

RESEARCH

Mapping Pharmacy Student Learning During Cocurricular Activities to National Standards and Institutional Outcomes

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Objective. To assess pharmacy student learning from co-curricular activities and map this to Accreditation Council of Pharmacy Education (ACPE) standards and the institution's curricular outcomes.

Methods. Student representatives of professional organizations at one college of pharmacy were asked to complete a 16-item questionnaire on behalf of their members about each cocurricular activity their organization completed. Descriptive statistics were used to characterize the results. Content analysis was conducted on open-ended questions, and resulting codes were mapped to ACPE Standards 2016 and curricular outcomes.

Results. The majority (74%) of the 152 unique cocurricular activities reported were designated as community outreach events and an average of 15 (SD=43) student members participated in each activity. The most frequently selected domain by student representatives was "promoted professionalism" for 86% of activities. Upon distilling student representatives' open-ended responses regarding their members' learning, each response was assigned to one or more of 34 codes. The most frequently assigned codes to learning descriptions (36%) were for patient education and counseling.

Conclusion. Representatives of student organizations characterized their members' participation in cocurricular activities as opportunities for learning. The results from the content analysis aligned with the quantitative data collected. Cocurricular activities provide opportunities for Doctor of Pharmacy students to enhance their skills, knowledge, and attitudes in both pharmacy practice and personal areas that map to ACPE Standards 2016 and the college's own curricular outcomes.

Keywords: cocurricular, curricular outcomes, learning, mapping

INTRODUCTION

Several decades ago, student affairs professionals in higher education were called on to integrate student learning into their standard menu of intramural sports, student organizations, residence halls, student employment, and student activities. Cocurricular learning, broadly defined, is learning that occurs in extracurricular activities that provide opportunities for students to be challenged and grow but which are not assigned academic credit, are voluntary, and are not systematically evaluated.¹ Since that time, various guidelines and principles have been developed to guide student affairs professionals in developing cocurricular learning activities.^{2,3} The main difference between the terms *cocurricular* and *extracurricular* is that a cocurricular activity complements learning happening within the curriculum, whereas an

extracurricular activity may or may not do so.⁴ Students can benefit from participation in cocurricular activities in several ways, including through engagement, professionalism, leadership development, and holistic personal development. In addition, findings from research in undergraduate students suggests that when cocurricular learning outcomes are aligned with institutional learning outcomes, students who participate in cocurricular activities are more likely to achieve institutional learning outcomes.⁵

Educators in professions such as engineering and medicine are beginning to examine cocurricular learning, and there is limited extant research regarding graduate students. For example, the impact of cocurricular learning on ethical development has been examined in engineering education. Finelli and colleagues found that most of the engineering students they studied participated in cocurricular activities that had an ethical component. The researchers posit several suggestions on how to make these activities more impactful.⁶

Researchers in medical education have found a positive relationship between students' involvement in

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diversity-related extracurricular activities and their self-rating of their preparedness for caring for diverse patients.⁷ In addition, medical educators have explored the potential of extracurricular activities to develop students' leadership skills, and skills and knowledge in global health.^{8,9}

Through its accreditation standards, the Academy has identified cocurricular activities as important opportunities for student learning. The Accreditation Council for Pharmacy Education (ACPE) has provided schools and colleges of pharmacy guidelines that promote the use of cocurricular activities to augment the achievement of competencies, particularly in some of the affective domains of Standard 3: Approaches to Patient Care and Standard 4: Personal and Professional Development.¹⁰ While this has been recognized as a challenge, cocurricular experience has been embraced as a mechanism to provide Doctor of Pharmacy (PharmD) students with authentic learning experiences to prepare them for future practice.¹¹

Pharmacy education has a long history of active and involved student organizations that develop and engage in a wide variety of cocurricular activities. Since the adoption of ACPE Standards 2016, colleges and schools of pharmacy have developed cocurricular mission statements, policies, processes, courses, and infrastructures, and have described various cocurricular activities.¹²⁻¹⁷ Examples of cocurricular activities in the pharmacy education literature vary widely but include participation in health fairs, assisting with admissions interviews, attending professional pharmacy meetings, and providing health education.^{16,17} Measuring the learning that occurs in cocurricular activities, however, remains a challenge in pharmacy education. A recent study of over 1,000 students at a single college of pharmacy examined the relationship between the extent of students' cocurricular involvement and their academic success. The authors found that students who had proportionately above average cocurricular involvement and/or held leadership positions typically had significantly higher mean grade point averages (GPAs) than students with below average cocurricular involvement and/or no leadership positions. For example, 133 students with above average cocurricular participation had a significantly higher mean GPA of 3.4 (SD=0.4) as compared to 67 students with below average cocurricular participation who had a mean GPA of 3.1 (SD=0.5). While this study broadly categorized time spent doing cocurricular activities into service hours, professional meeting hours, membership hours, and leadership hours, it did not examine what students learned from their cocurricular participation.¹⁸

Other research has examined how cocurricular activities map to programmatic outcomes or competencies.

At one college of pharmacy, students who were more involved in cocurricular activities generally reported better attitudes toward and higher self-efficacy than their less involved peers for 7 of 11 leadership-related competencies defined by the Center for the Advancement of Pharmacy Education (CAPE).¹⁹ At another college of pharmacy, Zeeman and colleagues reviewed documents, administered surveys, and conducted focus groups and interviews with students and faculty advisors to determine how involvement in three pilot pharmacy organizations contributed to skill development in the program's nine core competencies. The researchers found that cocurricular involvement in these organizations contributed to skill development in six of nine of their core competencies.²⁰

While some existing pharmacy education research has demonstrated a link between academic indicators such as GPA and cocurricular involvement, and has described approaches on how cocurricular involvement can be mapped to and contribute to progression in achieving programmatic competencies, there remains a gap in understanding what students learn, in their own words, from these activities and how students' cocurricular activities contribute to competency development.

The objective of this study was to examine student organization representatives' descriptions of their membership's collective learning through cocurricular activities. A secondary objective was to examine how student representatives' descriptions of their learning mapped to ACPE Standards 1 thru 4, and the college's own curricular outcomes.^{10,21}

METHODS

At the time of data collection, the pharmacy student body at Midwestern University Chicago College of Pharmacy consisted of 753 students, with a mean of 188 (SD=15) students enrolled in each class, for the first professional pharmacy (P1) year through the fourth professional pharmacy (P4) year. There were 24 officially recognized student organizations at the college. The mean number of student members per organization was 86 (SD=61), with the four class councils having the largest memberships as all students in each class are considered members of their particular class council. Phi Delta Chi had the largest number of student members of any professional fraternity at our college, and the American Pharmacists Association's Academy of Student Pharmacists (APhA-ASP) had the largest number of student members of any professional student organization at our college. Student organizations with the fewest number of members tended to be newer organizations, such as the Industry Pharmacists Organization (IPhO) and the National Community Oncology Dispensing Association (NCODA). Collectively,

student organizations organized and implemented a large number of activities annually. Some activities were focused on students. For example, a student organization sponsored a panel of speakers who discussed leadership or careers in pharmacy. Other activities were focused on the community. For example, healthcare screenings, immunization clinics, and diabetes education programs were designed and offered to communities of patients in the metropolitan area. Some of these were single, standalone activities, while others were sustained monthly activities that continued through formalized relationships with community organizations.

The investigators developed an electronic questionnaire aimed at collecting and characterizing more details about the type and scope of student organization activities as well as the learning pearls that students were gaining from these activities. The 16-item electronic questionnaire was created on SurveyMonkey (SVMK Inc., San Mateo, CA). Of the 16 items, eight focused on basic information such as the name and email address of the student organization member reporting, a title and brief description of the activity, the student organization responsible for the activity, location of the activity and whether the activity was generally considered to be a student education event (eg, career panel) or a community outreach activity (eg, health care screening). Four fill-in-the-blank items asked the student representative to provide the following: number of student organization members that participated in executing the activity (ie, volunteering), number of faculty members and/or pharmacists that participated in executing the activity, number of students that attended if the activity was a student education event, and number of patients and/or community members that attended or were provided services if the activity was a community outreach event. One item was a multiple-response item that asked students to identify which characteristic(s) from a list (pulled mainly from ACPE Standards 2016 Standards 3 and 4) the activity addressed.¹⁰ Minor editing was required to create active phrases out of single words. For example, “professionalism” was modified to read “promoted professionalism” in the questionnaire. Students were asked to select all domains that characterized the activity. Finally, in three open-ended items, students were asked to debrief the activity and describe what the student organization learned from the activity and what they would do differently next time. These open-ended items were intended to better understand what the student organization as a whole had learned from the activity rather than what the individual student representative completing the questionnaire had learned. The last open-ended item allowed participants to provide additional comments or clarifications about the activity.

Student organizations are required to register their activities in the university’s electronic system, Engage (Campus Labs, Boca Raton, FL), which is managed by the Office of Student Services. After the activity, an email with a link to the questionnaire described above is sent to the individual student who registered the activity. The student who registered the activity or his/her designee acts as a representative of his/her student organization in completing the post-activity questionnaire. Student representatives tasked with completing the post-activity debrief questionnaire are instructed to do so after discussing the activity with other organization members who participated in the activity. For the purpose of this study, a student organization representative is defined as the individual within an organization who was tasked with completing the post-activity debrief questionnaire(s). These student representatives are instructed to complete the post-activity debrief questionnaire as soon as possible after the activity occurred, with general guidance to respond no more than two weeks from the date of the activity. There is no specific training given to student representatives on how to select domains that relate to an activity or exactly how or what to write in response to the open-ended survey items. Student representatives are not required to be student leaders within their respective student organizations, and the investigators did not attempt to determine whether student representatives were in a leadership position within their organization. Responses to the post-activity debrief questionnaire are supposed to reflect the organizational members’ thoughts and feelings about the activity rather than the student representative’s own thoughts and feelings.

A pilot study was conducted in early 2017 when the process was first communicated to students. The process was introduced by college administrators at a quarterly student council meeting and also communicated via email to students and faculty advisors of student organizations. Data were then collected on 13 cocurricular activities and analyzed. The results of this pilot study indicated that the student representatives could characterize their cocurricular activities as opportunities for learning across the domains described earlier. The domain most frequently reported by student representatives was “developed communication skills” and “encouraged leadership development.” The pilot also demonstrated that the process and communications to the students appeared to be clear and effective for collecting these data. Subsequently, college administration returned to another quarterly student council meeting to determine whether the process was clear and manageable, and student leaders at the meeting affirmed that it was.

Full implementation of the process was initiated in fall 2017. All student leaders were invited to special

meetings where they were educated on the data collection process and questionnaires in more detail than provided in previous meetings with student council before and after the pilot. Data were collected for the 2017-2018 academic year.

Analysis

Descriptive statistics were used to characterize the number of activities reported, student participants, pharmacists, and participating community members. Frequencies were used to describe students' perceptions of which domains, as described above, characterized their activity. Finally, a content analysis was performed on students' responses to the open-ended questions. Content was coded independently by the study investigators using the open coding process.²² That is, the two investigators reviewed responses and assigned coding themes that they had developed independently rather than selecting from a list of coding themes. The investigators also agreed to not limit the number of codes that could be assigned to a single response. After each investigator reviewed and coded the same 20 questionnaire responses, they met to discuss their level of agreement and to decide on language for some of the more prevalent themes moving forward. For example, after this first meeting, the investigators decided to use the words "value of" to characterize student representatives' descriptions of appreciating the importance or relevance of something (affective learning) as opposed to learning about something (cognitive learning). A specific example of this is the difference between "value of patient education/counseling" and "patient education/counseling." If a response stated that a student organization learned about how important patient counseling was, it would be coded as "value of patient education/counseling"; whereas, if a response stated that a student organization had learned how to better educate patients about their medications, it would be coded as "patient education/counseling." Upon completion of independently coding the remaining responses, the investigators met again to review their coding similarities and disparities, consolidate and collapse codes/themes as needed, and reach consensus about the final code assignment(s) for each response.

For the secondary objective of examining how student representatives' descriptions of their cocurricular learning mapped to Standards 1 through 4 of ACPE Standards 16 and the college's curricular outcomes, both investigators independently mapped the themes identified in the coding process to the ACPE Standards and curricular outcomes.^{10,21} Themes were mapped at the subdomain level of the ACPE Standards, eg, 2.1 Patient-centered care, 3.2 Education, and were mapped to the outcome component

level of the college's curricular outcomes. For example, the college's curricular outcome 1 is "demonstrate professionalism," and the three components of this outcome are: "1a. maintain professional responsibility and advocate such action in others," "1b. demonstrate professional behavior in all interactions with patients, caregivers, and other healthcare professionals," and "1c. represent and advance the practice of pharmacy."²¹ The investigators agreed that there would not be a limit to the number of ACPE Standards subdomains or curricular outcome components to which a theme could be mapped. After independently mapping the themes, the investigators met to discuss differences and reach consensus. The total time it took for investigators to code and map themes included approximately three hours of individual time and three live meetings that were approximately 1 to 1.5 hours each. Upon review by Midwestern University's institutional review board (IRB), this study was exempted from full review.

RESULTS

Data were collected on 152 cocurricular activities conducted and reported between August 2017 and May 2018. Student representatives reported a wide range of activities, from health screenings in the community to social activities on campus. Seventy-four percent (113/152) of the activities were identified as community outreach events. Twenty-six percent (39/152) were identified as student education activities. Nineteen student organizations conducted at least one cocurricular event during the academic year. One organization (APhA-ASP) conducted the majority of the activities (57%).

The mean number of student organization members participating in each activity was 15 (SD=43). The mean (SD) number of community members/patients who participated was 64 (SD=152). Refer to Table 1 for a complete description of the different types of activity participants.

Student representatives characterized their cocurricular activities in terms of the characteristics and domains listed in the survey instrument. The most frequently selected domains were "promoted professionalism" (131,

Table 1. Participants by Type Reported in Co-curricular Post-activity Debrief Questionnaires

Participant Type	M (SD)
Student organization member	15 (43)
Faculty member	1 (1)
Community member/patient	64 (152)
Student non-member of organization	38 (37)

86%), “developed communications skills” (124, 82%) and “engaged patient education skills” (103, 68%). The least selected domain was “developed skills in entrepreneurship” (10, 7%). A complete list of the frequencies of selected domains is reported in Table 2. As described in the Methods section, student representatives were allowed to select more than one domain to characterize the learning that occurred in each activity.

The first open-ended item was, “Based on your group’s debrief of the event or activity, what did you collectively learn from doing this?” Thirty-four individual codes emerged from the coding process as described in Table 3. SRs reported that patient education and counseling was the most frequent area of learning that occurred for their organization (N=36, 24%). “Patient education and counseling” was the area of learning that student representatives most frequently reported occurring in their organization (n=36, 24%). The second most reported area of learning that occurred was communication skills (35, 23%), and the third most reported area was health screenings (17, 11%).

In addition to the frequencies of characteristics that the student representatives selected for each activity, mapping to ACPE Standards 1 to 4 and college curricular outcomes are presented in Table 2.^{10,21} Of the 12 domains that students could select from when characterizing their activity, half of them mapped to one or more subdomains of Standard 4: Personal and Professional Development. Half of them also mapped to one or more subdomains of Standard 3: Approaches to Practice and Care. A couple of the domains mapped to one or more subdomains of

Standard 2: Essentials to Practice and Care. The only two subdomains of ACPE Standards 1 through 4 that were not mapped were 1.1 Foundational Knowledge and 2.4 Population-based care.¹⁰ Seven of the 12 domains (58%) mapped to the college’s curricular outcome 1: Demonstrate professionalism. A quarter of the domains mapped to some component of the college’s curricular outcome 5: Practice patient-centered care. The only two outcomes not mapped to the college’s curricular outcomes were 4: Practice evidence-based decision-making and 7: Manage medication use systems.²¹ All of the activities except two (1%) were mapped to at least one subdomain and one curricular outcome component.

In addition to reporting frequencies of codes assigned to each activity’s open-ended description of learning, mapping to ACPE Standards 1 to 4 and the college’s curricular outcomes is outlined in Table 3.^{10,21} All subdomains of ACPE Standards 1 through 4 were mapped to at least one of the 34 codes derived from students’ descriptions of their learning. The most frequently mapped subdomain (38%) was 4.1 Self-awareness. The least frequently mapped subdomain was 1.1 Foundational Knowledge (6%). Most of the college’s curricular outcome components mapped to at least one of the 34 codes with the exception of all of outcome 4: Practice evidence-based decision-making, and components B and C of outcome 8: Manage a pharmacy practice. The most frequently mapped curricular outcome component (65%) was 1A: Maintain professional responsibility and advocate such action in others. Most codes (59%) were only mapped to one curricular outcome component.

Table 2. Pharmacy Student Organization Representatives’ Reporting of Characteristics of Co-curricular Activities

Domain	Activities Associated With Domain, No. ^a	Percentage (%) of Total Activities (N=152)	Related ACPE Standards 1-4	Related College Curricular Outcome Component(s)
Promoted professionalism	131	86	4.4	1A, 1B
Developed communication skills	124	82	3.6	3A – 3D
Engaged in patient education skills	103	68	3.2	3B, 5A, 5C
Encouraged leadership development	87	57	4.2	1A
Engaged in cultural and/or social sensitivities	85	56	3.2, 3.5	1A, 1B, 5B
Promoted patient or pharmacist advocacy	79	52	3.3, 4.4	1C, 5A
Engaged in self-awareness	73	48	4.1	1A
Encouraged interprofessional collaboration	68	45	2.3, 3.4	9A, 9B
Developed problem solving skills	62	41	3.1	2A – 2E
Promoted innovation in pharmacy practice	58	38	4.3	1C, 2C, 8C
Offered patient clinical services	50	33	2.1, 2.3	5A – 5E, 6A, 6B
Developed skills in entrepreneurship	10	7	4.3	1C, 8C
Other	6	4	N/A	N/A

Abbreviations: ACPE=Accreditation Council for Pharmacy Education

^a Student organization representatives may have selected more than one domain per activity

Table 3. Mapping of Codes From the Content Analysis of Cocurricular Activities Sponsored by Student Organizations for Doctor of Pharmacy Students

Code	Activities Coded, No. (N=152)	Mapped ACPE Standards 1-4	Mapped College Curricular Outcome Component(s)
Patient education/counseling	36	2.1, 2.3, 3.2	3B, 5A, 5C
Communication skills	35	3.6	3A-3D
Health screenings	17	2.1, 2.3	6A, 6B
Teamwork skills	15	3.6, 4.2, 4.4	1A, 9B, 9C
Event management	14	3.1, 4.2	2A-2E
Knowledge/learning	14	1.1	1A
Value of interprofessional practice	11	4.1	1A, 9A
Interprofessional practice skills	11	3.4	9A-9C
Patient assessment	9	2.1	5B
Value of volunteerism	8	4.1	1A
Cultural sensitivity	8	3.5	1A, 1B, 5B, 6C
Career options	8	4.1, 4.4	1A, 9A
Value of patient education/counseling	7	4.1	1A
Healthcare disparity	7	2.4, 3.2	6C
Value of knowledge/education	6	4.1	1A
Leadership skills	5	4.2	1A, 1C
Empathy	5	4.1	1A
Advocacy	4	3.3, 4.4	1C, 5A
Career planning	4	4.1, 4.4	1A
Value of teamwork	4	4.1	1A
Value of profession of pharmacy	4	4.1	1A
Networking	2	3.6	3B
Professionalism	2	4.4	1A-1C
Pharmacy law	2	1.1	7A
Healthcare technology	2	2.2	8A
Approach to care	2	3.1-3.6	1A-1C, 2A-2E, 3A- 3D, 5A, 5B, 6C, 9A-9C
Value of research	1	4.1	1A
Motivation	1	4.1	1A
Value of lifelong learning	1	4.1, 4.4	1A
Value of event management	1	4.1	1A
Value of lifestyle modification	1	2.3, 4.1	1A
Knowledge of e-professionalism	1	4.4	1A
Value of communications	1	4.1	1A
Practice skills	1	2.1-2.4	5A-5E, 6A-6C, 7A-7E
Incomplete	2	N/A	N/A

Abbreviations: ACPE=Accreditation Council for Pharmacy Education

DISCUSSION

While there have been studies published describing how colleges of pharmacy have “curricularized” cocurricular activities within courses, this study describes a complementary novel approach to tracking student engagement in and learning from cocurricular activities and linking their characterization and descriptions of learning back to ACPE Standards and curricular outcomes.^{10,17,21} At Midwestern University Chicago College of Pharmacy, our students also complete a Professional Development four-course sequence in which they are required to participate in and reflect upon cocurricular activities within each of the courses. All students take Professional

Development I in fall of their P1 year, Professional Development II as a longitudinal course over their P2 year, Professional Development III in fall of their P3 year, and Professional Development IV in spring of their P3 year, immediately prior to beginning advanced pharmacy practice experiences (APPEs). The student representatives who completed the survey for this study would have at least completed Professional Development I in which they learned the basics of reflective writing and were required to submit a reflection on a cocurricular activity. The student organization post-event debrief survey described in this study that is submitted by student representatives is used to provide a snapshot of all of the

organizational learning that occurs in cocurricular activities beyond that which is reported in the cocurricular reflections submitted by individual students within the Professional Development course sequence. This combination of data collection techniques allows us to examine the impact of a wide array of cocurricular activities on student learning, while not placing the burden of reporting every activity on every student involved in a student organization.

Cocurricular activities clearly play a vital role in pharmacy education as illustrated by students' indicating how their cocurricular activities aligned with important competencies (Table 2) and students' descriptions of what they learned from these activities (Table 3). Students are using their cocurricular activities to practice pharmacy-specific skills, such as conducting patient education and counseling, health screenings, and patient assessments. Perhaps more importantly, these activities help students appreciate and recognize how involvement in cocurricular activities is a means of developing their professional and personal skills in self-assessment, leadership, and communication, all of which are arguably more difficult to plan and assess within the established pharmacy curricula.

Besides being more assured that students are receiving additional opportunities to shape their knowledge, attitudes, and skills, the mapping exercise helped us appreciate how students' cocurricular learning aligns with ACPE Standards 1 to 4 and college curricular outcomes.^{10,21} Similar to other colleges of pharmacy,^{19,20} we found that cocurricular activities align with expected outcomes. For example, whereas our college's curricular map includes relatively few learning activities in which skills such as leadership are taught and assessed, we affirmed that our students have many other opportunities to develop leadership skills through cocurricular activities given that "Encouraged leadership development" was selected as a domain for 87 (57%) of the activities, which aligns with Standard 4.2 Leadership. Because an average of 15 students (Table 1) participated in each of these 87 activities, there's a chance that many of our students had multiple cocurricular opportunities to develop their leadership skills outside of the curriculum throughout the year. Examining these data through the lens of mapping can help colleges of pharmacy better appreciate how cocurricular learning complements curricular learning.

There are limitations to this study. The individual student representatives tasked by their organization with completing the post-activity debrief questionnaire described what they believed all students who participated in the cocurricular activity had learned. While student organizations were instructed to have their student representative reach out to its members to gather their

collective thoughts and feelings about the activities, there was no guarantee that this was done consistently nor was there any assessment of the extent to which this occurred across student organizations, or whether there was sufficient inter-rater reliability across the student representatives who completed the questionnaires. In addition, the questionnaire did not measure depth or breadth of perceived learning, nor determine whether learning occurred in every student who participated in an activity. Further, the questionnaire data presented a snapshot of students' perceptions of learning that occurred and did not attempt to measure growth and development in individual students across time. In addition, the number of patients or clients served at community events, both health-related and non-health related, were best estimates. Demographic data on student participants were not collected; therefore, we do not know whether student participation in cocurricular activities varied across different demographic characteristics.

Potential areas for additional research in this area include correlating individual students' self-reflections on cocurricular activities within the Professional Development course sequence with that of the student representative for their organization to validate that student representatives are accurately capturing members' perceptions of an activity. In addition, objective evidence of curricular outcome achievement, such as performance on test items tagged to outcomes or preceptors' rubric ratings of individual student's achievement of outcomes, could be compared to student representatives' descriptions of collective cocurricular learning to further validate the process used in this study.

CONCLUSION

The results suggest that students acting as representatives of other student members in their respective organizations, can characterize and describe cocurricular activities as opportunities for learning. College faculty and administrators can use these descriptions to systematically examine how students' cocurricular learning complements curricular development of their knowledge, attitudes, and skills in pharmacy practice and personal and professional competencies.

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