



## Using an interprofessional flipped classroom educational strategy for developing evidence-based practice knowledge and skills



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### ABSTRACT

Evidence-based practice (EBP) is the standard approach used by healthcare practitioners to provide high quality, patient-centered healthcare. Given that all health professions students require education in both EBP and interprofessional collaboration, we used the advantages of a flipped classroom instructional strategy to provide an interprofessional EBP instruction program. Health professions students who had a clear understanding of their professional roles and had engaged in some clinical experience participated in this pilot program. The program consisted of three online learning modules (3.5 h) and one in-person faculty facilitated interprofessional case-based EBP learning activity (2 h). This program was designed with the following objectives (and assessments): develop students' foundational EBP knowledge and skills (module quizzes); increase students' understanding of health professionals' roles and responsibilities (module quiz); and improve students' attitudes toward interprofessional teamwork and communication (Readiness for Interprofessional Learning Scale). Program feasibility was also assessed. Student evaluations of the program indicated they learned skills they felt contributed to their successful participation in the in-person activity. Additionally, students reported a better understanding of the benefits and challenges of working in interprofessional teams. Students preferred the flipped classroom approach to a more traditional approach and favored learning in an interprofessional group. The major impact of this program is the potential for health professions students to gain foundational EBP knowledge and skills and experience in interprofessional teams by transitioning uni-professional, traditional EBP instruction to a flipped classroom educational strategy with students from multiple health professions programs.

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### 1. Format

This pilot program was a partnership between two higher education institutions, University at Buffalo, the State University of New York and Buffalo State, the State University of New York. Both institutions partnered together to ensure students were exposed to a broad representation of health professions students beyond that available at each individual institution. Using a flipped classroom approach, online learning modules for evidence-based practice (EBP) knowledge and skills and interprofessional roles and

responsibilities were hosted on each institution's learning management system and were accessed by participating health professions students one week prior to their involvement in a small group, in-person, EBP activity. The in-person activity required students to search for, appraise, and apply evidence to support the development of an interprofessional plan of care for a fictitious patient who experienced many health and social issues.

### 2. Target audience

Health professions students who were at approximately equivalent stages of their program participated. We targeted our student learners to be those that had a clear understanding of their professional roles and responsibilities, as determined by the project

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faculty from the participating programs, and had engaged in some clinical experience. Ensuring students are at similar stages of their professional preparation facilitates effective experiences in which students participate equally.<sup>1,2</sup> Targeted health professions programs included dental medicine, dietetics, medicine, occupational therapy, nursing, pharmacy, physical therapy, social work, and speech language pathology.

### 3. Objectives

EBP<sup>3</sup> has become the standard approach used by healthcare practitioners to provide high quality, patient-centered healthcare and is a common curricular component of many health professions education programs. Health professions students often receive their EBP instruction within their professional program from health sciences librarians, who are experts in this content area.<sup>4</sup> Despite the fact that most health professions programs have accreditation criteria requiring education in both EBP and interprofessional collaboration,<sup>5–8</sup> a recent systematic review of EBP education found that only 15% of cited studies involved students from more than one health professions program.<sup>4</sup> Therefore, we developed the current program to use the advantages of a flipped classroom instructional strategy to provide health sciences librarian-developed EBP instruction to an interprofessional group of students.

The overall objective of this program was to develop and implement an innovative, interprofessional EBP instruction program. The specific objectives were to 1) educate students in foundational EBP knowledge and skills (develop answerable clinical questions, conduct a literature search, appraise the literature identified, and apply findings from the literature) using online modules; 2) provide students an opportunity to use their EBP knowledge and skills to search for evidence to support the development of an interprofessional plan of care for a fictitious patient; 3) provide students with an opportunity to learn about and discuss the roles and responsibilities of different health professionals; 4) promote interprofessional teamwork and communication among students from different health professions programs; and 5) determine the feasibility of using a flipped classroom educational strategy to teach EBP knowledge and skills to an interprofessional group of students.

### 4. Activity description

#### 4.1. Program enrollment

Following receipt of Institutional Review Board approval from both participating institutions, students were invited to participate by announcements in their classes. All participants provided written consent.

#### 4.2. Program design

Flipped classroom instructional design is being increasingly used as an education strategy in health professions education programs.<sup>9–11</sup> This instructional strategy is also being used by health sciences librarians.<sup>12,13</sup> Flipped classroom instruction “is a blended-learning method in which a self-directed learning phase” (often online learning modules) “precedes the classroom-instruction phase. During the online phase, factual knowledge is imparted that serves as a basis for the classroom phase.”<sup>9</sup> The classroom phase is used to engage in active learning activities to apply the previously gained knowledge during an in-person session with the instructor.<sup>9</sup> Flipped classroom approaches to education are associated with increases in communication, teamwork, problem solving, and critical analysis skills.<sup>9</sup> Traditional lecture-based

educational strategies for information literacy are associated with weak skill development and limited retention.<sup>14</sup> As a result, EBP instruction may be more effective using a flipped classroom approach.

#### 4.3. EBP online learning module content, development, and implementation

Two EBP online learning modules were developed by two librarians and an instructional designer. The first module introduced students to the concepts of evidence-based practice while the second module provided PubMed instruction. Total time to complete both modules and quiz was approximately 2 h. Completion of these modules ensured that all participants possessed equivalent EBP knowledge and skills needed for the in-person interprofessional activity.

#### 4.4. Roles and responsibilities online learning module

In addition to the EBP modules, students accessed an IPE *Roles and Responsibilities* module. This module described the scope of practice, work environments, academic preparation, clinical practice experiences, and state licensure requirements for each of the participating health professions. Content included author developed text as well as videos produced by each profession's professional association. Completion of this module and quiz required approximately 1.5 h.

#### 4.5. In-person interprofessional EBP activity

Following completion of the three modules, students engaged in a faculty facilitated in-person interprofessional small group learning activity that took place in the active learning center of the Buffalo State library. The active learning center has a central teaching station and can accommodate 36 students arranged in six pods that each seat six individuals. Each seat has a laptop computer with internet capability and a controller to allow students to project their laptop monitor to the pod's large monitor so all students in the pod can simultaneously preview the content. In addition, anyone from any pod can share their screen with the entire room on the central screen at the teaching station. To accommodate all students, two sessions were held.

Upon arrival to the active learning center, students engaged in 30 min of discussion with their team members. Students were asked to discuss the academic, clinical, and licensure requirements of their professional program and the reasons why they chose their program. This discussion allowed students to become familiar with each other prior to engaging in the interprofessional EBP learning activity.

Following the introductory discussion, students were provided with a fictitious case, developed by one faculty member and vetted by faculty members of all participating health professions programs. The case included clinical issues relevant to all participating professions. Students were asked to identify issues with the patient's current management from their professional perspective, search the literature using their EBP knowledge and skills to identify strong evidence to support or change the current plan of care for the patient, and collaborate with their team to develop a comprehensive, interprofessional plan of care.

During this hour-long interprofessional EBP activity, librarians and faculty members floated through the active learning center to assist students as needed with EBP knowledge and skill questions or content questions.

Once teams had completed their plan of care, a librarian and a faculty member led a 30 min debriefing session. Each team shared

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