

PROGRAM DESCRIPTION / DESCRIPTION DU PROGRAMME

Librarian Integration in an Undergraduate Nutrition Program: A Progressive Evolution

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Abstract: **Program objective:** Integration of a medical librarian into undergraduate nutrition Professional Practice class with an evidence based nutrition component. The objective of this integration is to increase the success rate of the PEN (Practice Evidence Nutrition) project. **Setting:** Undergraduate Nutrition Program. **Participants:** Third-year undergraduate nutrition students. **Program:** The librarian was invited to present PubMed in January 2011 to the Professional Practice class, which lead to repeat visits and more detailed instruction. What started as a one-shot presentation is now a highly integrated series of presentations and hands-on computer lab components that focus on the completion of a PEN project. **Main results:** Through constant review and modifications over the years, the librarian has been successfully integrated into the curriculum of not only the intended class, Professional Practice, but also into the Research Methods class. **Conclusion:** The librarian's knowledge of evidence-based medicine and the willingness of the professor to make use of the librarian's expertise resulted in a collaborative working relationship centred on student success. Such a high level of successful integration is possible through a good working relationship with the professor. A bonus of the integration into the class is more involvement within other areas the nutrition curriculum and with the other faculty members of the nutrition program.

Introduction

Librarians are finding new ways every day to add value to their institutions. A well-known value-added service is the embedded or integrated librarian within faculties and classrooms [1–12]. To facilitate becoming more integrated, librarians are expanding their knowledge to become more valuable to the faculties that they serve [5, 7, 13–16]. In health sciences, a key knowledge base within which librarians are becoming experts is evidence-based practice (EBP) [7, 13, 17–20].

EBP has become common throughout many health disciplines, including nutrition and dietetics. Competency standards written at the association level have been evolving to include EBP, which has a direct impact on undergraduate curriculum development. One of these competency documents was published via the Dietitians of Canada in April 2013 by the Partnership for Dietetic Education and Practice (supported by Human Resources and Skills Development Canada). One of the main competencies is to “participate in practice-based research” which includes: demonstration of research and evaluation knowledge, ability to identify research questions, ability to consider methods and ethical aspects of research, ability to critically appraise and interpret literature, and ability to summarize and effectively communicate research [21]. This competency falls under the larger “Research and

Evaluation” topic, which also includes being able to perform literature searches and use “technology to seek and manage information” [21]. To assist in developing and complementing these competencies, the Dietitians of Canada developed an online global resource called PEN (Practice Evidence Nutrition) (<http://www.pennutrition.com>) that is used by other developed countries such as Britain and Australia. PEN is a database of “knowledge pathways”. A knowledge pathway (KP) is “designed in a question and answer format, [and] represents a collection of questions, evidence-based answers, references, tools, resources, and evidence and practice guidance summaries, background information and other related materials on a particular topic” [22]. Each knowledge pathway is written to answer a specific clinical question. The pathways are carefully structured, researched, appraised and evaluated. There are various contributors that submit KPs to PEN, including experts in the field and undergraduate students in nutrition programs (<http://www.pennutrition.com/contributors.aspx>).

Literature review

Though there are very few articles written concerning librarian involvement in undergraduate nutrition faculties, there is a lot of literature on integrated/embedded librarianship [1, 2, 7, 9–13, 23–31]. Of two articles that do specifically discuss nutrition faculties, only one was specifically

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about librarians in the classroom [32], whereas the other was an assessment of information-seeking patterns and needs of faculty [33]. Shpilko [33] shed light on the type of resources used by nutrition faculty, which is important to consider when evaluating which resources should be taught in the classroom and to understand the faculty's use of information is important as they are ones who often teach students their research habits. However, it is not as relevant as Smith and Penumetcha [32] for the purpose of this program description.

Smith and Penumetcha [32] focused on the integration of a librarian in a nutrition undergraduate research methods class. Prior to this pilot study, the librarian was invited as a guest speaker. This type of "one shot" instruction was "often not enough exposure to the resources and skills necessary to perform a quality literature search" (p. e70). In the research methods course, the librarian covered three sessions in a computer lab and was also added to the BlackBoard online learning management system where she could interact with the students outside the classroom. The sessions covered general search tips, how to access resources such as specific databases (CINAHL, Pubmed, and Cochrane Library) and web resources, and the sessions allowed for hands-on search activities in a computer lab. Overall, the "students found the librarian's involvement with the course helpful" (p. e74). The students also "felt they gained skills from the librarian that they will need to pursue their education and career goals" (p. e70) [32]. Smith and Penumetcha [32] also highlighted the importance of instructor-librarian collaboration and communication as they "should strive to mutually recognize and respect each other's area of expertise" (p. e74).

This program description is similar to Smith and Penumetcha's [32] article but will delve into the longitudinal development of the librarian's integration into the curriculum at a small, undergraduate nutrition school.

Background and setting

Université de Moncton is a small Acadian University situated in a mid-sized urban centre on the east coast of Canada. The Moncton campus of Université de Moncton has more than 4000 full-time students and 600 part-time students. There are over nine faculties and five schools, with approximately 18 programs offered in arts, humanities, pure and applied sciences, and social sciences. The School of Food Sciences, Nutrition, and Family Studies (L'École des sciences des aliments, de nutrition et d'études familiales (ÉSANÉF)) is one of the four schools that make up the Faculty of Health Sciences and Community Services (Faculté des sciences de la santé et des services communautaires). The ÉSANÉF offers two bachelor's programs (nutrition and family studies) and a master's of sciences in nutrition-food sciences. The bachelor of nutrition has research components within specific courses (Professional Practice, Food Security, and Research Methods).

The Champlain Library (Bibliothèque Champlain) has seven liaison librarians who serve the campus. Each librarian is responsible for several disciplines. The disciplines are grouped within the faculties so there are

sometimes two librarians who serve a single faculty. Two librarians are responsible for the Faculty of Health Sciences and Community Services. One librarian handles nursing and psychology (in addition to sciences faculty), whereas the other is responsible for ÉSANÉF and the School of Kinesiology and Recreation Studies (École de kinésiologie et de loisirs (ÉKL)). The second librarian, known as the medical librarian, is also the librarian for the satellite medical education program on the Moncton campus. The medical librarian officially became the subject librarian for ÉSANÉF and ÉKL in September 2012. Professors often invite librarians to be guest speakers in courses but there is a growing trend of librarians being more integrated into courses (i.e., more time in the classroom or computer lab, development and assessment of assignments, etc). One example of integrated librarian-ship is in the Professional Practice II (PPII) course to assist the students in completing their PEN KP project.

PPII course

The PPII course primarily consists of third-year students who are getting ready to finish their studies and start their practicums and clinical rotations. The PPII course is taken after the Research Methods course. One of the major requirements to complete PPII is to submit a KP to PEN, which is reviewed by editors at PEN and, upon successful evaluation, added to the PEN database.

The requirements to submit a KP are outlined in the PEN Writer's Guide (available with a subscription to PEN). The guide follows the standard EBP workflow: assess, ask, acquire, appraise, and apply. They also make use of the PICO (Patient, Intervention, Comparison, Outcome) method. The Guide details the process to develop a KP along with resource suggestions and templates. The types of sources suggested for background questions are government websites, association websites, and well-known and vetted health information websites (i.e., Mayo Clinic). For foreground questions, the Guide suggests evidence-based websites such as Evidence Updates, PubMed, Trip Database, and Clinical Practice Guideline websites. The resources suggested are freely available to anyone to access. Therefore, many specific university subscription databases are not emphasized in the classroom presentations.

Program description

In winter 2011, the medical librarian promoted and taught a series of lunch-and-learn style workshops at the Champlain library. The workshops focused on basic and then advanced search strategies in PubMed. Shortly after the workshops, she was contacted by the professor responsible for the PPII class at ÉSANÉF to present PubMed in the PPII class (3 hours). Over the next few years, the librarian's involvement increased as the course evolved (Table 1). In the second year, the singular PubMed presentation reflected more of the PEN requirements followed by working sessions in the computer lab. In the third year, the presentation turned into a more comprehensive clinical research demonstration using a few different databases that the PEN writer's guide places emphasis

Table 1. Evolution of involvement in the classroom.

Year 1 (2010–2011)	Year 2 (2011–2012)	Year 3 (2012–2013)*	Year 4 (2013–2014)†	Year 5 (2014–2015)‡
February 2011: PubMed (PPII, 3 h)	January 2012: Search Strategies for PubMed and PEN (PPII, 3 h)	February 2013: Search Strategies for Clinical Research and Bibliographic Management (PPII, 3 h)	September 2013: Search Strategies for Clinical Research and Bibliographic Management (RM, 3 h)	September 2014:- Search Strategies for Clinical Research and Bibliographic Management (RM, 3 h)
	February 2012: Working session, Search strategy (PPII, 3 h)	February 2013: Working session, Analyzing search results (PPII, 3 h)	September 2013: Working session, Search strategy (RM, 3 h)	September 2014: Working session, Developing a research strategy (RM, 3 h)
	February 2012: Working session, article analysis (PPII, 3 h)		January 2014: Consultation, Feedback, and Practice (PPII)	October 2014: Working session, (RM, 3 h)
			January 2014: Analysis and critical appraisal (PPII, 1.5 h)	January 2015: Analysis and critical appraisal (PPII, 1.5 h) and Consultation, Feedback, and Practice (PPII, 1.5 h)
			February 2014: Consultation, Feedback, and Practice (PPII, 3 h)	

*Librarian was given a log-in code for PEN. Librarian became the official subject librarian for ÉSANÉF.

†Institutional PEN license obtained by the Champlain library.

‡Collaborated with the RM teaching assistant.

Note: RM, Research Methods Class; PPII, Professional Practice II Class.

on: PubMed, the Cochrane Library, and the Trip Database. Other databases such as Google Scholar and ScienceDirect are also mentioned. Because the PPII class is usually taken by students nearing the end of their training, the primary resources taught are ones that are accessible outside of the university environment.

During the same time period, the librarian had started to expand her knowledge base of EBP through an online course taken in Fall 2011 (EBM 6005: Evidence-Based Medicine and the Medical Librarian through Duke University) and a workshop attended in Summer 2012 (Supporting Clinical Care: An Institute in Evidence-Based Practice for Medical Librarians at Dartmouth College). This knowledge led to a discussion between the librarian and professor, and resulted in further integration, with the medical librarian teaching students how to appraise articles in addition to how to develop a search strategy, how to use particular resources, and citation management. To cover all the steps outlined in the PEN writer's guide, a lot of material was covered only briefly in the classroom, which resulted in a massive workload for the students who were also getting ready for clinical rotations and other practical experiences. To alleviate some of the workload and give more dedicated time to analyzing and preparing the KP in the PPII class, the PPII professor decided to pair up with the Research Methods (RM) professor. This partnership also helped to ensure continuity and avoid duplication of subjects being taught. With this modification, the librarian was added to the RM Fall 2013 syllabus. In 2014–2015, the medical librarian worked closely with the Teaching Assistant to develop a logical flow to the syllabus that was proposed by the RM professor. The initial searching instruction was moved from the PPII class to the RM class. The RM class is comprised of a mixture

of ÉSANÉF students, so some are in Family Studies, whereas most are in Nutrition (clinical); therefore, the librarian had to teach two search strategy methods: a general approach and a clinical research approach (to include PICO). In addition to the PEN KP project assigned in the PPII class, the RM class required students to complete a research proposal project. The simultaneous projects were a source of confusion to the students as they were not sure how to use the same search topic to complete the criteria of both projects. The teaching team planned to discuss how to address this confusion. (The professors usually meet in the summer to discuss the upcoming year. The librarian was not involved in this discussion as she began maternity leave as of May 2015.)

Outcomes

The librarian sporadically conducted surveys over the years to improve her teaching skills and to generate student feedback. Each time, the feedback indicated that the students found the librarian's integration to be beneficial (Table 2). A common comment was that the students wished to have received this kind of training before their last semester of their bachelor degree, before they go to do their clerkships and internships. Materials that were considered very useful were given more emphasis, whereas the less useful items were reworked or dropped entirely over the years. After the second year, the KP coordinator at PEN started to hear anecdotal evidence from the PEN editors that it was apparent which students had the help of the librarian as those assignments tended to be of higher quality. There has been discussion of doing a more formal evaluation in the future to better evaluate the impact of this level of integration on the quality of the KPs.

Table 2. Excerpt from the results of the 2012 survey*.

Benefits of the sessions	Totally disagree (%)	Disagree (%)	Agree (%)	Totally agree (%)	Total	
I increased my ability to search for articles	0 (0)	0 (0)	4 (31)	9 (69)	13	
I increased my knowledge of how to search for articles	0 (0)	0 (0)	4 (31)	9 (69)	13	
I increased my knowledge of how to develop a search strategy using PICO	0 (0)	1 (8)	4 (31)	8 (62)	13	
My overall evaluation is. . .						
	Totally disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Totally agree (%)	Total
The exercises and examples helped me understand the concepts taught in the classroom	0 (0)	0 (0)	0 (0)	4 (31)	9 (69)	13
The visual presentation positively affected learning the materials	0 (0)	1 (8)	0 (0)	5 (38)	7 (54)	13
The librarian's explanations were clear	0 (0)	2 (15)	0 (0)	7 (54)	4 (31)	13
The librarian demonstrated expertise of the concepts	0 (0)	0 (0)	0 (0)	6 (46)	7 (54)	13

*Translated from French to English from original survey.

Note: Response rate of 65%.

The librarian also made herself available to meet outside of the classroom to work with the project groups. Over the years, this service has been promoted and used with increased frequency. Students also consult with the librarian on projects outside of the RM and PPII classes. This increase in reference utilization was an additional benefit of becoming more integrated in the PPII class.

In response to the comment by the students to learn some of this material earlier on in the nutrition curriculum, the librarian has made tremendous outreach efforts to the rest of ÉSANÉF. Every time she goes to the faculty, she stops by every office with her business card and notebook in hand to talk with the professors on site. The librarian often leaves with a better understanding of who teaches which courses, research interests, and sometimes even a booked appointment for a one-on-one training session with a professor. The librarian is now invited to first-year orientation classes and others throughout the nutrition curriculum (Table 3). Research assistants and graduate students also contact her on a regular basis to assist with their research endeavours.

Discussion

The development of the PPII course has been a long and rewarding process. The students are grateful for the help and expertise of the librarian along the way. The objective of increasing the success rate of the PEN KP projects has been met, and the PEN editors have commented on the superior quality of the projects since the integration of the librarian. Much like in Smith and Penumetcha's article [32], the success of the course would not be possible without an eager librarian, who engages in continual professional development and a solid working relationship with a professor, who encourages her students to take advantage of the library resources and the librarian's expertise in EBP. Open communication, regular meetings, and a common goal between the professor and the librarian are integral. This integration of the librarian

Table 3. Training and reference statistics.

ÉSANÉF	2012–2013	2013–2014	2014–2015
Class presentation sessions	4	6	12
Individual consultation sessions	1	16	21
Reference questions	4	5	27

into the research aspects of the nutrition curriculum is an effective way for students to learn competencies from which they will benefit throughout their careers.

Conclusion

This program description offers an example of how a singular lunch-and-learn presentation can lead to a librarian becoming fully integrated into a course and more involved in the whole curriculum. By fostering a positive reputation with a single professor, more collaborative opportunities within a faculty can grow exponentially. This growth takes time, sometimes years, as shown here. So, be patient, persevere, reap the rewards, and then tell your story.

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