment. The second is to present how the course was flipped through use of team-based learning, online technologies and innovative learning spaces. Finally, this paper will present an assessment of the project, providing actionable numbers and results that readers can take to their administrators, should they want to attempt similar projects.

Literature Review

Importance of information literacy to business and management disciplines

Information literacy has a long history of being associated with business disciplines. In a 1994 article, just at the advent of the World Wide Web, an article in the *Journal of Education for Business* defined information literacy as "the ability to effectively and efficiently access and evaluate information for problem solving and decisionmaking" in a business context, and cited a need for change of AACSB standards and an integration into course curriculum at both the MBA and

undergraduate levels (Hawes, 1994). Business information literacy was first defined by Cooney as

"specific programs and practices that your library utilizes" to help business students achieve

information literacy goals of being able to locate, and effectively use needed information (Cooney,

2005). Course curriculum integration of business information literacy by business faculty with the

aid of librarians are widespread, though often at the invitation of the faculty member or as a linked

course (Detlor, Julien, Willson, Serenko, & Lavallee, 2011; Fiegen, 2011; Littlejohn & Benson-Talley,

1990; Natt, 2013). In addition, many schools have mapped business information across their

curriculum through the use of online tutorials (Gunn & Miree, 2012).

Today, business information literacy and business research methods are still missing from

the AACSB standards. Information literacy suffers from a public relations problem as a

comparatively unknown concept. In a study by Conley and Gil (2011), 56 business professionals

were asked if they were familiar with the term information literacy. The majority were not (Conley &

Gil, 2011).

Flipped classrooms

The concept of active learning first came to prevalence in 1991, appearing in the Association

for the Study of Higher Education (ASHE) *Active Learning: Creating Excitement in the Classroom.*

Subsequent research posited that students needed to do more than just listen to learn but rather

needed to be engaged in higher order learning tasks "involving students in doing things and thinking

about what they were doing"(Bonwell & Eison, 1991). Flipped classrooms are one delivery method

of this kind of active learning. A typical "flipped" or "inverted" classroom provides students with

online lectures before class time, using face-to-face time to discuss problems, work together

collaboratively, or engage in high-order activities (Berrett, 2012; Datig & Ruswick, 2013; Foertsch,

Moses, Strikwerda, & Litzkow, 2002; Kim, Kim, Khera, & Getman, 2014; Lage, Platt, & Treglia,

2000). This flipped method is intended to push concept engagement away from the "homework"

out of class environment and into the classroom environment, where students can work together with instructors to grasp concepts.

Team-based learning

Our adoption of flipped learning was heavily influenced by aspects of team-based learning, or TBL. TBL was originally created by Larry Michaelsen in the 1970s as an adaption for scalability (*Team-based Learning: A Transformative Use of Small Groups*, 2002). TBL focuses on the use of small permanent groups, which collaboratively work together on quizzes or small projects. Team members are regularly held accountable and receive feedback from their group members in highly structured environments that go beyond traditional uses of teams in classrooms. This often involves the use of readiness assessment tests followed by collaborative in-class activities where student solve problems together.

TBL was used effectively in the library environment by Jacobson, who used TBL in a for-credit course at the University of Albany. Jacobson noted that with the move to TBL students "took responsibility for their own learning" and cited group work in their midterm feedback as being an effective part of the course (Jacobson, 2011). TBL has been used effectively in nursing courses where it has been shown to both increase participation in courses (Clark, Nguyen, Bray, & Levine, 2008) and positively influence student outcomes (Cheng, Liou, Tsai, & Chang, 2014). Though many novel methods such as TBL have been applied to information literacy courses in management programs, flipped teaching and TBL have yet to be applied to an entire business information literacy course.

Background

At Purdue, the credit bearing information literacy course GS 175 has been taught by libraries since the mid-nineties. The course originated as a required course in electrical engineering but was soon adapted for other departments (Sharkey, 2006). Colleges and universities have been offering

for-credit courses since the 1960s, with spikes of interest in the 1970s and 1990s (Hollister, 2010). Since 2008, the Parrish librarians have taught GS 175, a course on research skills for students from Purdue University's Hospitality and Tourism Management Department. Originally these classes were taught to 30-40 students per section in the Parrish Learn Lab where each student had a computer (Evans, 2011). The assignments varied but usually focused on specific types of resources, or comparisons between different databases. Seeing the positive impact the course had on students, the Purdue University Krannert School of Management identified the need for greater integration of business information literacy into the business undergraduate curriculum. Libraries create a MGMT 175 course, which had very similar structure as the GS 175 course.

The libraries and management school determined to scale MGMT 175 up to include all incoming management students, approximately 300 students per semester in addition to the HTM students. The expanded revised course, now called MGMT 175, was established as a required course for Krannert students. The classes were set at 70 students, which required moving to a bigger room that did not have a computer for each student.

At the time, the Libraries were deeply involved in IMPACT (Instruction Matters: Purdue Academic Course Transformation), a provost-initiated, campus-wide course redesign program and faculty development training initiative for student success. IMPACT's mission is to "improve student competency and confidence through redesign of foundational courses by using research findings on sound student-centered teaching and learning" ("IMPACT - Home," n.d.). IMPACT focuses on improving large courses throughout campus by collaborating with instructors on pedagogy, technology, and content. The IMPACT initiative was identified as a possible framework to transform and accommodate the increased scale and reduced technology of MGMT 175. The weekly classes of IMPACT provided suggestions of different modules as well as training on

technologies. It also offered reflection time for the three faculty librarians to discuss how techniques might apply to their situation.

The Flipped Course

In order to meet the new teaching load with existing resources, changes needed to be made to the content, the pedagogy, and the delivery of the courses. In the old method, the class met twice a week in a computer lab classroom. Typically, the librarian spent about 20 minutes of every class period on a short lecture, and then the students did in-class activities or worked on assignments for the rest of the time. Given the nearly double-sized sections and the non-lab setup, effective delivery of content was one of the foremost concerns for the librarians. Student-centeredness was also a concern.

During the spring semester after the decision to establish MGMT 175 as a required course, the Parrish librarians participated in the IMPACT program as fellows and had the opportunity to evaluate different options. They considered offering the course completely online, as well as hybrid models such as smaller labs and larger lectures. The librarians ultimately chose a team-based flipped framework for several reasons. The Krannert School of Management had recently created a professional studio for creation of videos for courses. Librarians would be able to take advantage of that to produce instructional videos. Also, as part of the IMPACT program, the librarians had access to an expert from Information Technology at Purdue (ITaP) who could walk us through implementation of the more sophisticated Blackboard features as well as other technology tools. Team-based learning has the benefit of being more sustainable than individual assignments as it requires less grading. Finally, as MGMT 175 is an entry course into the School of Management, team-based learning helps the students connect to other students in their major and prepares them for group work in higher level courses.

The stated goals of this course are that students will be able to "evaluate and synthesize information in order to accomplish a specific business purpose" (see Appendix), and that students will be able to "use information ethically and within the Purdue Student Code of Conduct". Emphasis is placed on having students make evidence-based decisions. Students need to be able to find information to prove a point or persuade someone else, but also to make decisions based on the information for a stakeholder.

With the help of IMPACT, the librarians "flipped" the course, creating (or gathering) a suite of specialized videos and tutorials of materials covered during the class. There were three large concerns which the librarians hoped to resolve with the adoption of the flipped instructional model. First, they wanted to move to maximize enrollment while keeping the experimental lab environment of the smaller course. Second, they wanted to maintain a collaborative and personal environment where students could ask questions and work with each other. Third, they wanted to maximize the use of technology so that the time spent in classroom could be focused on challenging questions.

The result is that three faculty librarians currently teach 2 to 3 sections of 70 students every 8 weeks. In all, this change means that three instructors teach 420 to 630 students every year, versus the 160 that they taught previously. The course had been taught in an active learning classroom. At Purdue, an active learning classroom is a large open concept classroom, with tables and multiple whiteboards and projections systems, allowing multiple groups to work on a problem at one time (see Figure 1).

Each individual assignment, group challenge, and group assignment the students complete in MGMT 175 is designed to support these goals. For example, a major project requires that students record a voice-over PowerPoint for a stakeholder, recommending whether or not to enter a specific market, such as craft beer or solar panels, based on information they find in articles and reports. Students must gather many different types of information (market research, financial information,

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scholarly articles) in order to make decisions effectively. Another example is the individual memo assignment, where each student writes a memo to a stakeholder about a business process which they research in the scholarly and trade literature, making a single, specific recommendation for the stakeholder.

In its 2013 iteration, which met once a week in 75 minute sessions, the course employed a case-based flipped method using team-based learning. Before each class session, students watched videos, took a quiz based on the videos, and sometimes did an assignment based on the skills learned in the videos. These assignments were short and built on each other. For example, a student might find several articles for a memo they would write later in the course. When they came to class, students completed a group assignment to apply what they have learned in the videos. An example of the in-class group challenge for industry and market research reports is the infographics/poster assignment. During one class period, the students used two subscription market research databases (Mintel and IBISWorld) to find specific information such as market share, market size, and evidence of demand; they presented the information in poster "infographic" format to a stakeholder, and made a recommendation based on the information. For more information on the course design, please see the example syllabus in Appendix A. Videos and example assignments, as well as Blackboard modules are also available at the following web link:

http://guides.lib.purdue.edu/flippingBIL .

Technology was an important concern for the redesign, and the librarians have experimented with several different approaches. To be used for in-class activities like the one described in the paragraph above Parrish Library had access to a group of 15 iPads to lend to the students during class. They were used in two sections of the course, with mixed success. While individual students did indicate that iPads were useful, the iPads did not get uniform use throughout the classes and often students preferred their own devices. Students noted in focus groups that they liked using their

laptops in class, and are more comfortable with their own laptops than provided ones. For more information please see the author's previous study on ipad use (Stonebraker, Robertshaw, Kirkwood & Dugan 2014). Bring Your Own Device (BYOD) became the favored policy.

Assessment

MGMT 175 was assessed in a variety of ways. All students took the pre/post-tests with full credit points for completion. The pre/post test was administered through Qualtrics and was multiple-choice. Halfway through the course a focus group was conducted by members of Purdue's Center for Instructional Excellence. Assessment centered around three areas of concern:

- Did students successfully reach the learning outcomes of the class? Did students significantly improve in areas of business information literacy?
- Where was the largest impact in terms of student populations?
- Where is MGMT 175's effect felt in the management curriculum on the student/instructor/program level?

These assessment questions were chosen as they reveal impact across curriculum and student populations. Larger program effects are important because they change larger dynamic between the management school and the libraries. When library and school administrators can point to larger effects on the student population, it lends legitimacy to the investment the library makes in the classroom.

It was important when examining student outcomes to consider population effects. Studies have shown that "not all students will necessarily benefit to the same extent, or perhaps even in the same direction" as other groups of students in college classrooms, and information literacy classrooms are not different. Given the growing diversity in undergraduate student populations, population factors such as age, sex and ethnicity may create conditional effects that are important to study when considering impact of a course. In addition, conditional effects may be used to focus the course in later semesters (for example a section focused on international students) or may be used for further assessment (Pascarella & Terenzini, 2005, p. 2).

Focus Groups

While a university course evaluation was conducted and was positive, we have chosen to focus on the focus groups conducted with the students as these qualitative metrics reveal consensus as well as individual opinions. Students indicated in the course evaluation that they liked working in groups and learning "on-the-spot" from each other in a collaborative setting. Students in focus groups reported that the course included "activities include extensive research that fully challenges our ability to investigate," Students also mentioned that the videos were helpful because the students could watch them more than once. Team-based learning was also reported as being helpful.

Pre/post-test

Pre/post-test results show learning growth both in content areas, such as marketing segmentation, and in students' ability to recognize that different questions could require different resources. An example of one of the questions that demonstrated this kind of enhanced awareness is shown in Table 1 and Table 2. A question asking students where to look for information about the features of an iPhone 5 shows little change before and after the course, but questions about business processes and markets show dramatic change as students are able to recognize when resources other than Google are preferred (see Table 1 and Table 2). As a whole, students after the course could recognize a question where certain library resources would be applicable (Table 2). At the same time, Table 2 shows that they were not selecting subscription resources indiscriminately as they could recognize questions where Google would be a better source for information.

[INSERT TABLE 1 ABOUT HERE]
[INSERT TABLE 2 ABOUT HERE]

All students were required to take the pre-test and post-test and received completion points for doing so. When coded for correct answers with a range of points from 0 to 2 and had a maximum of 60 points. Over the 2013-2014 school year, roughly 500 students took the course (514

pre-/472 post-). The course pre- and post- discrepancy derives from students dropping the course. The pre-test average was 31.57, post-test average: 38.41 (Effect size: .950 (scale= 0-1)). The pre- and post-test are significantly different (p=.001).

In comparing populations, there was not a significant difference between men and women in MGMT 175, though women on average did start lower in terms of their information literacy skills. There was a significant difference on total between international and domestic students, with domestic students doing better (p=.0001). Effect size pre-post for domestic students is 1.28, effect size for international students pre-post is .62. Comparing means, domestic students started higher with their information literacy skills and made higher gains. This can attributed to a language barrier, as the test was taken in English, online.

A favorable impact can be found among the underrepresented minority students who took MGMT 175. On average, underrepresented minority students started lower and made larger learning gains, outperforming their peers (see Table 3). This was a promising assessment piece, given the importance of these groups' success in terms of social justice and equity across the university.

Overall, the results show very positive impact across populations. There is clear and consistent growth in all student groups. Students were impacted positively by the experience, as can be seen from the jump in scores from pre to post-test. It is important to note that students entered very low on the pre-test, gaining only half of the possible points. Additionally, students had not reached a maximum level of information literacy knowledge and skills. It would reasonable to assume that there would be a ceiling effect on how much students could learn in a one-credit eight week course. While students learned significantly, and the course and librarians were effective, there is still much for room for embedded library work in other classes to build upon that knowledge.

[INSERT TABLE 3 ABOUT HERE]

Program effects

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A notable assessment metric has been student performance in case competitions. Case competitions are competitive activities between and within business schools where students are given a "case" and through evidenced-based decision-making and critical thinking provide recommendations for the stakeholder. Anecdotally, students who have taken MGMT 175 have been very successful in these competitions due to their experience using information to make actionable recommendations. A group of freshmen who had taken MGMT 175 were able to beat out students in a supply chain management competition due to their ability to interpret information and present results. Students have also pointed to MGMT 175 in events as being helpful in case competition environments for industry analysis and market research. Case competition success is important because it highlights how skills such as researching and breaking down problems can be useful across a curriculum. Large program effects create talking points that administrators can bring to stakeholders across the institution as well as funders to show value.

Conclusion

Overall, Parrish librarians learned many things from the process of flipping our course. Flipped courses do not work unless expectations are clearly articulated. At this point, students need to be taught how to engage with and be successful in a flipped course. An example of this happens on the second class of the semester, which typically has the lowest quiz grade because so many students forget that they need to take the quiz before the class. Often, students also forget to watch the videos closely and therefore do not perform as well on in-class assignments. They are not yet familiar with the class structure and do not realize they will need to use the skills from the videos and quiz in the class. This is part of the flipping process: students are not used to taking control of their own learning and therefore there is some adjustment. In addition, instructors need to make sure that they are clear and consistent in their expectations.

Flipped learning has proven to be an effective method of teaching this course. We anticipate continuing to offer the class in this flipped manner, and refining it. We are moving the course back to meeting twice a week for shorter periods in order to cover more materials outside of class. BYOD was successful enough that MGMT 175 is moving from a room with a laptop for each group of six students to a similar room without computers. MGMT 175 students will be tracked long term in the School of Management. There are currently plans to assess students on information literacy concepts in upper division courses to determine if the information and skills learned in MGMT 175 are retained over time.

When the Parrish library started the process of adapting this course, it seemed to entail daunting groups of tasks. What has emerged is a new course which challenges the students and also provides a learning space which is active and enjoyable. Lessons learned and objects created during the process of flipping MGMT 175 may also benefit librarians working in either embedded or invited lecture work, or who seek to advise professors on methods to flip and scale business information literacy.

Moreover, MGMT 175's success can be a vital talking point in the conversation across campus about information literacy. While the content of the class is focused on undergraduate business majors, the findings are applicable to many other academic disciplines or crossover courses. The MGMT 175 model showcases business information literacy as a vital and scalable 21st century skill in business, management and economic disciplines.

Works Cited

Berrett, D. (2012). How "flipping"the classroom can improve the traditional lecture. *The Chronicle of Higher Education, 12.*

Bonwell, C. C., & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom. 1991 ASHE-ERIC Higher Education Reports.* ERIC.

Cheng, C.-Y., Liou, S.-R., Tsai, H.-M., & Chang, C.-H. (2014). The effects of Team-Based Learning on learning behaviors in the maternal-child nursing course. *Nurse Education Today*, *34*(1), 25–30. doi:10.1016/j.nedt.2013.03.013

Clark, M. C., Nguyen, H. T., Bray, C., & Levine, R. E. (2008). Team-Based Learning in an Undergraduate Nursing Course. *Journal of Nursing Education*, *47*(3), 111–117. Retrieved from 10.3928/01484834-20080301-02

Conley, T. M., & Gil, E. L. (2011). Information Literacy for Undergraduate Business Students: Examining Value, Relevancy, and Implications for the New Century. *Journal of Business & Finance Librarianship*, *16*(3), 213–228. doi:10.1080/08963568.2011.581562

Cooney, M. (2005). Business Information Literacy Instruction: A Survey and Progress Report. *Journal of Business & Finance Librarianship*, *11*(1), 3–25. Retrieved from 10.1300/J109v11n01-02

Datig, I., & Ruswick, C. (2013). Four quick flips Activities for the information literacy classroom. *College & Research Libraries News*, *74*(5), 249–257.

Detlor, B., Julien, H., Willson, R., Serenko, A., & Lavallee, M. (2011). Learning outcomes of information literacy instruction at business schools. *Journal of the American Society for Information Science and Technology*, *62*(3), 572–585.

Evans, K. (2011). Creating an Information Literacy Course in Hospitality and Tourism Management: A Case Study. *Academic BRASS*, *6*(1).

Fiegen, A. M. (2011). Business Information Literacy: A Synthesis for Best Practices. *Journal of Business & Finance Librarianship*, *16*(4), 267–288. doi:10.1080/08963568.2011.606095

Foertsch, J., Moses, G., Strikwerda, J., & Litzkow, M. (2002). Reversing the Lecture/Homework Paradigm Using eTEACH® Web-based Streaming Video Software. *Journal of Engineering Education*, *91*(3), 267–274. doi:10.1002/j.2168-9830.2002.tb00703.x

Gunn, M., & Miree, C. E. (2012). Business information literacy teaching at different academic levels: An exploration of skills and implications for instructional design. *Journal of Information Literacy*, *6*(1), 18–34.

Hawes, D. K. (1994). Information Literacy and the Business Schools. *Journal of Education for Business*, *70*(1), 54–61. doi:10.1080/08832323.1994.10117725

Hollister, C. V. (2010). *Best Practices for Credit-bearing Information Literacy Courses*. Association of College and Research Libraries. Retrieved from https://books.google.com/books?id=CjXQzzqA2tgC

Institute of Education Sciences. (2013). Most popular majors. *Fast Facts- National Center of Education Statistics*. Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=37

Jacobson, T. E. . (2011). TEAM-BASED LEARNING IN AN INFORMATION LITERACY COURSE. *Communications in Information Literacy*, *5*(2), 82–101. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=llf&AN=77407461&site=ehost-live

Kim, M. K., Kim, S. M., Khera, O., & Getman, J. (2014). The experience of three flipped classrooms in an urban university: an exploration of design principles. *The Internet and Higher Education*, *22*(0), 37–50. doi:http://dx.doi.org/10.1016/j.iheduc.2014.04.003

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the Classroom: A Gateway to Creating an Inclusive Learning Environment. *The Journal of Economic Education*, *31*(1), 30–43. doi:10.1080/00220480009596759

Littlejohn, A. C., & Benson-Talley, L. (1990). Business Students and the Academic Library: *Journal of Business & Finance Librarianship*, *1*(1), 65–88. doi:10.1300/J109v01n01_07

Natt, A. (2013). What Is Business Information Literacy and Can the Corporate Librarian Contribute Anything to the Discourse? *Journal of Business & Finance Librarianship*, *18*(2), 146–174. doi:10.1080/08963568.2013.769290

Pascarella, E. T., & Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research. Volume 2* (p. 2). San Francisco, CA: Wiley.

Sharkey, J. (2006). Towards information fluency: applying a different model to an information literacy credit course. *Reference Services Review*, *34*(1), 71–85. doi:10.1108/00907320610648770

Team-based Learning: A Transformative Use of Small Groups. (2002) (p. 288). Greenwood Publishing Group. Retrieved from https://books.google.com/books?hl=en&lr=&id=8S8efQkqeqIC&pgis=1

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