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Currents in Pharmacy Teaching and Learning 8 (2016) 492–500

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Teaching and Learning Matters

# Concept mapping, reflective writing, and patchwork text assessment in a first-year pharmaceutical care course

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## Abstract

**Background:** The aim of this work was to aid learner's understanding and application of the complexities of pharmaceutical care practice. Specifically, this initiative sought to design, implement, and evaluate student perceptions of and performance on a longitudinal sequence of concept mapping (CM), reflective writing (RW), and patchwork text (PT) activities in a first-year Foundations of Pharmaceutical Care (FPC) course.

**Educational activity:** To encourage examination of the complexities of pharmaceutical care practice, three iterations of combined CM and RW (or PT) occurred throughout the semester, along with peer sharing. The sequence was evaluated by examining student work and student documentation of peer sharing, as well as a survey. The sequence was completed by 163 (99.4%) students. Satisfactory ratings were achieved on final concept mapping assignments by 97% of participants and 80% of students agreed/strongly agreed that, through re-review of work they could see that their understanding of the topic had improved over time.

**Critical analysis:** The deliberate pairing, sequencing, and repeating of CM, RW, and critical appraisal (CA), provided instructors with a more thorough and precise understanding of student knowledge and the ability to monitor, acknowledge, and respond to student learning as it occurred over the course of a semester.

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**Keywords:** Concept mapping; Reflection; Assessment; Patchwork text

## Background

Ensuring the ability to provide patient care is a major focal point of Doctor of Pharmacy curricula. The Center for Advancement of Pharmacy Education (CAPE) 2013 Educational Outcomes set the expectation that “the graduate is able to provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities)” in outcome 2.1.<sup>1</sup>

This desired outcome was affirmed in Standard 2 of the Accreditation Council for Pharmacy Education's Standards 2016.<sup>2</sup>

The pharmaceutical care practice model creates a foundation for the pharmacist's contributions to the rational use of drugs in patient care.<sup>3</sup> As with any professional practice, the pharmaceutical care practice (PCP) includes three core components: the philosophy of practice, the patient care process, and the practice management system. Adopting the philosophy of pharmaceutical care practice is critical, as it acts as a compass and provides the practitioner guidance in prioritizing and decision-making in patient care. The patient care process includes assessment, care plan, and follow-up evaluation to ensure a patient's medications are properly indicated, effective, and safe, and the patient is able to take them as intended. Practice management systems include all

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the support required to provide pharmaceutical care. All three combine to form the professional practice of the pharmacist.

Medication therapy management (MTM) focuses on the patient care process component of PCP. A number of reports have discussed the development of MTM-related skills through core courses,<sup>4–7</sup> electives,<sup>8</sup> or early<sup>9</sup> or advanced<sup>10,11</sup> experiential education. However, these reports on MTM skill development do not include a clear and comprehensive approach to teaching the philosophy of practice and practice management systems. Teaching students all three components of pharmaceutical care practice, as opposed to only the patient care process, provides a more complete framework for development into a practitioner. The philosophy of practice and practice management systems are also needed to provide the foundation (i.e., values and responsibilities) and context for delivering MTM services.

Helping students to understand the complexities and interrelationships of the three components presents an instructional challenge. Historically, students have been able to describe each component separately as they have matriculated through the semester. In subsequent coursework students could apply the patient care process but struggled to articulate the philosophy of practice, the elements of a practice management system or explain the relationship between the three components. In order to aid deeper understanding of PCP, this initiative aimed to design, implement, and evaluate student perceptions of and performance on a longitudinal sequence of activities. This sequence was designed to help students draw connections between components of PCP, consider application of the model to future practice, and reflect on their own development into a pharmaceutical care practitioner. This article will review the design of these activities, as well as student performance and student perceptions of the activities.

## Educational activity

### *Design considerations*

Foundations of Pharmaceutical Care (FPC) is a required, 1.5-credit fall first-year pharmacy course. In this course, students work individually and in groups to learn about pharmaceutical care practice, focusing on the three major components of the practice: philosophy of practice, patient care process, and practice management system.<sup>3</sup> Various iterations of this course have existed for over 20 years. As the name suggests, the Foundations of Pharmaceutical Care course lays the foundation for professional practice and the pharmacy curriculum. A primary course goal is to provide the scaffolding and structure upon which future course content can be hung. The course meets for 90 minutes twice weekly, and the bulk of in-class activities are active learning (e.g., role play). Course content progresses from philosophy of practice to the patient care process to practice

management systems throughout the semester. Student performance is based on a philosophy of practice writing assignment (8%), four patient care process assessment activities (48%), a midterm examination (20%), and an assignment requiring students to teach pharmaceutical care practice to a non-pharmacist clinician (16%). The longitudinal sequence of activities described in this article accounts for 8% of the total course grade.

When first introduced, PCP can be difficult for students to understand, particularly if their experience in pharmacy has not allowed them to see this model of practice in action. For example, if students have experience working as a pharmacy technician, they may have participated in dispensing functions more than comprehensive patient care. In the past, students have been successful in learning and applying the individual components of the patient care process. However, students have struggled with making practical connections between the philosophy of practice, the patient care process, and the practice management system. Students have also had difficulty envisioning this model's use outside of the controlled classroom environment.

To further enhance student learning, a combination of learning methods were employed with the goals of: (1) supporting learning of the PCP, (2) fostering critical thinking, particularly about the connections between concepts in the course, (3) encouraging reflection on learning, and its impact on future practice, and (4) aiding in the development of reflective practitioners.

Concept mapping (CM) was introduced to aid learners in creating the scaffolding/structure for current learning and future curricular content. Concept maps represent relationships between ideas through a hierarchical structure and connective terms (usually prepositional phrases) referred to as links and cross-links.<sup>12</sup> The meaning of any concept for the learner is represented by these linkages.<sup>13</sup> In discussing the implementation of the Accreditation Council for Pharmacy Education's 1997 standards, Brandt<sup>14</sup> identified CM as an example of effective teaching and learning strategies. CM has also been used to encourage connections between theory and practice,<sup>15</sup> which was one of our goals. Concept maps have been used in a pharmaceuticals course to explain the interrelationships of physicochemical properties, formulation factors, and excipient requirements of a specific dosage form.<sup>16</sup> Concept maps have also been used in a pharmacy communications course to demonstrate student understanding of the concepts taught and their interrelationships.<sup>17</sup> In a previous offering of a pharmaceutical care course, mind mapping (i.e., a representation of connected and related concepts emphasizing free-form, spontaneous thinking in order to find creative associations between ideas<sup>12</sup>) had been employed as a tool for this same purpose. Instructors described many mind map submissions as looking like “spaghetti” with no apparent order. In addition, the means by which the various concepts connected in students' minds was often unclear to instructors. Thus, the new CM activity was designed to encourage a graphic

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