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Information Literacy and Research Development Skills: Advancing Librarian's Participation in Pedagogical Research

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Abstract: Information literacy continues to be an important professional agenda conceptualizing and advancing academic librarians' teaching roles for the 21st century. In this paper, the author advances librarians' proactive involvement in the Scholarship of Teaching and Learning (SoLT) as an alternative and potentially effective avenue to enhance teaching and learning of research skills on campuses. She will draw her pedagogical research stance from the experiences of undertaking: 1) a blended learning project involving two different 2nd year undergraduate foundational courses in the Faculty of Human Ecology, and 2) a pedagogical research project for a 4th year research seminar course in the Department of Human Nutritional Sciences. Qualitative and quantitative methods are used to explore student learning in both projects. The blended learning project was restricted to research paper assignment aspects in the courses. In contrast, the second project will look at the entire course and its effectiveness in facilitating student learning and engagement in research. The author concludes that librarians can find new ways of contributing to enhancing student learning and engagement in research by capitalizing on their involvement in SoLT to advance student learning, the common interest of both teaching faculty and librarians, rather than keeping their information literacy educational efforts in "the library silo. "

Keywords: Higher Education, Librarian-Faculty Collaboration, Pedagogical Research, Scholarship of Teaching & Learning, Information Literacy, Student Learning

1. Introduction

The Scholarship of Teaching and Learning (SoTL) is an on-going international movement that is being fostered and facilitated by the teaching development units of many universities, national and international conferences, and dedicated journals. Although there are many different interpretations of SoTL, the notion of SoTL originated from Earnest Boyer's seminal work, *Scholarship reconsidered: priorities of the professoriate* (1990). Since then, the new vision

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of scholarship has caught the imagination of many university instructors and professors. Boyer's vision of undergraduate education, which is closely connected to his holistic view of research-intensive universities, was subsequently articulated in the influential report, *Reinventing undergraduate education: a blueprint for America's research universities* (The Boyer Commission, 1998). In essence, Boyer wanted to transform research-intensive universities, where he observed that academic tenure and promotion were primarily based on research and publications at the expense of teaching functions. Boyer instead envisioned the universities to be learning ecosystems or something similar to the notion of "communities of practice" (Lava & Wenger, 1991; Wenger, 2000). He argued that it is possible "to turn the prevailing undergraduate culture of receivers into a culture of inquirers, a culture in which faculty, graduate students, and undergraduates share an adventure of discovery" (The Boyer Commission, p. 16). Boyer's view of research-intensive universities underpins his broader view of scholarship in higher education, which covers four key pillars: discovery, integration, application/engagement, and teaching. He recognized that the scholarship of teaching brings together research, teaching and student learning. For example, Cruz (2014) succinctly summarizes her interpretation of SoTL: "to make teaching and learning an iterative process, one of constant inquiry, analysis, and change" (p.3). The Society for Teaching and Learning in Higher Education (Canada) provides a full contemporary definition of SoTL:

> The scholarship of teaching and learning in higher education is a form of inquiry or research that focuses on improving understandings of teaching and learning effectiveness in specific courses, disciplines, or institutions. Through processes of inquiry, critical reflection, and communication[,]faculty members answer questions about the impact of their own teaching on student learning. (Christensen Hughes, 2005, p.1, as cited by Vajoczki et al, 2011)

SoTL provides the inquiry orientation for teaching and learning in higher education not only for teaching faculty but also for librarians and other support professionals as their partners (Bradley, 2007). The author is in particular interested in SoTL as an effective alternative framework to the Information Literacy Competency Standards for Higher Education (ACRL, 2000) to situate information literacy instructions into specific disciplinary context. In this paper, the author presents her account of how she came to embrace SoTL to explore the support of undergraduate research skills development as a liaison librarian for one faculty at the University of Manitoba, Canada.

The author's first experience of engaging in SoTL was with a blended learning project for two foundational courses in the Faculty of Human Ecology. The

project was designed to facilitate student learning specifically in relation to required research paper assignments in these courses. Capitalizing on the lessons learned from the blended learning project, the author is currently undertaking another SoTL project, a pilot action research to reorganize and redesign the delivery of a 4th year Human Nutritional Sciences research workshop course, in close collaboration with teaching faculty. In all these projects, facilitation of information literacy was situated in the context of research processes that students need to undertake. The use of both quantitative and qualitative methods of investigation is common and indispensable in SoTL. For example, in the blended learning project, survey and interviews were conducted to shed light on student learning experiences and a case study was developed to describe different circumstances of two different foundational courses.

2. Blended Learning Project

The idea of conducting a pilot project for blended learning, "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (Garrison & Kanuka, 2004, p.96), first emerged in the context of a long-established 2nd year undergraduate foundational course in the Faculty of Human Ecology. The foundational course was designated as a writing intensive course with a half of the total course grade attributed to two research paper assignments in the course. It was being offered twice every year, one in a summer session and another in a regular term session in the fall. The course historically provided a fertile learning environment for information literacy, and an in-class, well-tailored library instructional session had been customarily provided in the support of students working on the research paper assignments.

The author had developed some insight over the years about an essential difficulty: many undergraduate students find it difficult to ascertain the purpose or the nature of the academic tasks that are assigned to them in research papers, leaving students unprepared to search and identify relevant sources. In case of the long-established 2nd year foundational course, although instructors rely on assignment sheets or handouts to describe required research paper assignments, and the author provided an in-class library session, these were not enough by themselves to guide students to understand the how and why of the tasks (Hadwin, 2006 & Higgis, 2006). The course was the right candidate to explore the use of blended learning designed around research paper assignments in order to support student learning. With this intention, the author invited the Faculty of Human Ecology and a writing instructor from Academic Learning Centre to jointly apply for an internal grant program, the 2011 Summer Session Innovation Fund from the university's Extended Education.

The original idea was to design and develop a blended learning model as a pilot project for the 2011 summer session, and to subsequently adapt it to the regular fall semester offering with a large class size. The pilot project was going to explore the effectiveness of blended learning to better facilitate student learning

about the processes of academic research. However, the course for which we developed the pilot project was unexpectedly replaced by a brand new foundational course with different content coverage. The first offering of the new course was set to begin in the 2012 winter regular semester. Despite the change, the author and the writing instructor continued with the blended learning project with the brand new course, again inviting the Faculty, with the support of a "Teaching & Learning with Technology" grant from the University of Teaching Services. Subsequently after the completion of the project in 2012, a case study of the blended learning project was developed drawing primarily from the first research paper assignment in respective foundational courses and reflecting different course circumstances (Yoshida, 2014).

2.1. Two Different Courses and Blended Learning

Table I summarizes the different course circumstances of the two foundational courses.

Table I

	2011 Summer Course	**2012 Winter Course**
Class size	11 students	114 students
Content coverage	History of Human Ecology and professional identity in the fields.	Research methods: quantitative, qualitative, and mixed methods.
Course duration	6 ½ weeks	13 weeks
Course Teaching Experience	Taught by a sessional instructor who had taught the course in the previous fall semester.	Brand new course with a new sessional instructor to teach it.
Research Paper Assignment	Research the definition of Human Ecology and reflect and develop one's own definition.	Research the definition of "the determinants of health" and explain one's own definition by comparing and contrasting different definitions.

The general blended learning structure was developed with the use of two online tools for both courses: 1) Springshare's LibGuides platform to develop an online course guide; and 2) the discussion module of the University's Learning Management System (LMS), used as an online interactive space. The online course guide was used to organize student learning activities by providing instructions, examples, and references such as "How to Formulate A Thesis Statement," "Writing Tips," "How to Search Journal Articles," and "APA Style Guide," and links to course readings. The guide also seamlessly linked to the

LMS where students posted their draft work such as a mind map, a thesis statement, an outline, and feedback to their peers.

2.2. Blended Learning Activities and Delivery

2.2.1. 2011 Summer Course

Specific blended learning activities in the 2011 summer course included such interactions as: interviewing of a peer in class; posting a paragraph of the peer's relationship to Human Ecology; posting a draft mind mapping; posting an outline of the paper; and providing feedback to peers. The instructor of the course, and in some cases the author and the writing instructor, guided these activities in the class, and students were referred to the online course guide for further assistance.

The author provided a library session in class to demonstrate how to effectively browse and select potential sources for the papers followed by hands-on practice. By the time of the library session, previous blended learning activities and class discussions had well prepared students to locate relevant sources for their paper topics. Consequently, when the author demonstrated during her session how to formulate a search strategy and effectively browse and select relevant sources in a scholarly database, she observed that students were making appropriate connections to the searching tasks, and finding useful sources during the subsequent hands-on session. It was noted by the author that each student seemed to have had a unique approach to the tasks, each retrieving different sources that were found to be relevant. This also reflected diverse connections to Human Ecology among the students. The author found this to be a success of the blended learning support. The assigned paper was indeed intended to be a reflective paper to draw one's connection to the chosen field in Human Ecology. This was quite a contrast to the author's past experience of seeing many students looking for some textbook-like definition in the literature having interpreted literally the phrase "the definition of Human Ecology," that was used in the assignment sheet to describe the purpose of the paper.

Managing and running of the blended learning project in the 2011 summer course proceeded very smoothly. This is perhaps attributable to a number of factors: 1) the long-established foundational course was already designed to guide students by breaking down research and writing processes into a number of steps, such as mind mapping, drafting an outline, and developing an annotated bibliography; 2) everyone involved in the blended learning project was familiar with the course and its coverage; and 3) the class size was small with 11 students. When the course instructor was officially hired two months prior to the start of the 2011 summer session, the author, writing instructor and course instructor were able to hold five planning sessions. We had a couple of more meetings during the course to coordinate course activities.

2.2.2. 2012 Winter Course

For the 2012 winter course, the blended learning aspects included such activities as: a class-wide brain storming session using Twitter; posting an initial

understanding of "the determinants of health" as a paragraph and receiving feedback from peers; submitting a draft thesis statement with an outline to Online Writing Tutor for feedback; and, after submitting the paper, posting the introduction section and giving feedback to peers. The author provided an in-class demonstration of searching and accessing the literature related to "the determinants of health," followed by a question-and-answer period. The writing instructor had a session on thesis statements and the use of outlines to develop research papers. She also demonstrated how to use Online Writing Tutor.

In contrast to the 2011 summer course, managing and running of the blended learning activities for the 2012 winter course was rather challenging. There were three major lessons learned from the 2012 winter term course for properly integrating the blended learning support into a course.

The first lesson was the importance of properly aligning instructional and learning activities to support student learning (Biggs, 1996; Biggs & Tang, 2011). In the 2012 winter course, we experienced some misalignments in the blended learning delivery. For example, the Twitter session was designed to brainstorm meanings of "health" among students and to help them subsequently break into the discussion of "the determinants of health." It was originally designed to encourage students to reflect on the concept they just learned by posting their own perspective in a paragraph as the next step. The timing of the posting exercise unfortunately was not properly aligned with classroom lectures and activities that were not part of the blended learning support. Because the introduction about the notion of "the determinants of health" was not provided in time for students to formulate their own thinking before the posting exercise was due, confusion was created.

The second lesson learned was the importance of articulating the academic tasks that the research paper assignment asks students to accomplish (Butler & Cartier, 2004). For the 2011 summer course, students studied the history of Human Ecology, and the course content was closely tied to the research paper assignment. The paper assignment encouraged students to articulate and form their own professional identity or career aspiration in the fields. On the other hand, the course content for the 2012 winter course was research methods and the topic assigned for the paper was the concept of "the determinants of health," which can be taught as a separate course of its own. The connection of the overall course content to the assigned research paper was not entirely obvious and articulation of the connection would have been very helpful in integrating the blended learning support into the course. Most importantly, situating the research paper assignment properly in relation to the course content would have helped us further articulate the academic tasks that students were asked to carry out in the paper and thereby helped us design the learning activities that encourage students' reflection on the tasks.

The third lesson learned was that integrating the blended learning support in the course might not be necessarily the purview of sessional instructors. The sessional instructors are often not given leeway to deviate from the course syllabus. The 2012 winter course was a brand new course and the new instructor undoubtedly required ample time to prepare for her lectures. We did manage to hold two brief planning meetings with the course instructor, but these mainly addressed scheduling and administrative matters of the course. Integrating blended learning into the course requires some adjustment or reorganization to the rest of the course to ensure all the teaching and learning activities are aligned. There was unfortunately no time to ensure how all the activities designed were connected to the facilitation of student learning.

2.3. Survey, Interviews and Focus Groups

Semi-structured interviews and a survey were conducted for each course to gather student-learning experiences. For the 2011 summer course, a paper survey was distributed and collected during the last class of the course, while for the 2012 winter course a link to an online survey using SurveyMonkey was made available on the online course guide during the last 10 days of the course. In addition, we recruited student volunteers to participate in the interviews. In both courses, in order to ensure enough student participation in the survey and interviews, a $25 gift card honorarium was provided for those students who participated in both. For the purpose of comparing any differences in student learning experiences, two focus groups were conducted with a total of 7 students who had taken the same foundational course without the blended learning support within the previous 4 years. Table II summarizes the percentage of the students who responded to the survey, the number of students who participated in the interviews, and their attending year for respective courses.

Table II
Methods Used to Gather Student Learning Experiences

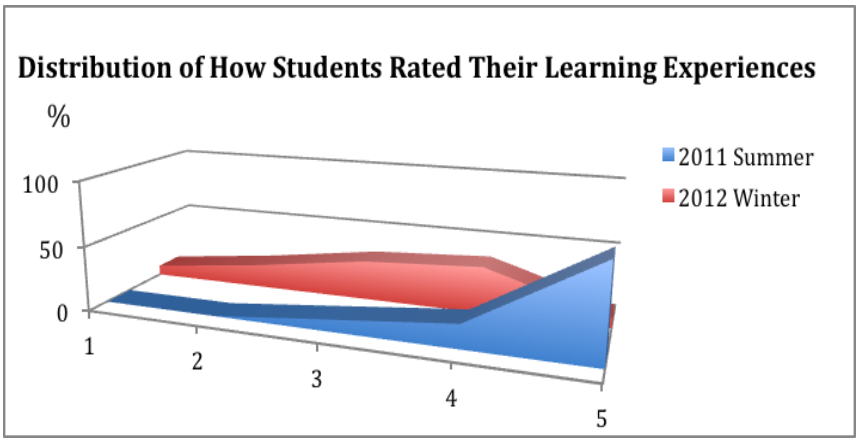
Course	Class Survey No. of Students (% of Response)	Interviews	Focus Groups
2011 Summer	11 (100%)	7 students*	7 students
2012 Winter	42 (36.8%)	14 students**	n/a

* 2nd year students. ** Five 2nd year, five 3rd year, and four 4th year students.

2.3.1. Survey Results

For the 2011 summer course, all 11 students who completed the course filled out the survey, while for the 2012 course, 42 students filled out the survey at a response rate of 36.8%. The surveys for respective courses were not identical due to the different nature of the paper assignments and the learning activities included in blended learning were not the same. The survey results, therefore,

are not comparable, except one question that was included in both surveys and asked students to rate their overall experience of the course on a scale of 1 to 5. The majority of students in the 2011 summer course (72.7%) rated their learning experience to be 5 while the majority of the students in the 2012 winter course rated theirs to be 3 (30.77%) or 4 (35.9%). The accompanying graph shows the different patterns for respective courses in terms of students' overall learning experiences. These different patterns may reflect the difference in the class size, the different course content, the diversity in students' attending year, or the success in integrating the blended learning support (Yoshida, 2014, p.353).



2.3.2. Interview Results

Detailed results of the interviews conducted for respective courses were already provided in a separate publication (Yoshida, p.354 -358). Findings from the interviews indicated that blended learning support designed around research paper assignments in both courses had positive impacts on students, providing them with extra opportunities to receive various levels of feedback from their peers in the 2011 summer course, and their peers and Online Writing Instructor in the 2012 winter term course. The interactions created by the blended learning structure in each course, in turn, encouraged students to reflect on their own styles as they were represented in posted outline or annotated bibliographies or introductory sections of their papers. In some cases, students learned effective styles they saw in their peers' work. Some students really enjoyed sharing aspects of the blended learning, but many felt somewhat intimidated to share their draft work, while almost everyone enjoyed viewing their peers' posts. The students in the 2011 summer session were better guided for the tasks associated with the research paper with the blended learning support; this helped them prepare better for searching and finding relevant sources from research and scholarly sources. While some planning and alignment issues existed in the 2012 winter term session, the interviews of the students indicated that they actively looked for cues and clues to what was being expected in their paper,

and some activities in the blended learning support helped students assess their work and approach to developing the paper.

2.3.3. Focus Groups

The majority of the students who took the 2011 summer course had positive learning experiences with the blended learning support and the course in general. This was a sharp contrast to some of the negative experiences expressed by half of the students who took the same course without the blended learning support and participated in the focus groups (n=7). They expressed some resentment, feeling they were overly penalized by some APA technical errors they made in the papers. Those who did not appreciate the assignments expressed that they did not see any intellectual benefits associated with the assignment. One of the positive remarks highlighted by the students from the 2011 summer course, in contrast, was that they appreciated the importance of APA style in professional and research writings. In general, the students who took the 2011 summer course appreciated the course and blended learning activities.

2.3.4. Conclusion from the Blended Learning Project

Designing blended learning around undergraduate research paper assignments has a great potential for developing the learning environment that facilitates student engagement in research processes. In the 2011 summer course, the blended learning support helped students connect various assignments associated with research processes as part and parcel of accomplishing a research paper, instead of viewing them as disconnected separate activities. Similarly, the students in the 2011 summer course more likely saw APA style as an important aspect of learning how to communicate their research results. Integrating blended learning into a specific course, however, requires a fair amount of planning, some experimentation, and learning from students' experiences. Most importantly, planning for blended learning support around research paper assignments requires a commitment and buy-in from the course instructors. This is an important factor for succeeding in making a course an effective learning environment by integrating blended learning. In reality, many undergraduate courses are often taught by sessional instructors—such was the case for the blended learning project—and it may not be feasible to fully exercise the SoTL approach.

3. Action Research – 4th Year Research Workshop Course

The author is currently undertaking another pedagogical research in collaboration with teaching faculty. Capitalizing on what she learned from the blended learning project in 2011 and 2012, she is now co-developing an action research framework for a required 4th year research workshop course for completing a degree in Human Nutritional Sciences. Two sections of the course are being offered in the fall semester, and another section in the winter semester. Unlike the earlier courses that were taught by sessional instructors, three different tenure-track professors normally teach the course. This will allow

some exploration to redesign or reorganize the course delivery if the professors choose to do so, while keeping the basic administrative framework of the course. Another advantage is that there is no content coverage: the course exclusively devotes its teaching and learning to conducting a self-directed

communicate and apply understandings and processes ethically" (Willison, 2014, p.8). These faucets are described in terms of 5 level of student autonomy, level 1 being Prescribed Research and level 5 being Open Research. In a close look, the 6 faucets identified by the RSD framework are surprisingly correspond to the standards developed in the Information Literacy Competency Standards for Higher Education (ACRL, 2000). The RSD framework provides common language for the author and the course instructor to collaborate and to reframe the course in line with the facilitation of student learning.

As a part of the pilot project, the author substantially rewrote the library assignment, emphasizing iterative processes of searching and browsing key databases that guide formulating tentative research questions and developing draft outlines for the papers. At the beginning of the course, the author offered a three-hour library session when students began to frame their research questions. Later in the course, she provided a brief demonstration of another database that was useful for students to locate relevant sources in the preparation for the group consumer presentations, coordinating the time of the demonstration with the professor's discussion about the group presentations. The library session at the beginning of the course included: a group activity to discuss familiar processes of locating relevant research paper sources; presentation of a guide for formulating tentative research questions and drafting outlines; demonstrations of how to search and navigate a key database, and of the use of RefWorks; and a hands-on session. The author and professor responded to individual questions and interacted with students during the hands-on session. The professor also developed rubrics that are suitable for the course to guide her teaching and student self-assessment, adopting the generic rubrics provided in the RSD framework. The professor shared the rubrics she developed for the course with the author for discussion. The pilot project includes administration of pre- and post-surveys to monitor changes in students' perceptions of conducting research at the beginning and at the end of the course, as well as reflective notes kept both by the author and the instructor.

The plan is to extend the pilot project to include two other instructors and all sections of the course, contingent upon available research funds. In the proposed action research, building upon the basic framework developed in the pilot project, the co-investigators will continue to coordinate reorganization and realignment of instructional and learning activities in consultation with two other instructors using the RSD framework as a guiding framework. In addition to pre- and post-questionnaires, interviews by third-party interviewers will be conducted with student volunteers across the three sections of the course, as well as with the two other instructors to illuminate their teaching experiences.

4. Conclusions

By taking a SoTL approach to the information literacy skills development, librarians can work collaboratively with the teaching faculty to design and develop teaching and learning activities that help students understand and learn

to accomplish academic tasks in a specific disciplinary context. By engaging in SoTL, librarians can develop evidence-based practices in their approach to teaching and learning, and contribute to developing better learning environments in higher education.

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