

## RESEARCH

# A Characterization of Student Reflections in an Introductory Pharmacy Practice Experience Discussion Course

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**Objective.** To characterize weekly student reflections in an introductory pharmacy practice experience (IPPE) discussion course meeting concurrently with IPPE rotations in institutional pharmacy.

**Methods.** A qualitative analysis was conducted to identify themes within weekly reflective statements submitted by second year pharmacy students (P2) enrolled in an IPPE rotation and concurrent discussion course. Weekly reflections from the 2015-2016 offering of the course were reviewed by investigators to identify common themes via an iterative process. Subsequently, investigators coded each submission into one of the identified categories. Initial agreement between investigators was assessed using the Cohen kappa coefficient. Discrepancies between coding were resolved through discussion to reach consensus.

**Results.** A total of 402 reflection assignments were reviewed from 85 P2 students enrolled in the IPPE course. Ten themes were identified, with the most common themes being interprofessional teamwork, pharmacist and technician roles and responsibilities, and policies and procedures. Substantial initial agreement between investigators was found, with the most discrepancies arising within the themes of medication distribution and pharmacy administration/organizational structure.

**Conclusion.** Student reflections on IPPEs centered on 10 key topics, primarily related to distributive, legal, and regulatory functions of institutional pharmacy practice. Structuring an IPPE rotation longitudinally in an academic term, with a concurrent discussion course, builds a framework for regular student reflection.

**Keywords:** experiential education, introductory pharmacy practice experience, reflection

## INTRODUCTION

Kolb's experiential learning style theory suggests four stages that comprise experiential learning.<sup>1</sup> Reflection is a key component of the learning cycle, allowing an opportunity for "purposeful critical analysis of knowledge and experience, in order to achieve deeper meaning and understanding."<sup>1,2</sup> Reflection gives rise to new ideas, or modification of an existing idea, leading to testing of new hypotheses and drawing new conclusions. Reflection is highlighted in the Accreditation Council for Pharmacy Education (ACPE) 2016 Standards (4.1 Self-awareness – The graduate is able to examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth).<sup>3</sup> Clearly, the ability to reflect on experiences and consciously evaluate thoughts and choices in "real time" is a valuable skill to the competent

practitioner, as outlined in the Center for the Advancement of Pharmacy Education 2013 Educational Outcomes sample objectives 4.1.2 and 4.1.3.<sup>4</sup> Much scholarly effort has been directed toward quantifying and defining reflection within professional practice and education, especially in health sciences.<sup>5-8</sup> Tsingos and colleagues summarized the role of reflection in experiential learning theory and its implications in the pharmacy curriculum.<sup>9</sup> Their work suggests a framework of reflective practices that should be built into the pharmacy curriculum to allow "integration of the knowledge-based curriculum with the ambiguities of practice."<sup>9</sup>

The Introductory Pharmacy Practice Experience (IPPE) is an opportunity for student pharmacists to begin assimilating new knowledge in the context of pharmacy practice. Placement of IPPE within pharmacy curricula may offer opportunities for building the framework of reflective practices in experiential settings. The longitudinal approach, with IPPEs offered alongside didactic coursework during an academic term, allows for more immediate opportunity to incorporate recently acquired

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knowledge in rotation activities and a greater ability to reflect on experiences in light of that knowledge. IPPE programs are administered in diverse fashion across the United States. Galinski and colleagues found that 43% of IPPE programs are administered in a longitudinal fashion, whereas 26% of programs schedule IPPEs during winter or summer breaks.<sup>10</sup> This same study found that requiring two or three IPPEs was most common among programs. Devine and Darbishire found that the average number of hours required for community and institutional practice (the two focal points of IPPE within ACPE Standards) were 143 and 119, respectively.<sup>3,11</sup> They also found that 71% of respondents required written assignments within their IPPEs.<sup>3,11</sup>

The IPPE coursework at Wingate University School of Pharmacy (WUSOP) mirrors these commonalities well, occurring longitudinally within an academic term and incorporating a one-hour weekly discussion course. IPPEs at WUSOP take place in all three didactic years prior to APPEs. In the first year, students complete a 120-hour IPPE in community pharmacy (IPPE-1). In the second year, students complete a 56-hour IPPE in hospital pharmacy at small community or large academic medical centers (IPPE-2). The IPPE-1 and IPPE-2 experiences acquaint students with distributive, legal and regulatory functions. In the third professional year, students complete a total of 120 hours divided in two IPPEs, one in ambulatory care and one in acute care (IPPE-3). The IPPE-3 rotations introduce students to basic clinical skills and clinical process development.

To assist students in developing reflective skills, WUSOP incorporates weekly reflective assignments in the first- and second-year IPPE discussion courses. The reflections, entitled "I Didn't Know" or IDK assignments, are a primary tool used in class to facilitate discussion. The only directive for IDK is that the material must be relevant to the practice of pharmacy, and it be interesting to the student, and the rest of the class. A simple way to encompass the IDKs might be "What did you see? What did you not know about what you saw? What did you find out about what you saw after it occurred?" These "micro-reflections" are not particularly cumbersome for students to complete, and the lack of formal direction is to allow for an organic approach for them to explore what they found intriguing or lacked understanding of during a given rotation day. As may be expected, the lack of formal requirements of IDKs leads to a wide variety of topics covered throughout the semester. The researchers wished to characterize these student-reported weekly reflections during the IPPE-2 experiences and the themes drawn out from students' shared experiences.

## METHODS

The focus of this study is the IPPE-2 in an institutional setting, completed at one of 12 hospital sites in the P2 year. During the rotation block, students spent one day per week for seven weeks at their site, totaling 56 IPPE-2 rotation hours. They also participated in a weekly one-hour discussion course, which was divided into two components. The first 25 minutes of each class were spent discussing students' IDK submissions. Submissions were free text format, typically one to two sentences, but no requirements were placed regarding length of submission. The submissions counted toward an attendance and participation grade, which was 12% of the overall course grade. Students uploaded their submissions into the course management system during the first five minutes of class, and then the course instructor opened all submissions on the large classroom screens so students could read them. For the next 20 minutes, the course instructor called on students to elaborate on their reflection and provide more details or background about what they learned. Careful effort was made to call on each student several times throughout the discussion course and ensure a variety of topics were highlighted during the 20-minute discussion period. After a student shared his or her IDK with the class, the course instructor asked other students to share similarities or differences with what they had observed at their site. For example, if a student shared his or her experience working with a medication reconciliation technician in the emergency department, the course instructor would ask if other students had observed medication reconciliation performed at their site. And if so, where in the hospital it was performed, and by whom it was performed (eg, pharmacist, technician, nurse). This sharing of experiences allowed students to gain insights not only from the rotation site they had been assigned, but also by proxy from the 12 other hospital sites that host IPPE-2 rotation students. The remaining 25 minutes of each discussion class were topic-driven, with topics such as journal clubs, medication safety, pharmacist roles and services, regulatory bodies, pharmacy calculations, and interprofessional teamwork.

This study was designed as a qualitative, thematic analysis of student reflections submitted in weekly course assignments housed in the course management system. Reflective IDK submissions from students enrolled during the 2015-2016 academic year were included. Reflections were first reviewed by two researchers who independently identified themes across responses. Discrepancies between themes were resolved via an iterative review process to reach consensus, provide further clarification, and define coding rules. The researchers then

independently coded each student reflection to one of the identified themes. The percent agreement and Cohen kappa coefficient were calculated using Excel 2013 (Microsoft, Redmond, WA) to determine the level of agreement between researchers.<sup>12</sup> Investigators considered a kappa of 0.6 or greater indicative of substantial agreement, in accordance with Landis and Koch.<sup>13</sup> Subsequently, common coding for discrepancies was determined by consensus. This study was approved as exempt from full review by the Wingate University Research Review Board.

## RESULTS

During the 2015-2016 academic year, 85 students were enrolled in the IPPE-2 course. Sixty-four percent had no prior work or shadowing experience in a hospital pharmacy setting, 26% had shadowed a pharmacist in the hospital setting, and 9% had paid work experience in a hospital pharmacy setting.

A total of 402 IDK reflection assignments were submitted in the course management system during the 2015-2016 year. Researchers reviewed a sampling of the 402 submissions independently and came to consensus on 10 overall themes (Table 1). An additional “miscellaneous” category was added to house a few submissions that did not appropriately fit into one of the 10 identified themes but did not warrant creation of a specific theme. Following consensus on 10 themes, researchers categorized each submission independently. Initial agreement between researchers on categorization was 67.9% ( $\kappa=0.64$ ). Discrepancies between coding were resolved through discussion to reach consensus. The final results of categorization are listed in Table 1. The most common themes highlighted in IDK reflections were interprofessional teamwork (18.2%) and pharmacist and technician roles and responsibilities (13.9%). The areas in which researchers had the least amount of initial agreement in categorization were medication distribution and pharmacy administration/organizational structure (42.9% and 43.8% agreement, respectively).

## DISCUSSION

Categorization of IDK reflections yielded 10 themes. Often, the drug and disease state reflections were prompted by student observations in other departments of the hospital (eg, radiation/oncology, cardiac catheterization lab, transplant). Also, 92% of P2 students were concurrently enrolled in the cardiology pharmacotherapy module, and often submitted reflections related to cardiology content they had learned in the didactic setting and then experienced “live” in the pharmacy practice setting. This highlights a benefit of scheduling pharmacy practice experiences concurrently

with semester coursework – course content taught in the classroom setting has the potential to be applied in the clinical environment within the same week.

Pharmacy practice experiences and discussion courses are designed differently across pharmacy schools in the U.S.<sup>10,11</sup> The model at WUSOP, where students participate in IPPEs concurrently with a discussion course within an academic term, has provided a learning environment rich in reflection and shared insights across 12 hospital sites. The IDK assignment stimulates students to reflect on the full rotation day and describe something novel they have learned or observed. Discussions highlight comparisons and contrasts across sites, and also prompt students to explore topics and opportunities at their sites that they have learned from classmates.

A limitation of the study is the small number of researchers involved in identifying themes and categorizing the IDK reflections. While overall agreement on categorization was 67% ( $\kappa=0.64$ ), the methodology would have been strengthened by involving more than two researchers. The categories that had the least amount of agreement between researchers provided some challenges. The medication distribution category had many overlaps with the technology category. Technology such as tubing systems, automated dispensing cabinets, and medication carousels were often submitted with reflections that discussed medication distribution processes. This led to disagreement between researchers on how to code the reflection, as a choice was necessary during coding as to which components of a submission should be prioritized. Additionally, the category of pharmacy administration/organizational structure had many overlaps with the pharmacist and technician roles and responsibilities. To resolve these and other discrepancies, researchers met to discuss their perspectives and come to consensus. Thus, the final level of agreement between researchers was 100%. A second limitation is that overall learning on pharmacy practice experiences cannot be summarized by the IDK reflections or themes alone. Instead, the IDK reflections are a snapshot of what the students have found to be engaging or relevant to their understanding of hospital pharmacy practice. No guidelines were given by the course instructor; therefore, the submissions were completely student-driven. Generalities gathered from the IDK reflections about student learning on the introductory hospital pharmacy practice experience, subsequently, should account for this limitation.

## CONCLUSION

There are many benefits of providing a discussion course concurrently with students’ pharmacy practice

Table 1. Themes of “I Didn’t Know” Reflections

Theme	Examples	Initial Percent Agreement	Number of IDK Reflections (%) N=402
Disease State Information	Stages of kidney disease, wound care, myocardial infarction, heparin-induced thrombocytopenia, stroke, tetanus	62.1	29 (7.2)
Drug Information	Tysabri, vincristine, heparin, vancomycin, Nuedexta, Praxbind, niacin, Botox	84.3	52 (12.9)
Interprofessional Teamwork	Grand rounds, patient rounds, reviewing medications with nurse anesthetist, cardiopulmonary unit, cardiac catheterization laboratory, rehabilitation unit, radiation/ oncology, nurse assistant responsibility with medication administration	64.9	73 (18.2)
Inventory Control	Availability of medication after hours, drug shortages, expired medications, controlled substances, stocking crash carts, 340B program, formulary, drug use evaluations	65	17 (4.2)
IV Preparation/Aseptic Technique	Precautions with IV chemotherapy, vertical and horizontal flow hoods, cleanroom standards, garbing, media fill testing	63.3	25 (6.2)
Medication Distribution	Tubing systems, automated dispensing cabinets, unit dose packaging, cart fills	42.9	24 (6)
Miscellaneous	Student absence from rotation	68.8	13 (3.2)
Pharmacist and Technician Roles and Responsibilities	Renal dose adjustment, transitions of care, order entry and verification, specialties (transplant, critical care, cardiology, oncology), decentralized practice, antibiotic dosing, IV to oral dose conversions, medication reconciliation	70	56 (13.9)
Pharmacy Administration/Organizational Structure	Size of pharmacy staff, multiple pharmacy locations within a hospital system, pharmacists’ schedules, role of the director	43.8	15 (3.7)
Policies and Procedures	Do not use abbreviations, hospital emergency codes, clinical trial protocols, antimicrobial stewardship, tech-check-tech, sharps disposal, medication safety	76.9	52 (12.9)
Technology	Automated drug cabinets, refrigerator temperature monitors, journal and drug information access, medication carousel, unit dose packaging and bar coding, electronic health records, computerized physician order entry	68	46 (11.4)

experiences, including an opportunity for regular and timely reflection on rotation activities, shared learning across students and practice sites, and rich discussion on key topics, such as medication safety and pharmacist roles in the hospital setting. Longitudinal IPPE models within an academic term offer opportunities for building a reflective framework in the pharmacy curriculum, as described by Tsingos and colleagues.<sup>9</sup> This study described one approach to building a reflective framework in an IPPE

discussion course and identified 10 themes highlighted in weekly IDK reflection assignments.

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