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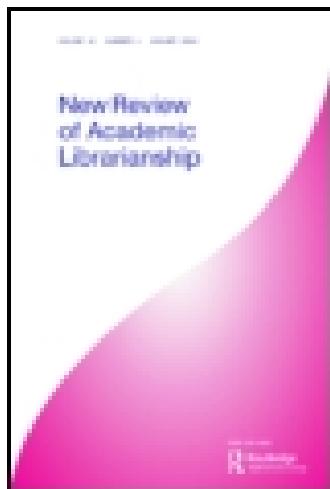
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The Flipped Classroom as a Tool for Engaging Discipline Faculty in Collaboration—A Case Study in Library-Business Collaboration

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Abstract

This case study focuses on an innovative approach to the flipped classroom as a tool for productive library-discipline faculty collaboration on information literacy instruction. The argument is presented that the flipped classroom can be a pathway into the disciplines that can be used in overcoming the disadvantages of the one-shot, and other barriers to collaboration. The case-study will outline the reasons for a successful collaboration on integrating information

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literacy into this undergraduate business course, and for its extension to five additional business courses. Practical examples of learning outcomes, in-class activities, and assessment are provided.

Keywords: collaboration, information literacy, university libraries

Introduction

Collaboration with discipline faculty is important for effective information literacy instruction. It has been recognized that barriers often stand in the way of establishing such collaboration with discipline faculty (Mackey and Jacobson 140-144; Saunders, "Culture and Collaboration" 137-47). While there is much scholarship that supports the claim that collaboration with discipline faculty is essential to effective library instruction (Brasley 71-88; Duskatsch 2003; Hardesty 339-367; Ivey 100-113; Kezar 831-860; Mackey and Jacobson 140-144; Oakleaf et al. 5-23; Saunders, "Culture and Collaboration" 137-47), there is relatively little written about the flipped class design as a vehicle for such collaboration, particularly when initiating new discipline faculty relationships.

Briefly defined, the flipped classroom can be described as follows:

A flipped classroom inverts the traditional educational model so that the content is delivered outside of class, while class time is spent on activities normally considered "homework." For example, students may access instructional material through videos, podcasts or online tutorials before the class meeting. Then during class time, students work on activities which force them to apply what they have learned (Benjes-Small and Tucker).

This paper will focus on an innovative approach to the flipped classroom as a tool for productive library-discipline faculty collaboration on information literacy instruction. Following

a literature review on library-discipline faculty collaboration, the flipped classroom, and common learning objectives in the university, this case study will go beyond existing scholarship on collaborative information literacy to argue that the flipped classroom can be a pathway into the disciplines that can be used in overcoming the disadvantages of one-shot sessions, and other barriers to collaboration.

This case study concerns the introduction of information literacy instruction to courses in the business management program at Lehman College of the City University of New York, a program which had not previously included one-shot library instruction sessions, or materials such as LibGuides or tutorials. Over the course of four semesters, by initially collaborating with one professor, the number of information literacy instruction sessions incorporated into her course went from zero to three, a ten percent increase in sessions during the course which meets twice per week over fifteen weeks. The number of hours spent on information literacy instruction increased from zero to four, out of a total of 40 course hours for the semester. The case-study will outline the reasons for a successful collaboration on integrating information literacy into this undergraduate business course, and for its extension to five additional business courses.

Flipped class design will be put forward as a way for librarians to gain entrée into courses that previously did not have library instruction by appealing to discipline faculty's need to maximize the effectiveness of face-to-face class time, providing active learning and critical thinking activities, and offering authentic assessment opportunities. It will be argued that library faculty can outline clear learning outcomes for information literacy within discipline courses, and develop assignments and activities to achieve and assess these learning outcomes. This may solve a problem for discipline faculty who have learning objectives in their syllabi, but have not

developed active learning strategies for achieving these outcomes. Practical examples of learning outcomes, in-class activities, and assessment will be provided for potential adaptation by librarians teaching information literacy in other disciplines. Finally, observations and conclusions on the flipped experience from a librarian and discipline faculty perspective will be presented.

Literature Review

A review of the literature on information literacy and library instruction reveals substantive research and commentary on (1) the importance of librarian-faculty collaboration for teaching information literacy, (2) the problems in establishing collaborations, and (3) viable approaches to developing collaborative relationships.

Framework for Information Literacy for Higher Education

With the adoption of the *Information Literacy Competency Standards for Higher Education* in 2000 by the Association of College and Research Libraries (ACRL), information literacy emerged as an essential learning outcome at many institutions of higher education ("Information Literacy Competency Standards for Higher Education"). The ACRL information literacy standards have been revised through a cyclical revision process resulting in the ACRL *Framework for Information Literacy for Higher Education*. The new *Framework* is based upon Threshold Concepts, "the core ideas and processes that define the ways of thinking and practicing for a discipline," and offers an expanded definition of information literacy that encompasses "a spectrum of abilities, practices and habits of mind that extends and deepens learning through engagement with the information ecosystem" (Association of College and

Research Libraries; Townsend, Brunetti, and Hofer 853-869). A key component of this expanded view of information literacy is the opportunity it affords for collaboration between librarians and faculty to redesign instruction, assignments, and curricula. Indeed, the Task Force responsible for the revised standards states that “a vital benefit of using threshold concepts as one of the underpinnings of the new *Framework* is the potential for collaboration among disciplinary faculty, librarians, teaching and learning staff, and others” (Association of College and Research Libraries).

Librarian-Faculty Collaboration

Several foundational articles focus on understanding faculty culture as necessary to the success of bibliographic instruction or information literacy instruction by librarians. Hardesty, in his seminal article on librarian involvement in bibliographic instruction, stated that “for bibliographic instruction programs to be successful, librarians need the cooperation and support of faculty” (343). Doskatsch provided valuable insights into challenges for librarians in developing collaborative partnerships with discipline faculty because of differences between how librarians view themselves as educators, and how discipline faculty view librarians (111). If fostering information literacy in the curriculum is to be successful, Doskatsch advises that it must be based on collaborative partnerships. Librarians must understand the language of pedagogy, engage in institutional curriculum issues, speak the language of those whose influence is needed, think strategically, and focus on outcomes by emphasizing contribution to student learning (115-118).

Over the past decade, there has been a wealth of literature published on the collaborative process in higher education focusing on academic libraries and information literacy. Arp et al. have noted the growing collaborative role for librarians stemming from the increasing recognition of information literacy as a learning outcome in colleges and universities (Arp et. al 18). Information literacy has been increasingly incorporated in student learning outcomes across college and university campuses, resulting in efforts by discipline faculty and librarians to develop pedagogies and assessment practices to achieve this goal (Information Literacy Competency Standards for Higher Education; Ratteray 368-375; Saunders, "Regional Accreditation" 317-326). Collaborative models such as teams and co-instructors in courses, learning communities, and campus-wide information literacy initiatives are seen as recognition of the integration of information literacy in the disciplines (Arp et. al. 19-22). Ratteray credited the Middle States Standards for Excellence in Education adopted in 2002, which positioned information literacy as an institutional learning outcome, as providing an impetus for collaborative efforts between librarians and faculty to build information literacy skills into the curriculum (Ratteray 368-372). Saunders studied the information literacy components of regional accreditation standards in the United States and pointed to ways that librarians and faculty could work collaboratively to accomplish institutional goals (Saunders, "Regional Accreditation" 317-325).

Although information literacy and critical thinking are now often built into the learning outcomes for undergraduate and department curricula, librarians still face serious challenges to establish their role in information literacy instruction in the disciplines (Saunders, "Culture and

Collaboration” 137-47). From a discipline faculty perspective, there are many hurdles cited in the literature to involving discipline faculty in library instruction. These include:

lack of time to tackle another initiative; lack of awareness of students’ needs; belief that students learn these skills and gain this knowledge elsewhere...; lack of instructional support for collaboration, information literacy, and/or information technology development; belief that instruction is the job of the library. (Mackey and Jacobson 143)

Overcoming Challenges to Collaboration

Much has been written in the scholarly literature on the librarian-faculty divide and the difficulties of librarians gaining acceptance as equals in discipline instruction. Hardesty posed the question why librarians did not receive the support and cooperation of discipline faculty on most campuses (Hardesty 343). The answer could be found in a faculty culture that emphasized research over teaching, valued academic freedom, had a resistance to sharing the classroom with librarians, viewed librarians as less educated (lacking PhD degrees), did not place a priority on the applied learning, or the process of learning, and resisted change (356.) Saunders studied the extent to which librarians tailored their information literacy instruction to various disciplines (Saunders, “Culture and Collaboration” 137-47). Saunders highlighted several reasons why integrating information literacy instruction into the curriculum across the disciplines remained a challenge, chief among them being that faculty are first and foremost formed by the habits of mind of the discipline in which they work. Saunders concluded that librarians may need to do

more to make connections to discipline areas by “integrating the language of faculty—specifically the language of the discipline—into their regular discourse” (“Culture and Collaboration” 145). Librarians may need to spend more time on methods of inquiry and evaluation, and other sources of information that are critical to the discipline, as well as specific assignments and subject databases (“Culture and Collaboration” 145).

There are several key examples in the literature that highlight ways of overcoming the inherent problems facing librarians in establishing collaborative relationships. A case study by Scales, Matthews, and Johnson analyzed the collaborative process involved in a librarian-faculty partnership at Washington State University to revise a credit-bearing general education course (233-234). Issues such as shared language and authority were particularly important factors in the collaborative process (Scales, Matthews, and Johnson 233-234). Brasley provided a framework for librarian-faculty collaboration on information literacy instruction including having a shared vision, mutually agreed curricular learning outcomes, curriculum mapping, and assessment (74-78). Mackey and Jacobson posited two models for collaboration: teaching alliances and campus partnerships (140). Practical steps are outlined for both models, as well as a discussion of underlying issues such as the level of commitment to team teaching. The role of technology is seen as advantageous in leveraging librarians’ expertise and in sustaining information literacy curricula (Mackey and Jacobson 140-142). Ivey studied working partnerships between librarians and faculty on information literacy instruction and found evidence to support the vital importance of a shared understanding of the development of information literacy instruction, the critical importance of provision of appropriate resources to support this work, and the importance of involvement of librarians in the planning and evaluation

of information literacy instruction in the disciplines (107-110). Jacobs and Jacobs sought to answer the question: “What does meaningful pedagogical collaboration between a librarian and a faculty member look like?” (73). In the Jacobs and Jacobs case study, it was a team-based learning community model of several librarians working with a group of discipline faculty on the teaching of research and the development of assignments (76). The imperative of finding common ground between librarian and faculty partners was emphasized. Moreover, these authors advised that the best approach is often grassroots and spontaneous development of partnerships, rather than depending upon institutional programs to support information literacy instruction across the disciplines (Jacobs and Jacobs 79).

Oakleaf et al. in their group article “10 Short Lessons on One-Shot Instruction,” offered an analysis of integration of information literacy instruction into course-based assignments (17). In an essay that is part of this multi-authored article, Debra Gilchrist commented on the role of assessment in bringing about deeper collaboration between faculty and librarians: “...with integrated assessments comes the increased opportunity for librarians to meaningfully engage with faculty in instructional and assignment design” (Oakleaf et al. 18). Recent studies emphasize the weaknesses of one-shot library instruction sessions, and ways to develop a blended approach involving collaboration with faculty on problem-based and project-oriented tasks linked to the discipline (Gardner and White-Farnham 235-242; Leibiger 187-222).

Collaboration on Business Courses

Several articles highlight collaborations between librarians and faculty on information literacy instruction in business courses. Fiegen, Cherry, and Watson put forward a model for

formally integrating learning outcomes into an undergraduate business curriculum. Librarians and business faculty collaborated on implementing this model. Their combined expertise resulted in rich information literacy instruction in which course objectives were matched with information literacy competencies (Fiegen, Cherry, and Watson 316). Atwong and Taylor reported on a collaboration between librarians and business faculty to provide instruction in doing business research using a particular database. Factors they considered very important were: an emphasis on active learning exercises, and collaboration allowing the librarian to construct meaningful learning experiences based on course content and discipline related concepts (Atwong and Taylor 439). In a study of business students, Devasagayam, Johns-Masten, and McCollum concluded that “Experiential exercises that demand involvement, engagement, application and reinforcement through repetition are one of the best ways to teach information literacy through pedagogy” (13). Whitesell and Helms reported on a collaboration between a business faculty member and a librarian to offer information literacy instruction to students in a capstone course. Assessment using pre- and post-tests of information literacy knowledge showed that students benefited from instruction involving use of critical thinking skills (Whitesell and Helms 23). Earlier studies by Roldan and Wu, and Kelly et al. concluded that information literacy instruction was valuable to students in management information systems and accounting. In particular, these two studies measured the effect of course-integrated information literacy instruction developed in partnership between librarians and faculty. The results showed improvement in students’ abilities and confidence to conduct and evaluate business research (Roldan and Wu 323-327; Kelly et al. 326-347).

As demonstrated by the case study below, the flipped class design requires collaboration between library and discipline faculty on learning outcomes, lesson planning, assignments, in-class activities and assessment. The flipped model allows the librarian to engage in discussion about the alignment of assignments and activities with learning objectives for information literacy instruction and for the course (Arnold-Garza 8-22; Benjes-Small and Tucker; Findlay-Thompson and Mombourquette 63-71). Getting faculty commitment to this instructional design process helps overcome barriers such as faculty resistance to collaboration and structural constraints of teaching workload. The literature review that I completed in April 2015 on collaboration on information literacy instruction did not reveal case studies, research studies or essays on the use of the flipped classroom as a tool for fostering such collaboration. My experience with the business department is an example of flipped instruction being used to induce discipline faculty to partner with the library on an instruction module that was advantageous to both.

Background

Lehman College is one of twenty-four campuses that make up The City University of New York (CUNY). It is the only publicly-supported four-year liberal arts college in the Bronx, and is dedicated to serving the Bronx and surrounding communities. With over 12,000 students, Lehman College grants Bachelor and Master's degrees in liberal arts and professional disciplines. The undergraduate business department is one of the largest majors with over 1,400 undergraduate students. Master of Science degrees are awarded in Accounting and Business.

This growing department is scheduled in fall 2015 to become the School of Business and to offer MBA degrees.

Lehman College faculty are focused on teaching as well as research. The mission and strategic plan of the college emphasizes the prime importance of teaching in order to educate students for the 21st century society and economy (Lehman College, Office of the President). The Leonard Lief Library offers an innovative, growing information literacy instruction program which is administered by the Coordinator of Information Literacy and Assessment, an Associate Professor in the department. The Library has an Instructional Technologies Librarian faculty position, as well as eight additional library faculty providing instruction (Leonard Lief Library).

Our library instruction program is “oriented by a broad view of information literacy and critical thinking, which can also be called critical inquiry” (Leonard Lief Library). We subscribe to CUNY’s Librarian Information Literacy Advisory Committee (Library Information Literacy Advisory Council, “Information Literacy Standards”) goals and objectives, and the *Framework for Information Literacy in Higher Education* defined by the Association of College and Research Libraries. The Library is currently engaging in a project aimed at integrating information literacy across the curriculum, following a method developed by CUNY’s Library Information Literacy Advisory Council (Library Information Literacy Advisory Council, “Articulating and Integrating”).

Library faculty fit well into Lehman’s culture of teaching and learning. We provide information literacy instruction to undergraduate and graduate classes in all subject areas throughout the college. Typically, these are one-shot sessions in which library faculty teach

research concepts and skills pertaining to the discipline. There has been a steady increase in the number of classes taught by librarians over the past decade, as well as an institution-wide goal of incorporating information literacy instruction into the disciplines. Critical thinking is a college-wide learning outcome for general education at Lehman, and therefore all faculty are asked to promote it as an essential learning outcome for undergraduate education.

This case study is focused on the business department, which until now has incorporated library instruction only sporadically upon request from particular professors, but not in a comprehensive or systematic way. There was little, if any, ongoing communication between the business department and library faculty, partly because the library did not have a “business librarian,” or a dedicated liaison to forge relationships that would lead to dialogue about the business department’s needs, and how the library could meet these.

After offering a workshop to business faculty on the library’s electronic resources and getting only one request from a business management professor for a one-shot library instruction session, it became very evident that a more creative approach was needed to develop productive collaborations with this department. In 2012, the flipped classroom began to infiltrate the library literature. Library faculty were already working on ways to develop flipped lessons for information literacy instruction in the disciplines. Thus, there was high interest in the flipped approach as a way to attract business faculty to library instruction. The case study below will demonstrate why the flipped model could help others initiate and support library-business faculty collaborations.

Case Study – Using the Flipped Classroom Model

The flipped classroom model was developed by two high school chemistry teachers in 2006 who began using recorded lectures to supplement face-to-face instruction (Arnold-Garza 8). The major elements of the flipped model are: moving a portion of the instruction outside of class, usually delivered through some electronic means such as video tutorials; and spending more time in class on active learning and formative assessment (Arnold-Garza 8). This transfers learning that can be readily accomplished by the individual student out of the classroom, and thereby leaves class time to focus on more in-depth and complex learning and skill sets (Arnold-Garza 9).

Instructional faculty at academic libraries are employing the flipped classroom model across the disciplines. The Association of College and Research Libraries' (ACRL) *Keeping Up With...* series, which covers trends in libraries and higher education, recently focused on the flipped classroom (Benjes-Small and Tucker), an indicator that this model is of great interest in our field. The report has numerous references to published examples of the use of the flipped model in information literacy instruction. Moreover, the flipped classroom has been used by discipline faculty across the spectrum, including business (Albert and Beatty 419-424; Findlay-Thompson and Mombourquette 2014). Collaboration with discipline faculty is necessary for successful implementation of flipped information literacy instruction (Arnold-Garza 12).

In fall 2013, a business professor recognized the need for some type of library instruction, as a result of a large number of reference questions related to her assignment, but did not explore this in collaboration with library colleagues, opting instead to request a one-shot library instruction session. The fact that the professor approached the library for an instruction session was an important step in improving communication between the library and the business

department. The professor arranged for me to provide a lesson in business research for one session of her course. The lesson demonstrated the problems with the one-shot library instruction session, which are documented in the literature (Oakleaf et al. 15): too much material to cover in a short session; passive learning in a lecture-demo that does not lead to good retention of material; and lack of opportunity and time for formative assessment to address specific learning needs. We observed that students did not retain information from the one-shot session. In order to work on their group project assignment following the one-shot session, most of the students came to the library in need of instruction in basic skills and concepts that we expected would have been learned in library instruction. In addition to the one-shot session, the professor brought her students to the library during another class session to work on their research assignment. She thought the students would ask questions of the reference librarians and receive direction on using databases. This was largely ineffective; the reference librarian was not in a position to give expert guidance to the group as a whole, and was faced with competing demands at the reference desk. Individual students or small groups received help with particular problems, but instruction could not be provided to the entire class outside of a classroom setting.

The business professor was largely unimpressed with the results of the library instruction as delivered in a one-shot session and independent work in the library (without instruction). This was to be expected given that the time constraints of the one-shot (one hour), and the lecture format, were very high barriers to effective instruction of business research skills and concepts. It appeared as though the business professor was discouraged and might give up on working with the library on instruction. After all, the library's instruction did not yield better results than her own independent efforts.

On the positive side, the lecture class exposed the business professor to essential concepts and skills in business research that needed to be built into the curriculum in order for her students to gather information, data, and research reports for the group project to analyze a company's management. The problem was how to transform instruction to improve learning and retention without expanding the amount of class time beyond one class session and one follow-up session.

The main points of the case made to the business professor advocating the flipped class model were: (1) learning outcomes for information literacy (business research) would be targeted to her syllabus and the business department's curriculum map of learning objectives (Department of Business and Economics; Business Administration Program; Curriculum Map); (2) learning of basic skills and concepts would be accomplished in a homework assignment designed with videos for independent learning; (3) active learning in class would offer differentiated instruction and formative assessment; (4) critical thinking and evaluation of sources would be advanced by active learning exercises; (5) pre- and post-tests would assess student learning and instructional delivery. All of the above elements of the flipped model appealed to the business professor because they fit the requirements of the learning outcomes of the business department, and were aimed at improving the learning and performance of her students on a complex research project.

There were eight specific learning objectives in the course syllabus that followed the business department's curriculum map of learning objectives. Three of the learning objectives were directly linked to information literacy and critical thinking (Syllabus; Business Management Course):

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- Use industry-standard analytical tools to assess a firm's internal and external environment
- Conduct secondary research and determine a company's SWOT (Strengths, Weaknesses, Opportunities and threats.)
- Compile research findings in several written reports

In order to achieve these learning objectives, students were required to conduct business research, participate in a group project, and present research reports.

The group project learning objectives were described as follows on the syllabus:

To collaborate with fellow classmates as a unified and coordinated team to collect and analyze information about a target company's management practices, the industry in which the company operates and the dynamic factors in the company's environment... this project tests your own management skills i.e. your ability to work with others to accomplish the tasks described below...(Syllabus; Business Management Course)

The tasks described in the project assignment included assembling a bibliography that consisted of specific types of sources, such as academic journal articles, newspaper articles, and reports filed with the U.S. Securities and Exchange Commission (annual 10K report):

Collect at least 15 articles/reports on your chosen company...when conducting your research look for information that addresses the questions posed in the remaining sections of the group project (Syllabus; Business Management Course)

The homework assignment and the active learning exercises in the flipped information literacy class aimed to teach research skills using all the essential business databases for finding information on companies, and then evaluating that information in context. The follow-up assignments and follow-up class in which students worked independently, would take students to a deeper level of research involving critical thinking and evaluation. This would align with the learning outcome of critical thinking that was mapped to the department curriculum and a learning outcome for undergraduate education at the college (Department of Business and Economics; Business Administration Program; Curriculum Map).

The design of the flipped instruction was built around the following elements:

- Learning Outcomes for Pre-Assignment and In-Class Activities
- Pre Assignment (LibGuide: Video and Worksheets)
- In class Activities (LibGuide and Worksheets)
- Assessment (Pre-and Post-Tests)

These elements were developed based on the course syllabus. The learning outcomes, pre-assignment, in-class activities, and pre- and post-tests were shared with the business professor in order to ensure that the learning outcomes and methods were in line with her own (Syllabus; Business Management Course; LibGuides).

The response of the business professor was positive. She was very interested in trying the flipped model to improve information literacy classes for her students. Therefore, we reached an agreement that two sections of the same Business Management course would receive library

instruction in spring 2014—one as a flipped class, and one as lecture. After reviewing the assignment and activities that were developed for the flipped class, the business professor was convinced that the flipped model would help her achieve the learning objectives she had selected for her business management course from the department’s curriculum map, and which she had integrated into the group project assignment (Department of Business and Economics; Business Administration Program; Curriculum Map). The business professor readily agreed that students needed instruction in basic research skills and critical thinking at the beginning of the course before diving into the group project. During a conversation before the semester, we collaborated on the logistics of the flipped class so that the benefits of both assignment and in-class activities would be maximized. Together we reviewed the homework assignment video and worksheet, in-class activities with worksheets, and follow-up activities with worksheets (LibGuides). All of this preparation went a long way towards getting buy-in from the business professor. The fact that the lesson was carefully planned and developed with supporting materials, enabled the professor to envision in detail how the class time would be spent, and to identify the advantages that would be gained by this investment of time and by allowing a librarian to lead this component of her course curriculum. The next section of this article will highlight the key elements of the flipped information literacy class that fostered collaboration.

Learning Objectives

It was a distinct advantage to structure the homework assignment and in-class activities around learning objectives aimed at teaching skills and concepts students would need to complete the group project as outlined on the syllabus. This gave the business professor a clear roadmap of how her students would learn the basics of business research necessary for the

complex group project described above. Therefore, the flipped lesson plan (homework and activities) that were shown to the professor in advance, gave clear indications of what students would accomplish during information literacy instruction, and convinced the professor to collaborate with a librarian (LibGuide). Furthermore, once the business professor said “yes” to the flipped model, we were immediately involved in conversations about pre-assigned homework and in-class logistics, assessments such as pre- and post-tests, and follow-up sessions. The flipped lesson plans were the initial way into a mutually reinforcing collaboration, which was essential to making the flipped class work.

Homework Learning Objective

The learning objective developed for the homework assignment was:

Students will be able to conduct searches in *Lexis-Nexis Company Dossier* database and to retrieve key information, publications and financial reports on target companies.

Prior to the library instruction class, students were asked to watch a short video tutorial on *Lexis-Nexis Company Dossier*, and complete a worksheet with questions about the company they had chosen for their group project (LibGuide). This database would yield fundamental information on companies that would be necessary as background for further research. Based on evidence from the literature, we could expect students to learn to search this database from the video tutorial (which had been developed with help from library colleagues), so that the in-person library instruction class could move quickly into other, more complex, business databases. Moreover, this assignment overlapped with the course learning objectives in helping

students search and retrieve articles, SEC reports, and other information for their group project bibliographies.

In order to incentivize the homework, the professor made the assignment mandatory. In later semesters, it was possible to access submitted assignments before class in BlackBoard, the college learning management system. This made it possible for the librarian to review the homework before class, and spend time in class on particular concepts or skills that students were having trouble learning. Granting permission for the librarian to access BlackBoard and post and review assignments was clear evidence that the business professor supported our collaboration, trusted in a co-teacher's ability to evaluate student submissions, and that she was committed to implementing flipped library instruction. The business professor was as committed as her library faculty collaborator to providing differentiated instruction to address individual learning requirements while teaching students to engage in group learning.

Active Learning Objectives – In-Class

Similar learning objectives to those noted in the previous section were developed for in-class activities:

1. Students will be able to search and retrieve financial information, market research reports, SWOT analyses, market share and other information on companies and industries from *Business Insights Essentials*.
2. Students will be able to search and retrieve articles on companies and industries from *Business Source Complete*. Students will be able to select and evaluate articles relevant to topics they are investigating in their group project.

3. Students will be able to research and retrieve articles on companies and industries from the *New York Times* and *ProQuest Wall Street Journal*, and evaluate these articles on topics relevant to their group project.
4. Students will be able to retrieve SEC reports such as 10K annual reports and be able to select information from these reports relevant to topics in their group project.

For each of the learning objectives, an activity with accompanying worksheet was designed. The class would be divided into groups that corresponded to the same groups students belonged to for their group project. Activities would focus on the first two learning objectives above. Students worked on the activities which involved searching databases and answering questions pertaining to that database on the worksheets. All of the questions were developed with the group project in mind, guiding students through a series of questions about companies that could be answered using specific databases: *Business Source Complete*, *Business Insights Essentials*, *ProQuest Wall Street Journal*, *Lexis-Nexis (New York Times; SEC filings)*. This approach provided incentives for students to engage in activities, and to ask specific questions of the two professors in the room. Our role was as coaches and facilitators. We observed each group and answered questions to advance the students' progress. Often, it was appropriate and necessary to interrupt group work to give brief explanations to the entire class. By conducting formative assessment on the fly, we could provide individualized instruction as needed, and advise students who were more advanced to move ahead faster.

When the business professor reviewed and discussed the outline for the activities and the worksheets, she was impressed with the flipped model as a way of teaching a large amount of material in a one-hour class. In addition, a LibGuide was developed for the course containing

video tutorials on each of the major business databases needed for the group project. Students would have access to the LibGuide throughout the semester (LibGuide).

Excited by the potential the flipped model offered, the business professor suggested that we expand our collaboration and allocate a follow-up class session to amplify and solidify student learning. This was a tremendous boost to achieving all the learning objectives of the flipped class and to correlate the activities noted above. It allowed concentration on the first two activities in class, and to assign the third and fourth activities as homework which would be reviewed in the follow-up class. Along the same lines, the business professor felt that the follow-up would solidify students' mastery of business research and close gaps in understanding that might impede their progress on the group project. Another benefit of active learning in the flipped information literacy class was to mirror the students' experience collaborating with a group on their project—a key learning objective for the course. The total flipped package, therefore, was seen as supportive of the professor's goal of teaching management principles through a group project on a company. By collaborating on the flipped instruction, we could move her students through the research process more effectively than through a standard lecture, strengthen students' ability to do independent and collaborative work, and involve students sooner in deeper levels of research involving critical thinking.

Assessment

Assessment was conducted in a formative manner in the flipped class. The formative assessment was done by reviewing answers on the homework assignment submitted before class, and on-the-spot feedback in-class. These formative assessments were essential ingredients in

providing individualized instruction, and addressing learning issues at the students' points of need. Of particular importance was the formative assessment in the follow-up class. This was done on-the-fly by looking at worksheets the students had completed at home, and addressing new problems that students raised in class. Often, these problems were experienced by groups of students, giving rise to spontaneous instruction for the whole class in order to clear up common mistakes or misunderstandings.

In addition to formative assessment, data was collected through pre- and post-tests comparing flipped and lecture classes, again offering the business professor data that she could bring back to her department. Discipline faculty are required to report on their methods of assessment of learning outcomes for their courses. Having another method of assessment focused on business research was of great interest to the business professor. This data will also be used as part of a research project on flipped learning that is being conducted by four library faculty who are teaching flipped information literacy classes in business, education and health sciences. The results of the research data analysis will be shared with discipline faculty. This authentic assessment data will hopefully support an argument for integrating scaffolded instruction and assignments into more courses in the business curriculum. The argument often made by discipline faculty against information literacy instruction by librarians is that it takes away too much time from subject instruction. However, flipped instruction offers the opportunity to efficiently collect data on improved subject learning (Arnold-Garza 19-20). When discipline faculty are offered positive assessment evidence, it stands to reason that they will be more interested in collaborating with library faculty to provide this type of instruction.

The informal preliminary data gathered from the pre- and post-tests, as well as differences in flipped and lecture class grades, has strengthened the business professor's belief in the flipped model, and in the importance of our collaboration. After the fall 2014 semester, I received an e-mail from the business professor in which she stated:

...the flipped classroom model... results have been astounding! I have never received the quality of work that I received from students who conducted company research. Students gained substantial skills and confidence in conducting research and in compiling data into a report.

At the end of the spring 2015 semester, the business professor surveyed her students on the value of the flipped information literacy instruction. The results showed that 70% of the students rated the flipped classroom approach a five on a scale of one to seven, with seven being the highest level of satisfaction. The improved quality of students' work, plus the students' receptivity to the flipped model, have contributed to the business professor's confidence in the efficacy of flipped information literacy instruction. She has expressed her interest in continuing our collaboration in the future in order to improve student learning of fundamental concepts and sources in business research.

Expansion of Flipped Instruction

The very positive comments that the business professor conveyed to her colleagues and the chair of the business department after the first semester of flipped classes were a catalyst for other faculty to want to collaborate on instruction. The first flipped class thus acted as a proof case for the spread of collaboration to other business faculty. In fall 2014 and spring 2015, five

business management courses which were taught by four business faculty were conducted as flipped information literacy classes. This was the first time these professors had requested information literacy instruction. They had heard good reports from the business professor who had collaborated initially on the flipped model. They were interested in collaborating on homework assignments, incentivizing the homework, providing the librarian with access to their courses in BlackBoard to review submitted assignments, and supporting pre- and post-tests as part of the research study that would ultimately benefit all information literacy instruction.

Additional Features of Flipped that are Attractive to Discipline Faculty

The benefits of the flipped model that convinced the first, and then subsequent business professors to collaborate on information literacy instruction were: (1) Reducing the amount of repetitive teaching of the same material; (2) Time-consuming preparation of assignments and active learning were done by library faculty; (3) Teaching of skills and concepts in business research would be done by library faculty who were experts in this area; (4) Instruction would be standardized across multiple sections of the same course; (5) More time could be spent on evaluation of information and critical thinking than previously.

Future Developments

The collaboration with the business professor will continue in the fall 2015 semester. We plan to assess student research papers according to criteria such as selection of sources, use of literature and data sources in analysis of business problems, and understanding of citation and

authorship . Our aim will be to assess how well students are able to retain and employ the knowledge practices and dispositions we have introduced in the flipped information literacy sessions through homework, active learning and follow-up assignments.

Conclusions

This case study has shown that flipped instruction can be used to form collaborations with discipline faculty because it can be structured to achieve goals that discipline faculty have set in terms of learning outcomes and assessment, and offers benefits to faculty over standard lecture format. The flipped classroom provides ancillary benefits to discipline faculty of avoiding repetitive instruction, standardizing library instruction across course sections, and the preparation by library faculty of carefully structured lessons and materials that are sustainable across several semesters.

On a practical level, the following practices are offered to assist in introducing the flipped instruction model as a catalyst for collaboration:

- Bring discipline faculty “on board” with homework assignments, in-class activities, assessment and the technologies supporting these learning modules.
- Spend a lot of time preparing materials for homework and activities that fit the subject discipline, advance discreet learning objectives that are achievable within time constraints.
- Structure lessons around discipline faculty’s goals and syllabus; build instruction around skills and concepts required for research assignments.
- Be open to modifications of flipped lessons; some lecture is often advantageous.

- Develop effective support materials such as video tutorials, LibGuides, podcasts.
- Demonstrate enough knowledge of the subject to assess students' work in order to enable individualized learning.

Library faculty can benefit from the flipped model by using it to gain entrée into courses and departments in subject disciplines beyond one-shot library instruction sessions. Moreover, by developing collaborations with discipline faculty, conversations can begin on integrating information literacy instruction in the discipline. The new *Framework* thus “opens the way for librarians, faculty, and other institutional partners to redesign instruction sessions, assignments, courses, and even curricula” (Association of College and Research Libraries).

The new *Framework for Information Literacy for Higher Education* is organized around six frames, “each consisting of a concept central to information literacy, a set of knowledge practices, and a set of dispositions” (Association of College and Research Libraries). The *Framework* will aid library faculty in integrating information literacy in the disciplines—work that has commenced on many campuses, including Lehman College. For example, “Scholarship as Conversation” is a frame that should inspire library faculty to understand the language and methods of individual disciplines in order to teach information in that discipline. “Research as Inquiry” is a frame that will spur innovative teaching methods to engage students in research activities more characteristics of authentic discipline practice.

As librarians grapple with implementing *Framework* concepts in instruction, it will become evident that greater collaboration with discipline faculty will be needed in order to open pathways to knowledge practices and dispositions that are fundamental to independent learning.

ACCEPTED MANUSCRIPT

The flipped class model presented in this article could be a prototype for engaging discipline faculty in the process of teaching students to become 21st century learners who think critically, research deeply, and solve problems collaboratively. In this case, the flipped model has opened the conversation with discipline faculty in business—a conversation that is continuing and expanding. Undoubtedly, the flipped model will evolve and develop in a variety of formats to solve particular problems. The important thing now is to consider it a valuable tool for starting collaborations with discipline faculty.

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