

TEACHERS' TOPICS

Fostering Interdisciplinary Communication between Pharmacy and Nursing Students

Aleda M.H. Chen, PharmD, PhD,^a Mary E. Kiersma, PharmD, PhD,^b Carrie N. Keib, PhD, RN,^c Stephanie Cailor^a

^a Cedarville University School of Pharmacy, Cedarville, Ohio

^b Accreditation Council for Pharmacy Education, Chicago, Illinois

^c Cedarville University School of Nursing, Cedarville, Ohio

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Objective. To evaluate pharmacy and nursing student self-perceptions of interdisciplinary communication skills, faculty member perceptions of interdisciplinary communication skills, and changes in those skills after increasing the interdisciplinary education content.

Design. Two cohorts of pharmacy and nursing (bachelors of science in nursing, BSN) students in respective, semester-long research courses engaged in active learning on interdisciplinary communication, with the second cohort receiving additional content on the topic. At semester completion, students presented a research project at an interdisciplinary poster session.

Assessment. Self-, peer-, and faculty evaluations (4 items; 5-point Likert-type) assessing self-confidence and actual interdisciplinary communication skills were completed during the poster session. Overall, students responded they were “very confident” or “extremely confident” regarding the skills, with greater confidence reported by the second cohort. Faculty members agreed that students exhibited effective interdisciplinary communication skills, with stronger agreement for the second cohort.

Conclusion. Including interdisciplinary education and experiences in a curriculum increases students' interdisciplinary communication skills. Using multiple interdisciplinary experiences may result in greater increases in these skills.

Keywords: interdisciplinary, communication, pharmacy education, assessment, poster session

INTRODUCTION

A lack of communication among professionals is a problem in health care.¹⁻³ Each health care profession has defined its identity, values, scope of practice, and role in patient care.⁴ Discipline-specific socialization often can be subtly negative toward other professions, contributing to ineffective interdisciplinary communication.⁵ The negativity can be overcome through improved communication as it is the key to a successful multidisciplinary team.^{6,7} Effective interdisciplinary communication leads to improved employment satisfaction among health professionals, improved patient care, and reduced health care costs.⁸ Through effective interdisciplinary communication, resources can be more efficiently handled, which can improve patient care because of a reduction in duplication and service provision gaps.⁹

To improve interdisciplinary communication, inter-professional education should be implemented prior to entering the work force, as students often are unprepared to communicate and work with other health care professionals upon graduation.^{5,8} Interprofessional education is defined as, “educators and learners from two or more health professions and their foundational disciplines who jointly create and foster a collaborative learning environment. The goal of these efforts is to develop knowledge, skills and attitudes that result in interprofessional team behaviors and competence.”¹⁰ Because of the fast-paced and interruptive environment of health care, the better time to teach health care professionals how to build interprofessional relationships is while they are still students.¹¹ Students recognize that shared learning can enhance future relationships.¹² Previous incorporation of interprofessional education into curricula has proven effective, particularly interprofessional learning sessions.^{5,13,14} Simulations provide students with a safe environment to gain confidence in their skills. Students agree they are better able to work in an interdisciplinary

Corresponding Author: Aleda M.H. Chen, PharmD, PhD, Cedarville University, 251 N. Main St., Cedarville, OH 45314. Tel: 937-766-7454. Fax: 937-766-7410. E-mail: amchen@cedarville.edu

team based on such experiences.⁵ Moreover, student perceptions of interprofessional skills increased as a result of a session where students learned about different scopes of practice, and students reported that they gained confidence in their communication skills.¹⁴

Accrediting bodies also recognize the importance of interprofessional education. For example, the Accreditation Council for Pharmacy Education (ACPE) and the American Association of Colleges of Nursing (AACN) mandate that interdisciplinary communication be incorporated into the curriculum. According to ACPE, pharmacists should be able to “provide entry-level, patient-centered care in a variety of practice settings as a contributing member of an interprofessional team,” while AACN states that BSN nurses must “demonstrate appropriate team-building and collaborative strategies when working with interprofessional teams.”^{15,24} Integrating interdisciplinary communication into the didactic curriculum provides students with a safe environment to learn skills to build interprofessional relationships, and the more confident students feel in their communication abilities, the more likely they are to use them.^{11,16}

The Center for the Advancement of Pharmaceutical Education (CAPE) 2013 Educational Outcomes (3.4.3) state that students “should be able to communicate in a manner that values team-based decision making and shows respect for contributions from other areas of expertise.”¹⁷ Competency Domain 3 of the Interprofessional Education Collaborative (IPEC) emphasizes interdisciplinary communication as well.¹⁸ Recommendations from the literature consistently include opportunities for students to practice communicating information, whether it is through the Situation-Background-Assessment-Recommendation (SBAR) communication process¹⁹ or through teamwork.^{5,14,20} Based on this research, an interdisciplinary poster session was created to give pharmacy and nursing students in respective research courses the opportunity to practice communication skills outlined in the CAPE outcomes and to be able to “organize and communicate information with patients, families, and health care team members in a form that is understandable, avoiding discipline-specific terminology when possible” (IPEC CC2).¹⁸

Pharmacy students were in a Research Design and Methodology course during the first semester of their first professional year, which gave them the earliest possible introduction to interdisciplinary communication and opened later opportunities for curricular reinforcement. Moreover, students learned in the beginning of the didactic curriculum how to communicate evidence from the literature (eg, a rationale for a research study or the results from an evidence-based literature review) to an interdisciplinary audience.

Therefore, the primary objective of this study was to evaluate pharmacy and nursing student self-perceptions of interdisciplinary communication skills and faculty member perceptions of students’ actual interdisciplinary communication skills. After the first interdisciplinary poster session was incorporated, the interdisciplinary content was expanded to further meet the definition of interprofessional education and to strengthen student skills. Thus, a secondary objective was to examine changes in interdisciplinary communication skills after increasing interprofessional content during the second, consecutive academic year. A third objective was to evaluate the impact of these changes on interdisciplinary communication.

DESIGN

This prospective, semester-long project was conducted at Cedarville University in the fall semesters of 2012 and 2013. Institutional Review Board exempt status was obtained at the university prior to conducting the study. Participants were first professional year pharmacy students and third-year bachelors’ nursing students.

The interdisciplinary poster session was integrated into existing overlapping courses: a pharmacy course on research design and methodology and a nursing course on research and evidence-based practice. These courses were selected because interdisciplinary collaboration is an important factor in the application of research results and is associated with the use of evidence-based practice.^{21,22} Specific learning outcomes for the interdisciplinary poster session in years 1 and 2 and the additional sessions in year 2 can be found in Table 1, as well as how each outcome addressed the IPEC competencies.¹⁸ In the pharmacy research course, students completed a research proposal as part of the course requirements. Students were placed into small groups of 4 to 6, and each group created proposals to address pharmacy practice-based research questions (ie, community pharmacists’ ability to communicate in appropriate health-literacy language) or science-based research questions (ie, pharmacokinetics of an antibiotic regimen in pediatrics). In the nursing course, students were placed into small groups of 3 to 4, and each group completed a literature review research project, which incorporated evidence-based principles from a clinical experience question developed at their experiential site. Students in both courses spent the semester working on their projects. Since students completed a project or project proposal, faculty members implemented a poster session at the end of the semester at which students could present their final projects or proposals.

During the first offering in fall 2012, an active-learning lecture about interprofessional communication

Table 1. Student Learning Outcomes, Assessment, and IPEC^a Competency Addressed

	Learning (Bloom's Taxonomy)	Self, Peer, and Faculty Assessment Item	IPEC Competency Addressed ¹⁸
Poster Session Learning Outcomes for 2012 and 2013			
Describe the general scope of their practice area and expertise to another health care provider	Knowledge	Item 1: I am/the student is able to provide a brief explanation of how the topic relates to the scope of pharmacy or nursing.	CC7
Present a coherent explanation of their project or proposal to a multi-disciplinary health professional audience using common language	Understand	Item 2: I am/the student is able to provide an overview of the project in a language that any health care professional student can understand. Item 3: I am/the student is able to provide a description of the project importance to the health profession (ie, patients, providers,) in a language that any health care professional student can understand.	CC2
Provide answers to questions posed by other health care professionals using common language and the appropriate level of depth and understanding	Evaluate	Item 4: I am/the student is able to provide answers to questions from a multi-disciplinary health professional audience with the appropriate level of depth/understanding.	CC3
Interprofessional Communication Session Learning Outcomes for 2013 Only			
Session 1: Define interprofessional communication. Describe the importance of interprofessional communication.	Knowledge Knowledge	In-Class Quiz Large Group Discussions	Introductory – no specific competency addressed CC1, CC2
Session 2: Describe the SBAR ^b method of interprofessional communication. Communicate a situation to another health care professional using the SBAR method.	Knowledge Apply	In-Class Quiz Patient Case Practice	

^aInterprofessional Education Collaborative

^bSituation, Background, Assessment, Recommendation

was co-taught by pharmacy and nursing faculty members to students in their respective classes. The lecture addressed learning objectives (communicating how their project relates to their field, providing a project overview, and answering questions). A brief description of the interdisciplinary poster session also was presented in this lecture. In another class session, a pharmacy faculty member presented a one-hour overview of pharmacy research to nursing students, and a nursing faculty member presented a similar overview of nursing research to pharmacy students. In each session, faculty members discussed how multiple health care professions interacted in the area of research and evidence-based practice. Another class lecture was held during which a nursing faculty member provided an overview to pharmacy students of using theory in research.

At the end of the semester, a 2-hour interdisciplinary poster session was held to present the students' final proposals and projects. Students were asked to create professional conference-style posters and were given examples of them. Students presented either their research proposal (pharmacy) or their evidence-based practice literature review research project (nursing) findings and performed self-evaluations and peer-evaluations of interdisciplinary communication. The posters were displayed in different rooms throughout the Health Sciences Center. Each room included pharmacy and nursing student groups, with approximately 4 to 5 posters per room. One pharmacy and one nursing faculty member were assigned to each room to evaluate students' interdisciplinary communication skills.

The first half-hour of the poster session was an open session, where faculty members and students could view posters. During that time, pharmacy and nursing faculty members and students engaged student presenters regarding their posters which facilitated sharing knowledge across disciplines. Students were required to have one team member present at the poster during this time. The next hour of the poster session was for formal presentations. Each student group was given 5 minutes to present to the students and faculty members in the room and 3 minutes to answer questions, again facilitating discussion with those outside of their discipline. During the last half-hour, evaluations were completed; no further faculty time was required.

During the second year of implementation, fall 2013, the class lectures from fall 2012 were continued, and additional sessions were incorporated to further address and reinforce the interprofessional component (Figure 1). In addition to the previous format, students in the pharmacy and nursing courses participated in 2 joint interprofessional education class sessions. Prior to each session,

students from both fields completed assigned readings on interdisciplinary communication. Readings were brief and were designed to be read and learned in an hour. In each hour-long session, students completed a 5-item knowledge quiz based on the preclass readings.

In session 1, students participated in a networking "Bingo" game to get to know one another and learned principles of interdisciplinary communication. The game included a 4x4 Bingo grid with personal or interest-related characteristics (ie, been to every state in the United States) or professional-related characteristics (ie, wants to work in pediatrics). For all professional-related characteristics, students had to find an individual in the other health profession who fit the category. In the second session, students participated in case simulations (small groups consisting of nursing and pharmacy students working together) using the SBAR process for communication,²³ followed by a large group discussion.

The interdisciplinary poster session was held in the same manner as the previous year, with a small modification. The pharmacy and nursing faculty members (9 out of 20 who had evaluated posters the prior year), participated in a one-hour training session prior to the poster session that included an ice-breaker, an overview of interdisciplinary communication, and training on the evaluation rubric.

The interdisciplinary communication evaluation rubric was developed from peer-reviewed literature and underwent review by a pharmacy student, nursing and pharmacy faculty members, and an assessment expert prior to administration. Each rubric contained 4 items, based on students' ability to explain the role of nursing or pharmacy in the topic area, provide a project overview, describe project importance, and answer questions. The rubric was mapped to the learning objectives for the poster session (Table 1), and all questions were formulated for communicating to an interdisciplinary audience.

The 3 rubrics (self-, peer, faculty evaluation) used the same 4 statements with different scaling (ie, level of confidence for self-evaluation and level of agreement with regard to ability for peer and faculty evaluations) to examine confidence and competence. The self-evaluation used a 5-point Likert scale-type evaluation of confidence (1=not at all confident to 5=extremely confident), while the faculty and peer evaluations used a 5-point Likert scale-type evaluation of competence (1=strongly disagree to 5=strongly agree). All surveys underwent student, peer, and expert review prior to use. During the poster session presentation, student groups who were not presenting completed peer-evaluations of presenters. Faculty members also completed an evaluation

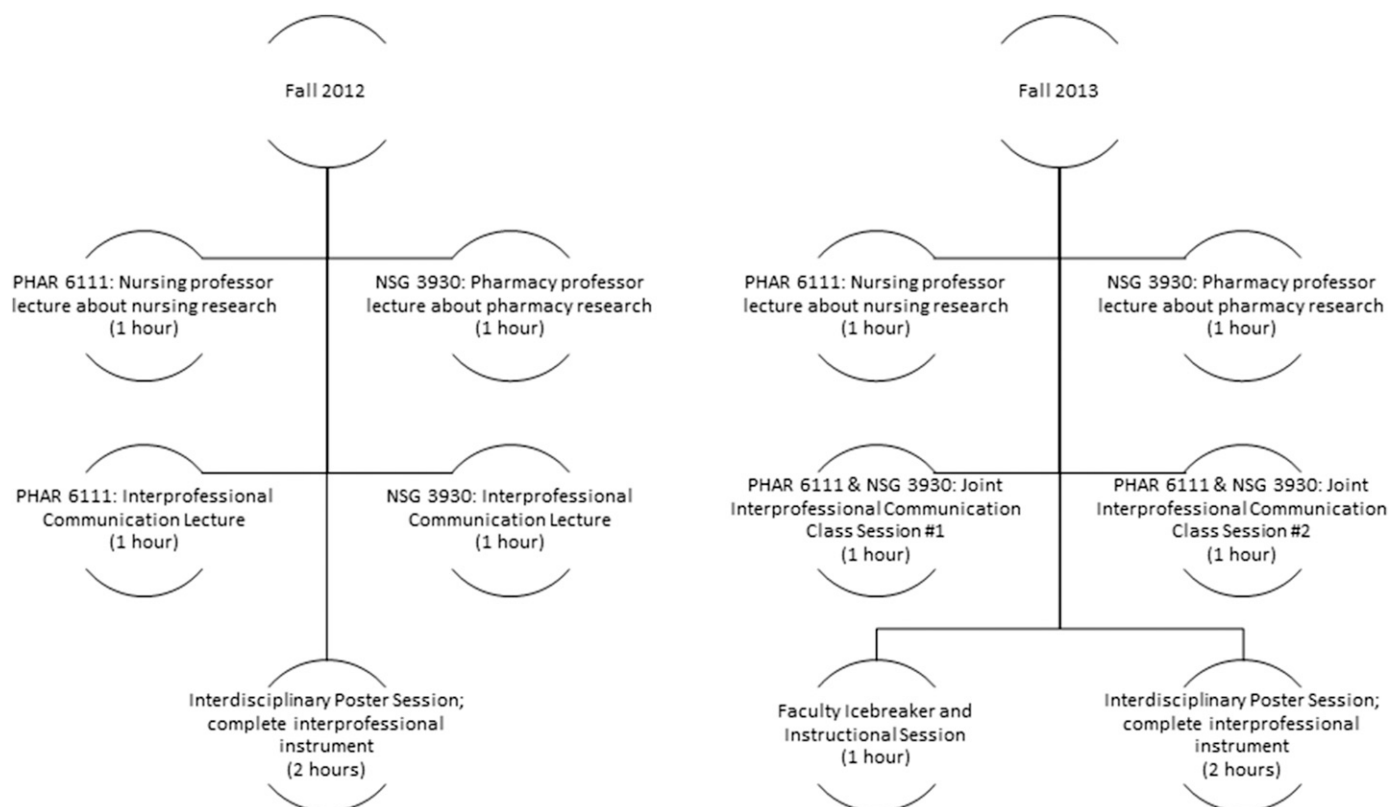


Figure 1. Incorporation of Interprofessional Education Activities and the Interdisciplinary Poster Session in Two Cohorts

on presenters. At the end of the poster session, student presenters completed the self-evaluation.

Data were analyzed with SPSSv21.0 (IBM, Armonk, NY). Frequencies and descriptive statistics were performed on the interdisciplinary communication assessments. Because the data were from Likert scale-type evaluations and did not pass the Shapiro-Wilk test for normality, nonparametric tests were used. Mann-Whitney U tests were performed to compare the differences in years of implementation and to compare differences between pharmacy and nursing. Spearman correlations were performed to assess the association between student and faculty evaluations.

EVALUATION AND ASSESSMENT

In year 1 (2012), 140 students participated (pharmacy n=51; nursing n=89), along with 9 pharmacy and 7 nursing faculty members. Most of the participants were female (n=86, 79.6%) and between the ages of 20 and 21 (n=75, 53.6%; Table 2). One hundred fifty-seven students participated (pharmacy n=47; nursing n=110) in year 2 (2013), along with 10 pharmacy and 10 nursing faculty members. The majority of students were female (n=128, 81%), with 39.9% (n=63) age 20.

In fall 2012, 54.3% of students reported being extremely confident they could provide a brief explanation of how their topic related to the scope of pharmacy or nursing, with 71.7% of peer evaluations strongly agreeing and 49.5% of faculty evaluations agreeing with this statement (Table 3). Students believed that they provided an overview of their project in an interdisciplinary manner, with 58.6% of students reporting extreme confidence. Peers and faculty members similarly agreed, with 72.1% and 63.7% strongly agreeing, respectively. Students responded with very confident or extremely confident (60.7% combined) that they provided a description of the project's importance to the health profession in an interdisciplinary manner, with 72.6% of peers and 56% of faculty members also strongly agreeing. Students reported they were able to answer questions from a multi-disciplinary audience with the appropriate level of understanding, with 50% being extremely confident in this skill. Their peers strongly agreed with this (73.6%), and faculty members strongly agreed as well (51.6%).

There were two significant differences between pharmacy and nursing on the self-evaluation in fall 2012. Nursing students rated themselves as more confident than pharmacy students did in providing a brief

Table 2. Demographic Information for the Two Cohorts of Pharmacy and Nursing Students

	Fall 2012 ^a n (%)	Fall 2013 ^b n (%)
Gender		
Male	22 (20)	29 (18)
Female	86 (80)	128 (81)
Age		
Less than 19	0 (0)	0 (0)
19	4 (4)	18 (11)
20	39 (36)	63 (40)
21	36 (33)	48 (30)
22	11 (10)	17 (11)
23	2 (2)	3 (2)
24	2 (2)	1 (1)
Older than 24	14 (13)	7 (4)
Ethnicity		
Caucasian	100 (93)	147 (93)
African American	4 (4)	3 (2)
Hispanic	1 (1)	0 (0)
Asian or Pacific Islander	3 (3)	1 (1)
Other	0 (0)	1 (1)
Major		
Pharmacy	51	47
Nursing	89	110

^aFall 2012, N=140

^bFall 2013, N=157

explanation of how their topic related to the scope of their profession ($p=0.001$) and providing an overview of their project in a language any health care professional student could understand ($p=0.031$). There were no significant

differences in faculty ratings for pharmacy and nursing students (Table 3). Only one student self-assessment item was associated with the corresponding faculty assessment (Item 3, Spearman's $\rho=-0.27, p=0.037$).

In fall 2013, 72% of students reported being extremely confident in their ability to provide a brief explanation of how their topic related to the scope of pharmacy or nursing, with 74.2% of peers and 63.1% of faculty members strongly agreeing (Table 3). Nearly 69% of students were extremely confident they provided an overview of their topic in an interdisciplinary manner, with 75% of peers and 79.8% of faculty members strongly agreeing. Students responded that they were very confident or extremely confident (71.3%) they provided a description of the project's importance to the health profession in an interdisciplinary manner. Peers strongly agreed (68%), and faculty members agreed (59.5%). Also, 51.6% of students reported being extremely confident in their ability to answer questions from a multidisciplinary audience with the appropriate level of understanding. Peers and faculty members strongly agreed (75.5% and 77.4%, respectively).

There were no significant differences between how pharmacy and nursing students scored themselves on the self-evaluation (Item 1: $p=0.583$, 2: $p=0.090$, 3: $p=0.157$, 4: $p=0.619$), or between the pharmacy and nursing students on the faculty evaluations in fall 2013 (Item 1: $p=0.469$, 2: $p=0.425$, 3: $p=0.068$, 4: $p=0.774$). There also were no significant associations between faculty member and student assessments of interdisciplinary communication skills.

Table 3. Self-, Peer-, and Faculty Evaluation Responses from the Interdisciplinary Poster Session

	Disagree n (%)		Neutral n (%)		Agree n (%)		Strongly Agree n (%)	
	Fall 2012	Fall 2013	Fall 2012	Fall 2013	Fall 2012	Fall 2013	Fall 2012	Fall 2013
Self ^a								
1	0 (0)	0 (0)	9 (6)	4 (3)	55 (39)	40 (26)	76 (54)	113 (72)
2	0 (0)	0 (0)	8 (6)	3 (2)	50 (36)	46 (29)	82 (59)	108 (69)
3	0 (0)	0 (0)	9 (6)	4 (3)	46 (33)	41 (26)	85 (61)	112 (71)
4	0 (0)	0 (0)	20 (14)	21 (13)	50 (36)	55 (35)	70 (50)	81 (52)
Peer ^b								
1	0 (0)	2 (0)	12 (2)	3 (1)	182 (26)	126 (25)	494 (72)	376 (74)
2	1 (0)	2 (0)	14 (2)	14 (3)	117 (17)	111 (22)	497 (72)	380 (75)
3	0 (0)	0 (0)	10 (1)	10 (2)	178 (26)	152 (30)	500 (73)	345 (68)
4	0 (0)	1 (0)	6 (1)	16 (3)	174 (25)	104 (21)	507 (74)	383 (76)
Faculty ^c								
1	2 (2)	0 (0)	1 (1)	4 (5)	45 (50)	27 (32)	43 (47)	53 (63)
2	1 (1)	0 (0)	1 (1)	5 (6)	32 (35)	12 (14)	58 (64)	67 (80)
3	2 (2)	0 (0)	1 (1)	6 (7)	38 (42)	28 (33)	51 (56)	50 (60)
4	0 (0)	0 (0)	4 (4)	0 (0)	47 (52)	19 (23)	41 (45)	65 (77)

^aFall 2012 N=140; Fall 2013 N=157

^bFall 2012 N=689; Fall 2013 N=507

^cFall 2012 N=91; Fall 2013 N=84

Of the 4 self-evaluation items, 3 items had significant increases during the second year of implementation ($p < 0.05$, Table 4). For example, students reported being more confident they could provide a brief explanation of how their topic related to the scope of their discipline and that they could provide a description of the project importance to the health profession in a language that any health care professional student could understand. There were no significant differences in the results of the peer assessments between the years. Of the 4 faculty-evaluation items, 2 items had significant increases during the second year of implementation ($p < 0.05$). Faculty members had greater agreement in the second year that students could provide an overview of their project in a language any health care professional student could understand and that students were able to provide answers to questions from a multidisciplinary health professional audience with the appropriate depth.

DISCUSSION

The increasingly interprofessional nature of health care and the improved patient outcomes associated with interprofessional care emphasize the importance of preparing future health care professionals to effectively work in teams. Moreover, accrediting bodies and education collaboratives believe interprofessional education should be incorporated into curricula.^{14,18,24} To meet these needs, an interdisciplinary poster session was incorporated into the beginning of a professional pharmacy program to improve interdisciplinary communication skills.

Even though the first interdisciplinary poster session resulted in positive student outcomes, potential improvements to the experience were identified. Consequently, the content was expanded in didactic instruction and evaluated to determine whether these changes further improved interdisciplinary communication.

Students reported a high level of confidence in their interdisciplinary skills. This could be a result of their exposure to the topic of interdisciplinary communication through the poster session as well as the 2 additional interprofessional education sessions included in the second year. Moreover, researchers used multidisciplinary health care training teams to complete case tutorials, and student confidence and willingness to interact interprofessionally increased as a result of the experience.²⁵ Thus, increasing student exposure to interdisciplinary experiences could improve confidence when interacting with other health disciplines.

During both years of this project, students expressed high confidence in their ability to speak to a multidisciplinary audience in an appropriate manner, and faculty

members agreed overall that students successfully presented their posters with these skills. According to Bandura's social cognitive theory, individuals will be more likely to complete a skill if they are confident in their ability of the skill.¹⁶ Therefore, as students increase their confidence in talking to other health professionals, they will be more likely to continue using this skill in their future career. Previous research showed health professionals who participated in interprofessional educational opportunities as students were more confident in their abilities to engage interprofessionally in the workplace.²⁶

Student confidence significantly improved during the second year of implementation, which included additional education and activities in interdisciplinary communication. Providing students with further awareness of the topic, as well as increased interactions with other health professions students created an opportunity to build their confidence in interdisciplinary communication. One reason for the significant increase in self-confidence from fall 2012 to fall 2013 could be because of the increased interaction students had with other health professional students prior to the final poster session. Giving diverse health professions students time to become acquainted with one another can lead to an increase in trust and respect.²⁷ Relationships may have been established during the sessions and, therefore, communication in the poster session may have been easier.

Faculty agreement validated the students' reported confidence levels. Self-evaluations completed by students may not have accurately reflected their skills; therefore, it was important to have other measures—in this case, faculty evaluations.²⁸ Faculty agreement that students exhibited interdisciplinary skills increased significantly from fall 2012 to fall 2013. This agreement provided validated not only students' interdisciplinary communication skills, but also that inclusion of more interprofessional education enhanced students' skills in this area. However, there were no significant associations between faculty scores and student scores in the second year and only one association in the first year (ability to provide a description of the project importance). Thus, while the frequency data suggested faculty agreement, inferentially, that case cannot be made.

Incorporating interdisciplinary education into the curriculum is not without its issues. Scheduling the poster session was challenging, given the different dates and times the pharmacy and nursing courses were held. In the second year, scheduling became more complicated with the addition of 2 interdisciplinary sessions. To address these challenges, both pharmacy and nursing academic departments rescheduled classes during those time periods. The 2 faculty members (one pharmacy and one

Table 4. Self, Peer, and Faculty Response Comparison between Fall 2012 and Fall 2013

		Fall 2012 Mean (SD)	Fall 2013 Mean (SD)	Z	p value
Self					
1.	I am able to provide a brief explanation of how the topic relates to the scope of pharmacy or nursing.	4.5 (0.6)	4.7 (0.5)	3.24	0.001
2.	I am able to provide an overview of the project in a language that any health care professional student can understand.	4.5 (0.6)	4.7 (0.5)	1.99	0.047
3.	I am able to provide a description of the project importance to the health profession (ie, patients, providers) in a language that any health care professional student can understand	4.5 (0.6)	4.7 (0.5)	2.06	0.039
4.	I am able to provide answers to questions from a multi-disciplinary health professional audience with the appropriate level of depth/understanding.	4.4 (0.7)	4.4 (0.7)	0.30	0.77
Peer					
1.	The presenter was able to provide a brief explanation of how the topic relates to the scope of pharmacy or nursing.	4.7 (0.5)	4.7 (0.5)	0.99	0.32
2.	The presenter was able to provide an overview of the project in a language that any health care professional student can understand.	4.7 (0.5)	4.7 (0.5)	0.95	0.34
3.	The presenter was able to provide a description of the project importance to the health profession (ie, patients, providers) in a language that any health care professional student can understand	4.4 (0.5)	4.7 (0.5)	1.76	0.079
4.	The presenter was able to provide answers to questions from a multidisciplinary health professional audience with the appropriate level of depth/understanding.	4.7 (0.5)	4.7 (0.5)	-0.59	0.55
Faculty					
1.	The student was able to provide a brief explanation of how the topic relates to the scope of pharmacy or nursing.	4.4 (0.6)	4.6 (0.6)	1.91	0.056
2.	The student was able to provide an overview of the project in a language that any health care professional student can understand.	4.6 (0.6)	4.7 (0.6)	2.17	0.030
3.	The student was able to provide a description of the project importance to the health profession (ie, patients, providers) in a language that any health care professional student can understand	4.5 (0.6)	4.5 (0.6)	0.31	0.75
4.	The student was able to provide answers to questions from a multi-disciplinary health professional audience with the appropriate level of depth/understanding.	4.4 (0.6)	4.8 (0.4)	4.53	<0.001

nursing) taught the interdisciplinary sessions in the second year, so there was little impact on other faculty members' workloads.

Another challenge was the recruitment of faculty members to participate in the poster session each year and the training session the second year, though a sufficient number of faculty members from each school volunteered to assist. Volunteers for the second year were easier to obtain because many faculty members mentioned (anecdotally) how much they enjoyed the experience. Some faculty members could not attend the training session at its scheduled time; consequently, a separate training session was held for those individuals. A final challenge was funding the poster session, as printing at least 40 posters annually generated a significant expense. To address this problem, an internal educational grant was obtained that covered the costs of both poster sessions.

Despite these challenges, the experience as it was offered in fall 2013, (Figure 1) remains part of the curriculum because it successfully introduced the concept of interdisciplinary communication to students. The experience is now funded by student fees and, in the future, we hope to expand this project to include other health professions on campus. This study can be used as a foundation for additional experiences or interactions. Further directions could include the evaluation of students at before and after the semester on their interdisciplinary communication skills to determine if the interprofessional education components improved their skills and confidence. This would help faculty members evaluate existing integrated lectures and improve them as needed. Another future direction could be the increased incorporation of interprofessional content in the curriculum to reinforce the concepts. Incorporating interprofessional education into the curriculum showed benefits, particularly with regard to student confidence, thus providing support for even more content.

There are some factors that could be considered limitations of this study. The peer evaluations may not have been accurate, as students may have felt inclined to rate their peers positively. This was anticipated from the beginning of the project; thus, the peer evaluations were not included as a research objective. Training sessions for students on conducting peer evaluations may have improved the validity of the assessments. Comparison of the faculty evaluations from fall 2012 to fall 2013 may not have been accurate, as faculty members were trained for the evaluation the second year but not the first year. All evaluations completed were at risk for social desirability bias, where evaluators rate higher on items because of the social risk that it entails.

While the project was conducted for more than one year, it was only conducted at one school of pharmacy. To increase the generalizability and the validity of the project, it should be evaluated at other schools of pharmacy as well. Nearly half the faculty members who evaluated the poster session in the first year also evaluated in the second year; thus, they may have approached the training and subsequent poster session differently than those who had not previously participated. This may have impacted faculty assessments of student competence in the second year.

SUMMARY

Incorporating interprofessional education and an interdisciplinary poster session into the curricula of pharmacy and nursing can benefit students' interdisciplinary communication skills. These experiences resulted in an increase in student confidence, which was validated by faculty agreement that they had these interdisciplinary skills. The increase in confidence was a foundation that could be built upon and reinforced throughout the curriculum. Thus, it may be beneficial to integrate more of these concepts into health care curriculum to create interprofessionally competent practitioners.

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REFERENCES

1. Spencer R, Coiera E, Logan P. Variation in communication loads on clinical staff in the emergency department. *Ann Emerg Med.* 2004;44(3):268-273.
2. Lingard L, Espin S, Whyte S, et al. Communication failures in the operating room: An observational classification of recurrent types and effects. *Qual Saf Health Care.* 2004;13(5):330-334.
3. Greenberg CC, Regenbogen SE, Studdert DM, et al. Patterns of communication breakdowns resulting in injury to surgical patients. *J Am Coll Surg.* 2007;204(4):533-540.
4. Hall P. Interprofessional teamwork: Professional cultures as barriers. *J Interprof Care.* 2005;Suppl 1:188-196.
5. Wagner J, Liston B, Miller J. Developing interprofessional communication skills. *Teach Learn Nurs.* 2011(6):97-101.
6. Leonard M, Graham S, Bonaum D. The human factor: The critical importance of effective teamwork and communication in providing safe care. *Qual Saf Health Care.* 2004;13(Suppl 1):i85-i90.
7. Patterson ES, Roth EM, Woods DD, Chow R, Gomes JO. Handoff strategies in settings with high consequences for failure: Lessons for health care operations. *Int J Qual Health Care.* 2004;16(2):125-132.
8. Hoffman SJ, Harnish D. The merit of mandatory interprofessional education for pre-health professional students. *Med Teach.* 2007;29(8):235-242.
9. Xyrichis A, Lowton K. What fosters or prevents interprofessional teamworking in primary and community care? A literature review. *Int J Nurs Stud.* 2008;45(1):140-153.

American Journal of Pharmaceutical Education 2015; 79 (6) Article 83.

10. Rice K, Zwarenstein M, Conn LG, Kenaszchuk C, Russell A, Reeves S. An intervention to improve interprofessional collaboration and communications: A comparative qualitative study. *J Interprof Care*. 2010;24(4):350-361.
11. Horsburgh M, Lamdin R, Williamson E. Multiprofessional learning: the attitudes of medical, nursing and pharmacy students to shared learning. *Med Educ*. 2001;35(9):876-883.
12. Greene RJ, Cavell GF, Jackson SHD. Interprofessional clinical education of medical and pharmacy students. *Med Educ*. 1996;30(2):129-133.
13. Solomon P, Salfi J. Evaluation of an interprofessional education communication skills initiative. *Educ Health*. 2011;24(2):616.
14. American Association of Colleges of Nursing. The essentials of baccalaureate education for professional nursing practice. 2008. <http://www.aacn.nche.edu/education-resources/BaccEssentials08.pdf>. Accessed January 15, 2015.
15. Buring SM, Bushan A, Broeseker A, et al. Interprofessional education: definitions, student competencies, and guidelines for implementation. *Am J Pharm Educ*. 2009;73(4):Article 59.
16. Bandura A. On the functional properties of perceived self-efficacy revisited. *J Manag*. 2012;38(1):9-44.
17. Medina MS, Plaza CM, Stowe CD, et al. Center for the Advancement of Pharmacy Education 2013 educational outcomes. *Am J Pharm Educ*. 2013;77(8):Article 162.
18. Interprofessional Education Collaborative Expert Panel. (2011). Core competencies for interprofessional collaborative practice: Report of an expert panel. Washington, D.C.: Interprofessional Education Collaborative
19. Enlow M, Shanks L, Guhde J, Perkins M. Incorporating interprofessional communication skills (ISBARR) into an undergraduate nursing curriculum. *Nurse Educ*. 2010;35(4): 176-180.
20. Pittenger AL, Westberg SM, Rowan M, Schweiss S. An interprofessional diabetes experience to improve pharmacy and nursing students' competency in collaborative practice. *Am J Pharm Educ*. 2013;77(9):Article 197.
21. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ*. 1996;312(7023):71-72.
22. Zwarenstein M, Reeves S. Knowledge translation and interprofessional collaboration: Where the rubber of evidence-based care hits the road of teamwork. *J Contin Educ Health Prof*. 2006; 26(1):46-54.
23. SaferHealthcare. What is SBAR and what is SBAR communication? <http://www.saferhealthcare.com/sbar/what-is-sbar/>. Accessed January 15, 2015.
24. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the Doctor of Pharmacy Degree. Standards 2016; <https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf>. Accessed February 26, 2015.
25. Borrego ME, Rhyne R, Hansbarger LC, et al. Pharmacy student participation in rural interdisciplinary education using problem based learning case tutorials. *Am J Pharm Educ*. 2000;64(4):355-363.
26. Pfaff KA, Baxter PE, Jack SM, Ploeg J. Exploring new graduate nurse confidence in interprofessional collaboration: A mixed methods study. *Int J Nurs Stud*. 2014;51(8):1142-1152.
27. Bajnok I, Puddester D, MacDonals CJ, Archibald D, Kuhl D. Building positive relationships in healthcare: Evaluation of the teams of interprofessional staff interprofessional education program. *Contemp Nurse*. 2012;42(1):76-89.
28. Austin Z, Gregory PAM. Evaluating the accuracy of pharmacy students' self-assessment skills. *Am J Pharm Educ*. 2007;71(5): Article 89.