







SHORT REPORT

Student-perceived impact of types of co-curricular activities in a Doctor of Pharmacy programme

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Abstract

Background: Co-curricular (CoC) activity tracking and assessment are required by the Accreditation Council for Pharmacy Education (ACPE) 2016 Standards. The purpose of this manuscript is to evaluate the student-perceived impact of the type of CoC activity chosen. **Methods:** First-year (P1) through third-year (P3) students in a 4-year Doctor of Pharmacy programme were required to complete two Professional Development Unit (PDUs) activities each semester and two Self-Selected Activities (SSAs) longitudinally through each academic year. PDUs include passive attendance at practitioner presentations, whereas SSAs require more active engagement, such as membership in professional organisations. Students completed surveys for each CoC activity. Survey responses for spring 2020, autumn 2020, and spring 2021 were collected through ExamSoft and analysed with PowerBI (2021) and IntellectusStatisticsTM (2019). **Results:** Students reported positive perceptions for both PDUs and SSAs in the areas of being “different from prior experiences”, “complimenting the curriculum”, “increased my understanding of the profession”, and being of “high quality”. Professional organisation activities were the most commonly selected SSA. Those activities with lower perceived benefit were less clearly aligned with the professional role of a pharmacist, such as intramural sports. **Conclusion:** Overall, most CoC activities that closely aligned with the profession of pharmacy were perceived to complement the curriculum and enhance students’ understanding of the field. Students reported perceived value in both active and passive CoC activities.

Introduction

Co-curricular (CoC) activities are considered to enhance student learning experiences through the support and application of learned concepts within the curriculum. Student involvement outside of the classroom began in colonial times with literary societies and religious activities, having since expanded to include myriad opportunities limited only by the imagination (Whipple, O’Neill, & Wilson, 2016). During the 1990s, seminal researchers identified student engagement as a key indicator for academic success and numerous other outcomes, e.g., cognitive development, practical competence, leadership, and educational persistence (Kuh, 1995; Tinto, 1997). Further, research postulated

that learning is enhanced through interaction and discourse with peers from diverse backgrounds. The resulting outcome from this research was the formal birth of the co-curriculum, its operationalism, and the assessment of outcomes.

Health professions education builds upon the scholarly body of co-curriculum research with the intention to further develop foundational knowledge through participation in knowledge-building communities, such as student organisations and clinical rotation activities. The application of course material in alignment with Budwig’s work on Liberal Education, pharmacy education utilises the co-curriculum to shift from the “learning about” material to “learning to participate”

(Budwig, 2013). Another research describes the growth in skills and achievement of learning objectives resulting from participation in student organisations. (Zeeman *et al.*, 2019b). The co-curricular body of research posits that practical education must go beyond learning by doing and supporting activities that encourage the student to adopt community practices, beliefs, and values essential for professional identity formation (Janke *et al.*, 2021).

The Accreditation Council for Pharmacy Education (ACPE) Standards 2016 outline requirements to both encourage participation in and assess the impact of CoC activities. At the Taneja College of Pharmacy, the Dean identified key stakeholders to lead CoC tracking implementation, which included the Office of Academic Affairs (OAA), Office of Student Affairs (OSA), Department Chairs, and core faculty. Initial planning began in the Autumn of 2016, when stakeholders contacted peer institutions to discuss ideas, review the available literature, and take inventory of existing activities that may already meet the co-curricular definition as per ACPE Standards 3 and 4. These Standards address key concepts related to the professionalisation of student pharmacists, with a focus on workforce preparation, professional preparedness, soft skill development, and core knowledge reinforcement.

Published literature on CoC was limited at the time the programme was being developed, as it was a relatively new concept. However, since CoC has been implemented within the college, literature has emerged regarding its implementation, methods, and outcomes. Concerns regarding documentation and assessment were among the main challenges identified with CoC implementation (Maerten-Rivera *et al.*, 2021). Some programmes utilise a pass/fail assessment method for CoC activities, with the addition of student reflections for professional development (Hoffman *et al.*, 2017). One programme evaluated student-reported involvement and skills obtained through CoC, with communication skills ranking highest, followed by professionalism, collaboration, and knowledge proficiency, despite varying degrees of student involvement in organisations (Zeeman *et al.*, 2019a). Research on student perceptions regarding the ability of CoC and mandatory curricular activities to meet programmatic outcomes noted trends of decreased improvement of programmatic outcomes with CoC activities, except for healthcare system resource utilisation, with mandatory curricular activities showing consistent improvement in these outcomes (Matthews *et al.*, 2022). A literature review reported positive student perceptions of CoC activities, barriers to participation due to voluntary options and limited clinical experience, and improved student knowledge

and academic performance (Onuoha, Garner & Fenn, 2021). Students have also reported that CoC activities support professional identity formation, through self-awareness and empathy and professional advancement, through exposure to diverse practice opportunities, leadership skills, and communication (Pahl *et al.*, 2022). However, no studies to date have evaluated the student-perceived impact of the different types of CoC activities experienced, which may provide guidance to colleges of pharmacy regarding CoC activity requirements.

The Taneja College of Pharmacy implemented formal CoC activity requirements with corresponding reporting for first (P1), second (P2), and third-year (P3) pharmacy students at the start of the Spring 2020 term; fourth-year (P4) students did not have CoC requirements. A formal training session was provided to impacted students. It reviewed the definition and role of CoC activities, ACPE requirements, the college's CoC Handbook, and activity and reporting requirements. A training session was also provided for all faculty so they could support advisees with the new process. Canvas sites were developed for each class, in which the CoC Handbook was posted for reference. Although CoC activities were not graded, students were instructed that completion was required to progress to the next academic year. CoC requirements included two Professional Development Units (PDUs) each term, except for Autumn P1, and two Self-Selected Activities (SSAs) for each academic year.

PDUs are approved 1-hour programmes coordinated by student organisations throughout the year, with guest speakers sharing experiences or providing professional development with the student body. PDUs serve as a precursor for future continuing education (CE) requirements and networking opportunities and introduce diverse practice exposures to help students identify areas of interest. Participation in these experiences is considered to be a more passive form of development.

SSAs were purposefully more broadly defined, ideally serving as longitudinal experiences that support professional or clinical development. These could include but were not limited to participation or leadership within student organisations, attendance at a professional meeting, community service, mentorship programmes, or state legislative days. Different activities could be completed throughout the academic year, but students were encouraged to select at least one longitudinal experience (i.e., organisation membership) for more impactful benefit. SSAs are considered to be more active forms of development, complementing PDUs.

The purpose of this pilot study was to evaluate the perceived impact of CoC activities for students within a Doctor of Pharmacy programme.

Methods

Students were required to complete standardised reflection surveys for each CoC activity by the second to last week of each term. These surveys included demographic data, Likert-scale reflection questions (ranging from 1-highly disagree to 4-highly agree), and a guided free-response reflection. Whereas a survey was completed for PDUs each term, SSAs were completed only after the spring term due to their longitudinal opportunities. The surveys were housed within class-specific CoC CANVAS courses and linked to ExamSoft. Reminders from the CoC coordinators were sent at the start of each academic term, mid-term, and one week prior to the deadlines. After the submission deadlines, student advisors were assigned to complete a review and provide feedback on the free response section.

Student reflection forms submitted for spring 2020, autumn 2020, and spring 2021 were included in the analysis. Data were pulled from ExamSoft and analysed with Microsoft PowerBI (2021) and IntellectusStatisticsTM (2019 [Online computer software]. Retrieved from <http://analyze.intellectusstatistics.com/>).

Results

A total of 366 students completed the CoC surveys during the pilot review, resulting in 2,167 surveys. The number of submissions per academic year status at the time of survey completion was 568 for PY1, 747 for PY2, and 852 for PY3. Students reported for more than one academic year based on the timeline of the pilot data evaluated (i.e., both PY1 and PY2). The average age of the participants was 22 years, with 77% having completed a bachelor’s degree or higher (Table I).

Student perception data for PDUs and SSAs can be found in Table II. Students most strongly agreed with the statement that PDUs were “high-quality” activities (mean 3.57) and generally had favourable perceptions of PDUs for the other components evaluated, with a mean of at least 3.32 for each statement. The most commonly selected SSA was membership in professional organisations, followed by professional meeting attendance and college committees/groups.

Students rated all SSAs over 3.0 (agree to strongly agree) for the statement that the activity was of “high quality”. Student perceptions also indicated that all SSAs but intramural sports complimented the curriculum.

Table I: Student demographics at the time of data assessment

Demographics	Number (%)
Gender	
Female	200 (55)
Male	153 (42)
Undisclosed	13 (03)
Average age	
	22
Highest degree	
High School	24 (6)
Associates	47 (13)
Bachelor of Arts	15 (4)
Bachelor of Science	263 (72)
Master of Science	3 (1)
Undisclosed	14 (4)
Academic year at time of submission*	
	568
PY1	747
PY2	852
PY3	

**Students may have submitted during more than one academic year based on the timeline of the pilot data evaluated*

Of the twenty-one options for SSAs, only intramural sports scored consistently low as an outlier, under 3.0 (agree to strongly agree) and with the highest variability through the highest standard deviations in three of the four statements assessed, which included “different from prior experiences”; “compliments the curriculum; and “increased my understanding of the profession”. However, there was a higher mean noted for intramural sports regarding the activity being of “high quality”. Lastly, students reported the highest agreement with both statements, “compliments the curriculum” and “increased my understanding of the profession” for those who chose to participate in the student-run free clinic (e.g., BRIDGE Clinic).

Table II: Student perceptions of CoC activities on a 4-point Likert scale

CoC activity Number overall responses (n, %)	Agreement to “Different from prior experiences” Mean (SD)	Agreement to “Compliments the curriculum” Mean (SD)	Agreement to “Increased my understanding of the profession” Mean (SD)	Agreement to activity being of “High quality” Mean (SD)
PDU 796 (100%)	3.33 (0.78)	3.32 (0.76)	3.33 (0.76)	3.57 (0.58)
Self-selected activities 1371 (100%)	3.36 (0.75)	3.34 (0.74)	3.33 (0.80)	3.51 (0.64)
Professional organisations (494, 36.00%)	3.26 (0.76)	3.20 (0.74)	3.30 (0.74)	3.43 (0.63)
Professional meeting attendance (179, 13.10%)	3.59 (0.59)	3.53 (0.66)	3.50 (0.71)	3.43 (0.63)
College student group/committee (138, 10.11%)	3.30 (0.80)	3.38 (0.61)	3.34 (0.75)	3.52 (0.56)
Board of pharmacy meeting (83, 6.10%)	3.24 (0.86)	3.28 (0.82)	3.34 (0.82)	3.24 (0.89)
BRIDGE clinic ^a (58, 4.24%)	3.78 (0.50)	3.76 (0.51)	3.79 (0.41)	3.72 (0.56)
Student delegate (50, 3.65%)	3.22 (0.91)	3.30 (0.71)	3.08 (0.70)	3.54 (0.54)
Student leadership retreat ^b (44, 3.22%)	3.39 (0.62)	3.32 (0.67)	3.11 (0.81)	3.39 (0.58)
Pizza policy night ^c (40, 2.92%)	3.08 (0.80)	3.27 (0.64)	3.38 (0.70)	3.45 (0.64)
Legislative days (37, 2.70%)	3.51 (0.56)	3.70 (0.52)	3.76 (0.43)	3.78 (0.42)
Mentor/mentee (35, 2.56%)	3.40 (0.69)	3.29 (0.75)	3.23 (0.73)	3.60 (0.55)
MCOM scholarly concentration program ^d (33, 2.41%)	3.64 (0.49)	3.58 (0.71)	3.42 (0.87)	3.39 (0.75)
Field experience/ Mission trip (30, 2.19%)	3.67 (0.84)	3.43 (0.94)	3.63 (0.81)	3.83 (0.75)
Intramural eports (29, 2.13%)	2.52 (1.02)	2.66 (1.14)	1.79 (1.29)	3.24 (0.87)
APhA patient counseling competition (27, 1.98%)	3.63 (0.56)	3.59 (0.64)	3.30 (1.03)	3.67 (0.48)
Community service hours (26, 1.90%)	3.04 (0.77)	3.15 (0.83)	2.96 (0.87)	3.54 (0.58)
Community service hours (pharmacy) (23, 1.69%)	3.83 (0.39)	3.70 (0.56)	3.61 (0.66)	3.74 (0.62)
Leadership training programme (16, 1.17%)	3.56 (0.51)	3.06 (0.85)	3.25 (0.68)	3.62 (0.62)
H.O.P.E. seminar ^e (15, 1.10%)	3.33 (0.49)	3.60 (0.51)	3.00 (0.70)	3.87 (0.35)
ASHP leadership workshop (11, 0.81%)	3.55 (0.52)	3.55 (0.52)	3.36 (0.67)	3.55 (0.52)
PLS E-board transition workshop ^f (2, 0.01%)	3.50 (0.71)	2.00 (2.83)	3.00 (1.41)	4 (0)
Art in healthcare ^g (1, 0.01%)	4 (-)	4 (-)	4 (-)	4 (-)

^aBRIDGE Clinic is a free, interdisciplinary health clinic run by the university with a focus on underserved populations

^bStudent Leadership Retreat is a 1-day workshop hosted by the Office of Student Affairs each January for all student organization leaderships

^cPizza and Policy Night is an annual professional social hosted by the student APhA Chapter to provide legislative updates during dinner

^dMorsani College of Medicine (MCOM) scholarly concentration program is an optional interdisciplinary training certificate students can earn longitudinally during their enrollment in the college

^eH.O.P.E. Seminar was an optional semester-long module offered to PY1 students in the autumn to assist with the transition to the Doctor of Pharmacy Program

^fPhi Lambda Sigma (PLS) E-board transition is hosted each spring for all organizational leaders in an effort to support an effective handoff as new executive boards are installed

^gArt in Healthcare is an interdisciplinary workshop offered annually to explore the intersection between healthcare, art, and wellness

Discussion

In general, the implementation of the pilot CoC programme went fairly smoothly, with requirements being the most frequent clarification from students and faculty. The use of an online CoC tracking system through CANVAS and ExamSoft was well received by faculty and students. These systems facilitated awareness of required reflections, tracking of completion by all stakeholders, and conversion of data analysis. The entire process was very time-intensive for the CoC taskforce members, as it required regular communication and responses to student/faculty e-mails, tracking of student completion, granting extensions, and review of process improvement for each term with the administration. All students completed the CoC requirements before progressing to the subsequent academic year.

Student responses for the overall means between PDUs and SSAs were comparable. Students reported higher agreement to SSAs differing from previous experiences and complimenting the curriculum, while PDUs were rated higher for quality of the activity. The average mean for both categories was the same for their ability to enhance student understanding of the pharmacy profession. This information was somewhat unexpected as it was anticipated the SSAs would perform higher due to their active format and more longitudinal application. It is possible that student experiences in SSAs may have been impacted by the fact that many are student-led as compared to a PDU being practitioner-led, which may influence the perceived value of the experience. The PDUs were also specific in the outcomes intended based on the topic of the event, which may have made it easier for students to more clearly identify alignment with the profession and curriculum. Finally, the level of engagement each student had within their selected SSA most likely varied, thereby impacting perceptions of activity value. Regardless of the reason, it appears that varying CoC activity options allows exposure to different formats and levels of engagement, further supporting student development.

Student responses for PDUs were higher than anticipated as this activity is more passive and consists of predominantly listening to guest speakers. Most notably, the highest agreement for PDUs was the quality of the activity, suggesting that students appreciate the opportunity to absorb information from specialists in a field or topic, adding to existing knowledge. Attendance at these presentations appear to add values, despite not having a requirement for application.

Overall, students reported that their chosen SSAs were generally of "high quality", with the lowest mean reported for an activity being 3.24 on the 4-point scale. This information is insightful since this is the first review

of student perceptions regarding the types of CoC activities utilised. All provided SSA categories were selected by at least one student, suggesting that a flexible menu of options is ideal for meeting student interests. Providing diverse CoC opportunities to students may enhance self-reflection on their impact.

Unsurprisingly, the majority of students selected professional organisation membership as an SSA since students often engaged in these activities prior to the CoC programme. Professional organisations offer students an opportunity to expand professional and social networks while allowing the exploration of professional interests and opportunities. Of note, students reported this as a lower quality experience (mean 3.43) as compared to other opportunities listed. This result may be due to two reasons: a) having the highest number of respondents provided a more reliable mean, and/or b) students had high expectations for these activities.

The lowest mean responses and highest variability to the quality of the activity were seen in the Board of Pharmacy (BOP) meeting attendance and intramural sports. Perceptions regarding BOP meeting attendance may relate to the level of engagement and the nature of cases brought forth during the meeting. Intramural sports responses were not necessarily surprising as this may be difficult to link back to the overall development as a pharmacist, although the CoC task force does feel that it supports soft skills such as leadership, communication, and reliability.

Limitations

Although this pilot study provides valuable insight into CoC activities, it has some limitations. As it was intended to provide an initial snapshot into student perceptions of CoC activities, the survey tool utilised has not been validated. The categories with fewer responses may have been skewed, and the student perceptions reported may not be generalisable. The activities with higher standard deviations suggest a possibility that the level of participation may have varied highly per student, resulting in higher or lower perceived quality.

Despite these considerations, this information is valuable in providing the first account of student perceptions regarding the different types of CoC activities. Future analyses may include a longitudinal assessment of student perceptions across the totality of enrollment in the programme, the evaluation of perception changes between academic years regarding specific activities, the comparison of CoC activities between academic years, the comparison of CoC activities based on student engagement levels, and the impact of enhancements to the CoC programme.

Conclusion

Overall, CoC activities that closely aligned with the profession of pharmacy were perceived to complement the curriculum and enhance students' understanding of the field. Data suggest that students perceived most CoC activities as high-quality experiences. Student perceptions regarding PDUs and SSAs were comparable, indicating the value of both passive and active CoC experiences. The high variability in student responses may have been secondary to the level of student engagement. The data supported the enhancement of co-curricular activities.

Future directions

Information gathered from the pilot data will be used to further enhance the offering of co-curricular activities. Correlation between the type of co-curricular activities and career choices of the graduates will be conducted in the future. A survey of graduates to assess the importance of co-curricular activities in determining their career trajectories is also in works.

Conflict of interest

The authors declare no conflict of interest.

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