

INSTRUCTIONAL DESIGN AND ASSESSMENT

A Regional Poison Prevention Education Service-Learning Project

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Objective. To create a service-learning project to provide poison prevention education to preschool through fifth-grade students.

Design. The School of Pharmacy collaborated with the Illinois Poison Center and campus departments to train pharmacy students as poison prevention educators. Seventy-eight first-year pharmacy students developed and gave age-appropriate, interactive presentations to more than 8,000 students at pre-schools and elementary schools.

Assessment. Preintervention and postintervention evaluations and reflections were collected from the pharmacy students. Ninety-nine percent agreed that they enjoyed the experience and 88% stated that they would continue to provide poison prevention presentations. Based on written assessment of the presentations, most of the preschool and elementary teachers agreed or strongly agreed that the presentations were organized, clear, appropriate for the students, and relevant, and that the pharmacy students appeared knowledgeable and professional.

Conclusion. Poison prevention education was an appropriate service-learning project for pharmacy students and provided a beneficial service to the community.

Keywords: introductory pharmacy practice experience, service-learning, poison prevention

INTRODUCTION

The Final Report of the American Association of Colleges of Pharmacy's (AACP's) Professional Affairs Committee and the Accreditation Council for Pharmacy Education (ACPE) Standards and Guidelines included a description of service-learning as a form of experiential education (Table 1).^{1,2} This description was expanded at the AACP 2007 Interim Meeting, "Engaging Communities: Pathways to Learning, Scholarship, and Service," by explaining necessary components of a successful service-learning program. The 4 main components of a successful program identified were: learning, community collaboration, funding, and community-engaged scholarship.³

The Southern Illinois University Edwardsville (SIUE) School of Pharmacy (SOP) has incorporated service-learning into the doctor of pharmacy (PharmD) curriculum as part of the introductory pharmacy practice experience sequence as a 1-credit required course during the spring semester of the first professional year. The purpose of the course is for pharmacy students to engage in activities that address human and community needs, together with structured opportunities designed to pro-

mote student learning and development. Service opportunities in the course are designed around a single topic. After students are educated about the topic, they then provide their knowledge as a service to the community. Placing the service-learning course so early in the curriculum makes it challenging to find topics with which pharmacy students feel comfortable, yet are large enough in scope for the entire class to participate.

Poison prevention education programs (30 to 45 minutes in length) targeted to primary school students effectively improve knowledge about poisons in this population.^{4,5} The program coordinators recognized that this topic would be appropriate for first-year pharmacy students. Poison prevention education was also acknowledged as a potential need in the community based upon several recent requests to our faculty members by area schools for such programming.

The Illinois Poison Center (IPC) provides state-of-the-art poison information to a larger population than any other poison center in the nation.⁶ In order to provide poison prevention information throughout Illinois, the IPC launched an online Poison Prevention Education Resource Center (PPERC) to empower anyone in Illinois interested in sharing poison safety and prevention information with the necessary education, presentation tools, and educational materials to do so. The PPERC is the only online training program/resource center of its kind for

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Table 1. American Association of Colleges of Pharmacy Professional Affairs Committee's Description of Service-learning as a Form of Experiential Education¹

Service-learning is a form of experiential education which:

- meets the actual needs of the community;
 - establishes a relationship between the community and the academic institution;
 - helps foster civic responsibility or the development of a sense of caring for others;
 - is integrated into the required academic curriculum;
 - provides structured time to reflect on the service experience;
 - enhances what is taught in school by extending student learning beyond the classroom and into the community;
 - attempts to balance the service that is provided and the learning that takes place.
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poison centers in the United States.⁷ The American Association of Poison Control Centers (AAPCC) reports that children (age 19 and under) are the largest population involved in poison exposures (64.5%).⁷ The IPC was contacted to be a collaborative partner and was supportive of the program. In addition to training the pharmacy students to become poison prevention educators, they assisted with supplies for the program. A \$5,000 grant was also obtained from The Meridian Society to cover the cost of materials.

Our learning objectives for the project were for pharmacy students to use information learned in the poison prevention education program from the Illinois Poison Center to develop a 30-45 minute presentation in poison prevention; identify poison prevention roles for a pharmacist within the community; communicate effectively; work effectively within a team; and project a professional image.

DESIGN

With input from the SIUE School of Education, it was decided to target preschool through fifth-grade students as this would provide a large enough population to secure the necessary number of presentations and would be the most feasible population within which to schedule presentations. Public and private elementary schools in the 2 counties surrounding SIUE were invited to participate. Initial contact with the schools was made by attending the Regional Office of Education meetings for school administrators to promote the project and to distribute program flyers to principals in attendance. Follow-up e-mails were sent to principals of public schools in both counties in early September 2006. Private schools and SIUE Head Start Programs in the area were also contacted via e-mail or telephone. We relied on those interested to contact the collaborators to schedule a presentation date.

The SIUE SOP spring semester of the first year is 18 weeks long with a 3-week break from didactic classes in the middle to allow pharmacy students to participate in introductory pharmacy practice experiences. The service-learning course is designed to meet for 1 hour weekly

throughout the semester to prepare students for off-campus experiences. During that time, pharmacy students receive training in the service area for 7 weeks, spend the next 3 weeks providing the service to the community, and then have 7 weeks for follow up when they return.

Presentations to the schools were to be given during the 3-week timeframe devoted to introductory pharmacy practice experience (February 21, 2007, through March 9, 2007). Reservations for presentation times were taken during the previous semester on a first come, first served basis through December 15, 2006. Three hundred forty-two presentations were scheduled to be given to more than 8,000 preschool and elementary school students. Once all presentations were scheduled, the course collaborators assigned pharmacy students into teams of 2 and appointed them to presentations. To allow for concentration on age-appropriate presentations, the pharmacy students were divided into cohorts for preschool presentations, presentations to kindergarten through second graders, and presentations to third through fifth graders. Each team was scheduled to give 8 to 10 presentations for their assigned age group.

The service-learning preparatory course began in January 2007. There were 78 pharmacy students enrolled in the course. The Director of Experiential Education acted as the course coordinator and was assisted by 2 faculty members who have an interest in community wellness initiatives and volunteered as collaborators. Each collaborator assisted in course development as well as material and course preparation. During the first meeting, the pharmacy students were introduced to the IPC PPERC program and were informed of their groups and presentation schedule. A faculty member also gave a sample poison prevention education presentation. The following week, pharmacy students were required to submit the certificate from the IPC PPERC program to show completion of the online training program. A faculty member from the Department of Curriculum and Instruction in the SIUE School of Education led a class period to provide tips for presenting to young students. Additional class periods

were devoted to describing program templates, discussing visual aids, submitting drafts of presentation outlines, and putting together “goody bags” of materials to be given to the preschool and elementary school students during the presentations. The first 2 days of the 3-week service portion of the semester (February 19-20, 2007) were dedicated to students giving their presentation to a faculty member and at least 1 other pharmacy student team for approval before going out into the community. Any teams that were not fully prepared were asked to do more preparation and present again prior to going out into the community.

The presentations consisted of a simple take home message, such as “Always Ask First.” The pharmacy students used multiple methods of their choice to get the message across. The Illinois Poison Center web site included several recommendations for possible methods that the pharmacy students could use in developing their presentations. Examples included: games, skits, puppet shows, storybooks, and illustrations of poison/food look-alikes and medicine/candy lookalikes. All of the preschool/elementary school students were given a “goody bag” consisting of a short letter to the parents informing them of the presentation, magnets and telephone stickers with the poison hotline number, a spring poison education brochure from the IPC, and an activity book and crayons (preschool, first, and second grade students), or chip clip (third, fourth, and fifth grade students). The “goody

bags” were intended to reinforce the message for students, and provide take-home information for parents or caregivers. The teachers were given an evaluation form to fill out during the presentation and a statement about which Illinois State Board of Education standards would be met during the presentation. The pharmacy students also chose or created a follow-up activity with instructions that the teacher could conduct with the students to reinforce the message during National Poison Prevention Week, which took place shortly after the students’ presentations. The follow-up activities included pictures to color, puzzles, word searches, and a magnet game.

Several forms of assessment were incorporated into the service-learning project to document achievement of the learning objectives. The preschool and elementary school teachers observed the presentations and completed an evaluation. Pharmacy students completed preintervention and postintervention evaluations, as well as a reflective evaluation. Questions included on the evaluation forms are presented in Table 2 and Table 3. Faculty members also evaluated the presentations prior to presentation to the children. Upon advice from the SIUE School of Education, the elementary school students were not asked to complete evaluations due to consent issues. Requiring parental consent may have decreased the number of viable sites and student participation. Data on the number of presentations given and the number of students in attendance were collected. Assessment of experiential

Table 2. Presentation Checklist

Presentation Plan

- Age group of children being presented to (please note):
- Demonstrates team introduction to teacher and requests teacher to complete evaluation and return at the end of the presentation in the envelope provided.
- Team member with responsibility for sufficient goody bags identified.

Introduction

- Team satisfactorily explained what a pharmacist does.

Presentation

- Props are appropriate and safe for the classroom.
- Presentation blocks of no more than 5 minutes with a break for Q & A or activities.
- Plan for distributing handouts is satisfactory.
- Team has a time keeper.
- Team can explain their back up plan to the faculty member if activities take less time/more time than expected or if students seem bored/aren’t getting it.

Closure

- Team has a plan to clean up materials (if necessary) after the presentation.
- Team member remembers to ask the faculty member for the evaluation after the presentation. (The teacher’s evaluation for return to the course coordinator).

Follow Up

- Team members address state education benchmarks to the “teacher” (faculty member).
 - Team member presents the teacher with a suitable class activity related to poison prevention for use at a later date.
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Table 3. Results from Preschool/Elementary School Teacher Feedback, % (N=319)

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Response
This presentation was well organized.	89	10	0	0	1
The topic was covered in a clear fashion.	85	14	0	0	1
The presentation was given in a professional manner.	88	11	0	0	1
The presenters were able to keep the students' attention.	83	15	0.7	0.3	1
Both presenters significantly contributed to the presentation.	89	8	1	0	2
The information provided in the presentation was appropriate for the students.	88	10	0.3	0	1.7
The presenters were able to incorporate the students into the presentation.	93	7	0	0	0
The information in the presentation was relevant to the topic.	93	7	0	0	0
The presentation reflected a thorough knowledge of the topic.	88	11	0	0	1
The presentation was given within the time limits.	81	13	1	0	5
The presenters were able to respond effectively to questions posed by the students.	85	12	0	0	3
The presenters were appropriately dressed for the occasion.	93	7	0	0	0

education activities was approved by the SIUE Institutional Review Board.

The pharmacy students' ability to develop an effective poison prevention education program was evaluated by the elementary school teachers, the pharmacy students themselves, and a faculty member. The teachers evaluated the organization, clarity, ability to keep the students' attention, relevance and appropriateness of the information, pharmacy students' knowledge of the topic, and ability to answer questions. Pharmacy students evaluated their own and their teammate's contributions to the presentation, preparedness for the presentation, and ability to keep the students' attention. The faculty member completed a rubric that rated each of the following aspects of the presentation as outstanding, satisfactory, or needs improvement: introduction, organization, depth of content, accuracy of content, questions and answers, communication aides, grammar and verbal communication, non-verbal communication, presentation summary, and presentation pace and length. The faculty members also completed a presentation checklist that appears in Table 2. Communication skills were evaluated by the elementary school teacher evaluations and the faculty member. Ability to work with a teammate was assessed by the elementary school teachers (both presenters significantly contributed to the presentation), the pharmacy students' self-evaluations (each member contributed, listened to, and respected ideas and input, and I would work with my co-presenter again), and the faculty member evaluations (each team member participated in completing the objectives). Professionalism was assessed by the elementary teacher evaluations (presentation was given in a professional manner, presenters were appropriately dressed) and faculty member evaluations.

ASSESSMENT

Ninety-nine percent of the teachers agreed or strongly agreed that the presentations were organized, clear, appropriate for the students, and relevant, and that the pharmacy students appeared knowledgeable, and professional, and were able to answer questions (Table 3). The teachers were given the opportunity to provide additional written comments. Comments given by several of the teachers included: that presentations were given at an appropriate level for preschool/elementary students, the preschool/elementary students were engaged during the entire presentation, the pharmacy students' interaction with the children was excellent, the preschool/elementary students benefited from the experience, and teachers would like to see the program presented annually. Comments for improvements related to having larger visual aids that all the students could see and including information in Spanish to take home to families.

The results from the pharmacy students' self and co-presenter evaluations appear in Table 4. Pharmacy students' stating that they agreed or strongly agreed that they enjoyed the experience overall improved from 88% prior to the presentations to 99% afterwards. Eighty-eight percent of pharmacy students stated that they agreed or strongly agreed that they would continue to give poison prevention presentations again if they had the opportunity.

The reflection questions posed to the pharmacy students appear in Table 5. Fourteen out of the 77 (18%) students who turned in reflections stated that they had not participated in any community outreach programs prior to the service-learning course. Most had participated in some kind of volunteer program through church or school activities in the past.

Table 4. Results From Pharmacy Students' Preintervention and Postintervention Evaluations, %

		Strongly Agree	Agree	Disagree	Strongly Disagree
I made a meaningful contribution to the presentation (N=74 Pre, =75 Post)	Pre	85	15	0	0
	Post	95	5	0	0
My co-presenter made a meaningful contribution to the presentation (N=74)	Pre	91	9	0	0
	Post	92	8	0	0
My co-presenter listened to and respected my ideas and input (N=74)	Pre	93	7	0	0
	Post	95	5	0	0
I was fully prepared for the presentation (N=74 Pre, =75 Post)	Pre	53	43	4	0
	Post	87	13	0	0
My team was able to keep the students' attention (N=75 Post)	Pre	N/A	N/A	N/A	N/A
	Post	80	20	0	0
I had access to adequate visual aids for my presentation (N=73 Pre, =75 Post)	Pre	81	18	1	0
	Post	93	7	0	0
I would work with my co-presenter again (N=74)	Pre	88	9	3	0
	Post	86	9	4	0
Overall, I enjoyed this experience (N=70 Pre, =75 Post)	Pre	57	32	11	0
	Post	71	28	1	0
Given the opportunity, I would continue to give poison prevention presentations (N=70 Pre, =73 Post)	Pre	37	47	14	2
	Post	50	38	12	0

Many of the comments about the learning experience focused on communicating with children and gaining presentation experience. In the post experience reflections, the pharmacy students indicated that they had met their expectations and were more confident in both their ability to get a message across to a younger audience and their ability to present poison prevention education.

The greatest concerns that the pharmacy students noted prior to giving the presentations related to fears of not being able to hold the students' attention, speaking in front of a group of young children, and fear of the unknown, especially not being able to prepare for what questions the students might ask. Overall, they felt like they were able to appropriately redirect the students when they got off track and they had planned enough interaction with the students throughout the presentations that the pre-school and elementary school students were not bored.

Pharmacy students identified roles for a pharmacist in community engagement by indicating their desire to continue giving poison prevention presentations and by their reflective responses of what they could see themselves doing in their community in the future as a pharmacist. Many of the pharmacy students responded that they could see themselves leading smoking cessation or disease state prevention programs in their pharmacies or clinics following pharmacy school to give back to the community. Others picture themselves providing presentations similar to the poison prevention education presentations to either children or adults.

All pharmacy student teams had to achieve at least a satisfactory rating for each of the components previously mentioned before they were allowed to give their presentations to the community. Each of the bullets on the presentation checklist (Table 2) also had to be met. Four

Table 5. Reflection Questions Posed to the Pharmacy Students

Pre-experience
1. What type of community outreach experiences have you previously been involved with?
2. What are your learning expectations for this experience?
3. What is your greatest concern prior to making your Service-learning presentations?
Postexperience
1. Did you meet your learning expectations for this experience? Explain your answer.
2. How did you deal with the concern you had prior to the presentations?
3. Consider the experiences you had during Service-learning. What one experience will be the most memorable and why?
4. You are now a practicing pharmacist. What would you like to do on a regular basis to help your community?

groups had to repeat their presentations before receiving final approval.

DISCUSSION

As evidenced by the pharmacy student and teacher evaluations and documented achievement of learning objectives, this was a successful service-learning project. Overall, the pharmacy students enjoyed the community service and learned to be effective poison prevention educators. Their assessments of themselves and their teammates indicated achievement of the ability to work as a team. The teachers and pharmacy students stated that the preschool and elementary school students learned an important message. Many comments in the pharmacy students' reflections stated that the project helped them to be more comfortable with this potential patient population and to feel more comfortable doing these kinds of presentations for future community service. The reflections also indicated that the pharmacy students would be interested in creating various programs in their pharmacies in the future to better serve their patient populations.

This program was well received in the community. Almost all of the teachers indicated that they would invite the presenters to return and several commented that they would like to see this as an annual program in their schools.

A few difficulties were encountered in putting this program together. The primary struggle was the faculty time commitment needed to schedule the presentations. Most communication was initially done via e-mail; however, scheduling of the actual presentations sometimes took many calls to teachers who were not always easy to reach since they were in class during the day. Also, assignment of the pharmacy student teams to give the 342 presentations was time consuming because the faculty member had to make sure presentation assignments were distributed equally among the students and that teams were not scheduled to present in 2 different places at the same time. Based on student feedback, students may be allowed to pick their own teams in future course offerings. The total cost of providing more than 8,000 preschool and elementary students with "goody bags" to take home to their families was \$5000. The pharmacy students were responsible for the cost of creating the visual aids used.

Due in part to the time commitment and cost of materials, this program will likely be repeated only once every few years. Since students from kindergarten through fifth grade at many schools have been educated this year, it would be best to wait before providing the program on this large of a scale again. The only thing that the collaborators thought should be revised to improve the program was to

have better communication about the length of time of the presentations.

Because our students are already trained as poison prevention educators, we have continued to accept individual requests to provide poison education programs in schools. This service is being managed through our student professional organizations. Some pharmacy students have also been scheduling presentations on their own in their hometowns and in their children's schools if the schools did not participate in our program.

SUMMARY

This service-learning program was beneficial to both the pharmacy students and the community. It also met the components that AACP used to describe service-learning as a form of experiential education as well as the components suggested to create a successful program.

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