TEACHERS' TOPICS

Mentoring Prospective Pharmacy Practice Faculty: A Seminar Series on Teaching for Pharmacy Residents

Lynne M. Sylvia, PharmD

Massachusetts College of Pharmacy and Health Sciences

Submitted August 25, 2003; accepted October 14, 2003; published May 25, 2004.

Objectives. A monthly seminar series on teaching was designed to introduce pharmacy residents to the elements of effective teaching and to offer them a forum in which to discuss contemporary issues in pharmacy education.
Design. The design of the program was discussion-based teaching. Scenarios were developed to reflect issues or problems pertinent to 6 central themes in pharmacy education. Using a tutorial approach, the 19 residents presented their solutions to these scenarios on a rotating basis as a means of facilitating discussion.
Assessment. Evaluations of the program were largely positive. The discussion-based format was effective and found to be more preferable to a lecture format. Following completion of the program, self-assessments revealed consistently improved levels of knowledge in each of the program's content areas.
Conclusion. With the graying of the faculty, colleges of pharmacy are encouraged to be proactive in recruiting qualified candidates for faculty positions. This seminar program offered prospective faculty candidates a greater appreciation for the demands and rewards of an academic career, thereby increasing the level of preparedness of these candidates for a faculty position.

Keywords: mentoring, pharmacy practice, teaching, resident

INTRODUCTION

The need for career mentoring in academic pharmacy has been a recurring theme for the past 10 years. The graying of the faculty, the presence of challenging nonacademic positions in pharmaceutical industry, and a lack of appreciation and preparedness for an academic position by qualified candidates are factors contributing to the shrinking pharmacy faculty pool.[1] To replenish and fortify the academic workforce, schools of pharmacy are encouraged to identify potential faculty candidates early in their career development, before they pursue other challenging career opportunities.[2] After identifying potential candidates, innovative programs that both nurture the academic spark within these individuals and expose them to the culture of academic life are recommended.[2]

Pharmacy practice residents and fellows typically constitute a body of highly motivated individuals who are at the cusp of making a career decision. At many schools of pharmacy, such individuals routinely participate in academic programs as instructors in the classroom and as co-preceptors in the experiential settings. In 2002, nineteen individuals were undertaking a pharmacy residency situated in Boston. All of these individuals had the opportunity to engage in teaching activities affiliated with 1 of 2 schools of pharmacy in Boston; however, none had received any prior formal instruction in teaching theory or principles, and none had had any prior experience as a clinical instructor. In an effort to expose these residents to an academic career, teaching seminars were designed and offered to the residents on a monthly basis at the Massachusetts College of Pharmacy and Health Sciences in Boston (MCPHS-Boston).

The primary goal of the seminar series was to introduce the residents to the elements of effective teaching and to offer them a forum in which to discuss contemporary issues in pharmacy education. A secondary goal of the program was to foster the professional development of prospective pharmacy practice faculty candidates.

Corresponding Author: Lynne M. Sylvia, PharmD, Department of Pharmacy Practice MCPHS-Boston, 179 Longwood Avenue, Boston, MA 02115. Tel: 617-732-2233. Fax: 617-732-2244. E-mail: lsylvia@mcp.edu

PROGRAM DESIGN

The seminar coordinator, a full-time faculty member

at MCPHS-Boston, initially held an informal meeting with the 8 residency coordinators of the Boston-based residency programs to discuss the format, structure, and goals of the seminar series. The specific goals of the program were as follows:

1. to develop a structured approach to clinical teaching;
2. to design and evaluate competency-based learning objectives;
3. to discuss issues relative to teaching strategies as they relate to learning styles;
4. to identify the 3 domains of learning and the taxonomies used in the assessment of these domains;
5. to retrieve academic literature and apply it to real world situations relative to pharmacy education;
6. to develop and evaluate an experiential rotation designed for pharmacy students;
7. to design and critique assessment techniques including examination questions, collaborative learning (group-based) assessment techniques, and oral presentation assessment methods;
8. to present a plan or approach to the resolution of the problem when presented with a scenario/problem specific to an aspect of clinical teaching

All of the residents participating in a Boston-based residency and their residency coordinators were formally invited to participate in the program. The residency coordinators served as education liaisons. Their involvement in the program was considered as a key feature, facilitating the resident's application of principles learned in the seminar to the clinical practice and patient-care settings. They were encouraged to attend each session, participate in the discussions, and attempt to reinforce concepts presented in the seminar series to the education-related components of the residency program.

The seminar series consisted of 8 sessions held at the college on a monthly basis from September 2002 through May 2003, excluding December. Each session was 2 hours in duration, except for the first session which was 3 hours in length. The first session, led by the seminar coordinator, offered an introduction to the basic elements of effective teaching. Topics discussed in this session included learning styles, the domains of learning, the Center for the Advancement of Pharmaceutical Education (CAPE) outcome statements, and the 10 steps to instructional design as described by Dick and Carey.[3] An active learning approach was used to elicit the participants' opinions on the characteristics of effective teaching and the impact of learning styles on the professional development of the pharmacy student. During this session, the format and structure of the program were also discussed.

The format of the seminar series was discussion-based teaching modeled using a tutorial approach. This program design was loosely based on an adaptation of the Oxford-style tutorial offered at Williams College. As described by Smallwood,[4] tutorial-based courses at Williams College foster personal relationships between students and faculty members, improve student's oral communication skills, and teach students how to present and critique an argument. Using this course design, students learn by solving problems and debating their solutions to the problems with peers. Tutorial courses typically pair 1 or 2 students to 1 professor. Each pair of students meets weekly with the professor to discuss problem sets that focus on course content. In advance of each tutorial session, students receive both reading lists and problem sets. During each tutorial session, one student presents their solution to a particular problem that relates to the course content; the other student is responsible for providing an oral critique of the solution. Learning is achieved through discussion and debate, and the professor serves as a facilitator of learning rather than a lecturer or content expert. As noted by Smallwood,[4] "If all goes well, the professor stays quietly in the background."

The tutorial model described by Smallwood[4] was adapted to accommodate a seminar program involving 19 pharmacy residents. During the introductory seminar, each resident was asked to choose 2 central topics of interest relating to pharmacy education from a list of 6 topics. The central topics or themes were experiential education, collaborative learning, large group (lecture) teaching, overcoming barriers to effective teaching with a focus on active learning strategies, dealing with incivilities, and developing a teaching philosophy. Each resident was subsequently assigned to present a solution to 1 scenario relating to 1 area of interest, and to critique the presentation of a peer's solution relating to a second area of perceived interest. Using this format, each resident was responsible for providing only 2 formal presentations during the entire seminar series, 1 of which was a critique.

Prior to each monthly seminar, recommended readings, a reading list, recommended Web sites, and 3 scenarios relating to a specific theme in pharmacy education were distributed to all of the residents. At each session, the 3 related yet different scenarios were presented by 3

Table 1. Seminar Themes and Scenarios

Date and Session Topic	Sample Scenario/Problem
September 2002:Introductory session (3-hour session on learning styles, teaching strategies, domains of learning)	Not applicable
October 2002:Experiential Education	Assume that you were recently hired as an Assistant Professor of Pharmacy Practice. At your practice site (acute care, community practice, ambulatory practice), you have been asked to customize a 5-week advanced pharmacy experiential (APE) program for 6th year students. Using the outcome statements described by ACPE, and the college-based goals of the APE, design a 5-week APE specific to your specialty area. Include competency statements, list of required activities, and an assessment tool.
November 2002:Collaborative learning	For collaborative learning to be effective, there must be group goals and individual accountability. As an educator, how do you ensure individual accountability when students are assigned to small groups? Describe how you would ensure active participation of all group members and 'fair play' with regard to the assignment of group grades.
January 2003:Large group teaching	Describe an experience that you had with large group teaching this year. In your description, discuss the following: (1) the type of presentation; (2) the audience; (3) the allotted time; (4) the learning objectives. What did you learn from this experience relative to the preparation and delivery of the lecture? In retrospect, what would you have done differently and why? Did you assess competence? If so, please present your assessment tools (exam questions etc).
February 2003:Affective domain of learning; Incivilities	Please assume that a co-worker/co-faculty member approaches you. She expresses to you that she is having many problems in the classroom with rudeness, lack of respect and unprofessionalism on the part of the students. She now asks for your advice. How can she gain better control in the classroom? Is it appropriate to single out the offenders in class?
March 2003:Barriers to learning and Active Learning techniques	Please take an existing presentation/lecture and redesign it to fit an active learning format or enhanced lecture format. What individual tasks would you ask the students to do in order to integrate active learning? What small group tasks would you employ? Please assume a class size of 100 students.
April 2003:Teaching philosophy statements and portfolio development	Please read the three selected papers from the Chronicle of Higher Education. Please present a brief summary of the author's teaching philosophy or point of view on teaching. Also provide a critique/reflection on the article. Do you agree with the philosophy? If so, why? If not, why not?
May 2003: Guest speaker: Donald Letendre, PharmD. Dean, College of Pharmacy University of Rhode Island	The residents submitted two questions to be answered by the expert: (1) "How do I, as a new educator, design a plan to professionalize students who have not developed a set of professional behaviors prior to entering the experiential years? I have tried to model professionalism through my own behavior, but this doesn't seem to be enough." (2) "In the seminar, we discussed many challenges to providing quality clinical education such as large class size, low motivation of students, and the multiple responsibilities of the faculty member. In your opinion, what is the primary deterrent to the faculty member's success in providing quality clinical education?"

of the residents, then each was critiqued by 3 other residents. Each formal presentation was ~20 minutes in length followed by a 10-minute critique. The critique took 1 of 3 forms: the resident providing the critique could add to the presenter's solution, present a counter-solution, or identify 2 points specific to the solution for open discussion and debate by the plenary group. Using this tutorial approach, the individual providing the critique needed to have a level of knowledge of the topic comparable to that of the presenter; however, the critique needed to be spontaneously delivered in response to the presenter's solution. Two hours were allocated to each seminar session; thus, there was ample time, if needed, for open discussion of each scenario by the plenary group of participants. In Table 1, the central themes and 1 of the 3 scenarios presented at each seminar session are provided. An abbreviated list of readings distributed throughout the program is provided in Appendix 1.

A key feature of a successful discussion-based course is the active participation of all members of the

course or program. During the plenary sessions, discussion tickets were used to facilitate the involvement of participants and to limit discussion by overzealous members of the group. Each participant who was not formally presenting in a session, including the residency coordinators and the seminar coordinator, were given 2 discussion tickets for use during the plenary sessions. These participants were encouraged to "spend" their tickets during the plenary sessions as a means of entering the discussion. A ticket was "spent" when the participant wanted to make a substantial contribution to the discussion. The presentation of a new idea or a counter argument constituted a substantial contribution, whereas asking for clarification of a point or quickly replying to a question did not warrant the use of a ticket.

The formal presentations and critiques were evaluated by all in attendance using a 1-page evaluation form. Participants were asked to use the C-R-C approach where C represents a commendation and R represents a recommendation, thereby providing 2 positive comments and 1 recommendation for improvement for each presentation. To encourage everyone's participation in the evaluation process, sample comments reflecting commendations (eg, ability to justify an argument) and recommendations (eg, need to provide more factual information in support of your argument) were provided on the reverse side of the evaluation form. The completed evaluations were forwarded to the presenters at the end of each session or at the beginning of the next monthly session.

Following each session, the participants were encouraged to reflect on the discussions and submit questions or comments to the seminar coordinator via electronic mail in the form of a "muddiest point." A type of 1- minute paper, the "muddiest point" paper asks the participant to identify an area from the discussion that requires clarification or further discussion. The muddiest points submitted after each monthly seminar were presented and addressed in a newsletter provided by the seminar coordinator. For example, following the presentations on large classroom teaching, "muddiest point" features in the newsletter focused on answers to the following questions: "Are there any rules to the use of humor in classroom instruction?"; "How do you introduce active learning strategies such that the students appreciate what you are trying to accomplish?"; and "How do you get to know or connect with your audience when the class size is large, exceeding 100 students?" The newsletters were distributed via electronic mail or distributed at the next month's session.

The final seminar session in May deviated from the standard format. The participants gathered for a closing luncheon with a guest lecturer followed by distribution of certificates of completion. Prior to this session, residents were encouraged to submit questions specific to pharmacy education that they would like to have answered by an expert educator. Two of these questions were submitted to the guest lecturer in advance of the session (see Table 1); answers to these questions served as the focus of the lecturer's presentation. In addition, the guest lecturer was asked to come prepared to spontaneously respond to other questions posed by the group in the spirit of "stump the expert." During this session, the participants were also asked to complete an evaluation of the program that included a self-assessment of their knowledge of each content area in the program.

Participants were encouraged, but not required, to develop a teaching portfolio and a teaching philosophy statement by the end of the program. Each participant received a certificate of completion if they attended at least 6 of the 8 sessions. Continuing education credit was not awarded. The program was funded by MCPHS.

EVALUATION OF THE PROGRAM

All of the Boston-based residents and their respective residency coordinators agreed to participate in the seminar series. Key demographic features of the participating residents are provided in Table 2. The residents and their respective programs represented a variety of clinical practice settings including acute care, ambulatory care, specialty practice (pediatrics), and community pharmacy practice. Three of the 8 residency programs were partially funded by MCPHS; residents enrolled in these programs had teaching responsibilities at MCPHS as a component of their residency responsibilities. In addition, all of the Boston-based residents reported that they had some level of teaching involvement at 1 of the 2 schools of pharmacy in Boston during their year of residency. The residency coordinators of each program routinely attended the seminars and participated in the discussions.

The evaluations of the program (see Table 3) were largely positive. The residents expressed overall satisfaction with the level of instruction and discussion, and they agreed that the scenarios were realistic and reflective of current issues in pharmacy education. In particular, there was agreement with the discussion-based format of the program and a lack of preference for a lecture-based format. The participants reported that they had ample opportunity to participate in the discussions. As such, use of the discussion tickets was deemed unnecessary as of

Table 2. Demographics of the Participants

Demographic	Finding
Number of residents/participants*	19 (3 community practice; 1 pediatric specialty; 15 pharmacy practice)
Age of participants (years)*	24 -27
Gender*	4 males; 15 females
Highest academic degree earned*	PharmD (100%)
Number of participants with previous formal instruction in education*	0
Number of sessions attended*	53% (10) attended all 8 sessions; 47% (9) attended 6 to 7 sessions
Number of residents that participated (as an instructor/facilitator) in any formal education program affiliated with a college during the year of residency*	100%
Type of involvement with a college of pharmacy†	71.5% (10) facilitated a seminar course; 71.5% (10) served as a clinical preceptor/teaching assistant in an experiential program 57% (8) provided a lecture/lectures in a required course; 14% (2) served as a facilitator/instructor in a required laboratory; 14% (2) provided lectures in a physician assistant program
Involvement in educational programs at the residency site †	93% (13) involved in continuing education programs; 71.45% (10) involved in pharmacy technician education programs; 50% (7) involved in staff development; 36% involved in nursing education programs; 21.4% (3) Other - community outreach programs, medical resident education
Plans for employment post-residency†	36% (5) clinical pharmacy position (hospital) with adjunct academic appointment; 36% (5) full-time faculty position; 7% (1) specialty residency or fellowship; 7% (1) clinical pharmacy specialist;7% (1) staff pharmacist (hospital); 7% (1) undecided

*Based on an initial survey of the 19 participants.
†Based on a 74% (n=14) response rate to a survey of participants in 5/03.

the third seminar session.

Table 4 provides the residents' self-assessments of their knowledge levels following participation in the seminar series. Based on a 74% response rate (n = 14) to this voluntary, self-assessment tool, participants consistently reported that their knowledge levels improved following participation in the program.

All of the residents received a certificate of completion. Eight (42%) submitted teaching portfolios for review by the seminar coordinator. As of August 2003, 5 participants (26%) have accepted full-time faculty positions in a school of pharmacy and 5 (26%) have accepted adjunct faculty appointments.

DISCUSSION

The program evaluations revealed that the tutorial format was effective in introducing prospective practice faculty members to issues in pharmacy education. When designing this program for pharmacy residents, an assumption was made that a discussion-based seminar format would be highly preferable to a lecture series. This assumption was primarily based on the stage of professional development and age-related learning style of the participants. Adult learning models, such as that described by Knowles,[5] emphasize the need for a problem-centered orientation to learning and a collaborative environment in which learning partnerships are developed between teacher and learner. Such models offer opportunities for mutual planning and diagnosis of learning needs, self-direction by the learner, and the immediate application of learned material.[5] Consistent with an adult learning model, the discussion-based tutorial approach used in this program offered the participants a sense of ownership in their education. The residents were allowed to choose areas of perceived interest from which to formally participate in the program, and they were responsible for directing the discussions based on their own solutions to the scenarios. The problem-solving exercises also required self-

Table 3. Evaluation of the Program

Aspect of the Program	Rating (SD) *†
The format (discussion-based) was effective.	4.64 (0.5)
The format allowed for all participants to routinely participate.	4.50 (0.65)
I would have preferred a lecture format in this program rather than the discussion-based format.	1.5 (0.65)
I would have preferred more opportunity for small group learning in this seminar.	3.14 (0.95)
The initial 3-hour session provided an effective introduction to key aspects of clinical education.	4.43 (0.76)
The initial session should be extended in length.	2.71 (0.91)
The initial session should include more small group exercises.	3.14 (0.95)
The problems/scenarios were realistic and applicable to my practice.	4.57 (0.51)
The selected readings and reference lists were helpful in researching the problems.	4.64 (0.5)
The newsletters addressed pertinent topics.	4.57 (0.65)
The 'muddiest point' feature was an effective mechanism by which I could address questions and have them answered.	4.21 (0.7)
The length of each session (2 hours) was sufficient.	4.14 (0.8)
The frequency of the program was sufficient.	4.14 (0.86)
The room/setting was conducive to participant involvement.	4.43 (0.65)
Completing ONE presentation per resident was doable from a workload perspective.	4.7 (0.63)
The seminar exposed me to aspects of clinical teaching that I had not previously explored.	4.57 (0.76)
The readings/support materials were made available to me in a timely manner.	4.64 (0.63)
I am satisfied with the level of instruction and discussion provided via the seminar.	4.71 (0.61)

* On a scale where 1: strongly disagree; 2: disagree; 3: neutral: 4: agree; 5: strongly agree.
† Based on a 74% (n=14) response rate to a survey of participants.

direction and research on the part of the resident. In keeping with the original assumption, the participants agreed that the discussion-based format was preferable to a lecture series.

Another advantage to discussion-based teaching is the ability to promote higher-order reasoning skills, such as analysis and synthesis.[6] Development of these skills in prospective faculty members is essential in preparation for their contributions to scholarship and research. Using the tutorial approach, the residents were empowered to analyze realistic situations in education, retrieve and apply the academic literature to these situations, and subsequently synthesize solutions. Each session was resident-centered; the seminar coordinator and the residency coordinators served as facilitators of learning rather than content experts. This collaborative learning approach also fostered the development of a mentoring relationship between the seminar coordinator and the learners, as proposed by Smallwood.[4] Throughout the academic year, residents scheduled meetings with the seminar coordinator outside of the scheduled seminar time to review portfolios, teaching philosophy statements, outlines for upcoming lectures or staff development programs, and examination questions.

Two limitations to the design of this program were identified. Unlike lectures that are effective for the dissemination of information to large audiences, the tutorial design is limited to a relatively small group of participants. This program was originally designed for 18 residents with each resident having responsibility for one formal presentation and one critique. The inclusion of an additional resident during the first month of the program required a restructuring of the program. Two residents were subsequently asked to share the responsibility for a presentation and a critique, and this did not appear to adversely affect the motivation or participation levels of these individuals. As of August 2003, 31 pharmacy residents enrolled in residencies throughout Massachusetts have expressed interest in participating in the upcoming program. To maintain the tutorial approach for this growing number of participants, the program has required further restructuring. Three additional monthly sessions (August 2003 through June 2004) will be included in the upcoming program, and some individuals will be asked to share the responsibilities for the presentations and critiques. Whether the expanding number of participants will influence the effectiveness of the program remains to be determined. When using the tutorial design, a second consideration is the potential for reflection and follow-up discussion. For discussion-based teaching to be successful, participants need an adequate amount of time to reflect on the discussion and an opportunity for follow-up discussion. Inclusion of a reflective exercise, such as the "muddiest point" paper, proved to be a valuable component of

Table 4. Self-Assessment of Knowledge Level

Content Area	Percent of Residents With Improved Knowledge* (N=14)
Learning styles	100%
Domains of learning	100%
Elements of quality instruction	100%
Application of Bloom's taxomony	93%
Incivility and its management	86%
Teaching strategies	93%
Small group techniques - assignment and group dynamics	93%
Active learning strategies	100%
Design of experiential programs	100%
Issues of student assessment (exams)	86%
Issues of student assessment (experiential)	93%
Development of a teaching philosophy statement	93%
Development of a teaching portfolio	86%

*Based on a 74% response rate (n=14) to a survey of participants.

the program for most of the participants. In the future, consideration will be given to the inclusion of a variety of reflective exercises such as the maintenance of reflective portfolios or the devotion of a portion of each session to reflection on the prior session.

CONCLUSIONS

With the graying of the faculty, colleges of pharmacy are encouraged to be proactive in recruiting qualified candidates for faculty positions. In this seminar series, pharmacy residents were introduced to a variety of teaching strategies used by clinical educators and exposed to common challenges encountered by clinical educators. The discussion-based tutorial design of the program allowed for a degree of self-direction and empowerment on the part of the learner, which is consistent with the format of an adult learning model. The program offered the residents the opportunity to gain a greater appreciation for the demands and rewards of an academic career, thereby increasing their level of preparedness for a faculty position.

REFERENCES

1. Brazeau GA. Chair Report for the Research and Graduate Affairs Committee. *Am J Pharm Educ*. 2001;65:26S-31S.
2. Roche VF. Securing Our Future. *Am J Pharm Educ*. 2001;65:202-203.
3. Dick W, Carey L. *The Systematic Design of Instruction*. 4th edition. NY, NY: Longman Books: 1996: 2-12.
4. Smallwood S. Me and My Professor: Williams College expands its Oxford-style tutorials, changing the role of professors. *The Chronicle of Higher Education*. February 15, 2002.
5. Knowles MS. *The Adult Learner: A Neglected Species*. 3rd edition. Houston, Tx: Gulf Publishing Company, 1984.
6. Center for Teaching Excellence in Learning and Teaching. The Pennsylvania State University. Teaching by Discussion. Available at: http://www.psu.edu/celt/newsletter. Accessed June 2, 2002.

Appendix 1. Sample references and learning resources.

(1) Anderson JA, Adams M. Acknowledging the learning styles of diverse student populations: implications for instructional design. In: Border LL and VanNote Chism N, eds. *New Directions for Teaching and Learning*. San Francisco, Calif: Jossey-Bass; 1992:19-33.
(2) Felder R. Reaching the second tier: learning and teaching styles in college science education. *J College Sci Teaching*. 1993;23:286-90.
(3) Dick W, Carey L. Introduction to Instructional Design. In: Dick W, Carey L. ed. *The Systematic Design of Instruction*. NY, NY: Longman Books;1996;2-12.
(4) Smallwood S. Me and My Professor: Williams College expands its Oxford-style tutorials, changing the role of professors. *The Chronicle of Higher Education*. February 15, 2002
(5) Diekelmann N. Pitching a lecture and reading the faces of students: learning lecturing and the embodied practices of teaching. *J Nurs Educ*. 2002;41:97-9.
(6) Schultheis NM. Writing cognitive educational objectives and multiple choice test questions. *Am J Health-Syst Pharm*. 1998;55:2397-2401.
(7) Berger B. Incivility. *Am J Pharm Educ*. 2000;64:445-50.