

Development and Evaluation of a Contemporary Topics in Pharmacy Practice Course Integrating Multiple Active Learning Strategies

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ABSTRACT. A two-credit Contemporary Topics in Pharmacy Practice course for Pharm.D. students is described and evaluated. The course was developed to increase students' understanding of current trends, issues, and developments in contemporary pharmacy practice. The content of the course lends itself well to the development of many of the curricular outcomes outlined by the AACP Commission to Implement Change in its Background Paper II. Multiple active learning strategies are employed to require students to think critically about contemporary issues and to communicate their viewpoints and evaluations in both written and oral form. Teaching strategies used include minimal lecturing, assigned literature readings, student presentations, classroom discussions, and group and individual projects. The students contract for grade desired using a performance proposal. They are also required to keep a written journal of activities and perspectives on the issues discussed. [Article copies available from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]

OVERVIEW OF TEACHING INNOVATION

Contemporary Topics in Pharmacy Practice is a required two-credit course in the first-year Pharm.D. program. The course has

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been offered four times thus far with enrollments of 10, 12, 16, and 26 students. The maximum enrollment limit is currently set around 25 students. The course meets once a week for two hours. This course was developed to increase the students' understanding of current trends, issues, and developments in contemporary pharmacy practice. It was felt that pharmacy as a discipline is dynamic and that a required course that would increase the students' awareness of contemporary issues must exist. Graduate need to have an understanding of relevant contemporary issues in order to develop a philosophical framework for pharmacy practice and specifically pharmaceutical care.

In addition, it was felt that the content of the course suited itself particularly well to the development of many of the curricular outcomes outlined by the AACP Commission to Implement Change in its Background Paper II such as critical thinking, communication abilities, ethics, and lifelong learning (1). Thus, multiple active learning strategies were employed to require students to think critically about contemporary issues and to communicate their viewpoints and evaluations in both written and oral form.

Other schools offer a similar type of course. However, based upon a review of the AACP curriculum database, it appears that most of these courses are elective for Pharm.D. students. Further, the types of instructional strategies used in these courses may employ more traditional, passive learning methods including lectures and seminar formats.

The course syllabus for Contemporary Topics in Pharmacy Practice is found in Appendix A. Included in the syllabus are course topics. The innovative features of this course are: (a) it is a required contemporary topics course for Pharm.D. students; (b) multiple teaching strategies including lectures, assigned literature readings, student presentations, classroom discussions, and group and individual projects are used in order to increase student understanding of contemporary issues and to address many of the outcomes found in Background Paper II; (c) contracting for grade desired using a performance proposal; and (d) requiring students to keep a written journal of activities and outcomes.

TEACHING INNOVATION

The nature of the desired course outcomes, i.e., critical thinking, problem solving, communication, ethical principles, leading, and becoming a lifelong learner, necessitated the use of a variety of active and passive instructional methods. Course lectures and assigned readings (passive methods) were required to provide students with background information on each topic. Classroom discussions, student presentations, and group and individual projects (active methods) enabled students to critically analyze and to apply and communicate what they had learned about each topic. Specific details about the instructional methods employed in the course are shared in the following paragraphs.

Assigned Readings

Extensive use of assigned readings formed the basis for all other course activities. The instructor compiled a list of contemporary readings to provide the student with a comprehensive overview of each topic. About 900 pages from the pharmacy and medical literature were selected. For example, in the section on ethics, care was taken in the selection of articles so students would gain perspectives from pharmacy practitioners, pharmacy educators, and the medical profession. All students were asked to read certain articles while specific students were assigned other selected readings and asked to orally report on these. Readings were completed weekly for each topic.

The articles assigned to all students were "primer" articles which generally provided broad overview of the topic. The remaining articles were assigned to selected students and focused on key issues within the overall topic. For example, during the segment of the course devoted to ambulatory services, all students were asked to read the primer by Bond and Hussar entitled, "Detection Methods and Strategies for Improving Medication Compliance" (2). Selected students were asked to read an article by Schneider describing a clerkship in community pharmacy (3).

Classroom Lectures

The traditional didactic lecture approach was rarely used. About six hours of lectures were included in the course. When this more

passive teaching approach was used, it was intended to clarify, or emphasize key concepts, and provide perspectives that would not be available otherwise through the readings, such as the instructor's perspectives and experiences. As examples, during the sessions on ethical issues, the instructor reviewed ethical principles, and the ethical decision-making process. During the ambulatory services segment, the instructor shared her experiences with the implementation of ambulatory services by reviewing a study she designed to measure barriers to pharmaceutical care in the ambulatory setting.

Classroom Discussions

Every class session involved class discussions. All students were encouraged to participate. Even during sessions devoted to lectures, there was extensive class participation. The syllabus included focus questions used to stimulate discussion. Students could also submit additional questions. These questions were used by the instructor to direct the areas of discussions. The instructor's role during these sessions was one of a moderator and facilitator. Discussions were redirected by the instructor when they wandered. The instructor also provided information when needed to continue the discussion. Participation was mandatory. To ensure that all students participated, the instructor sometimes directed questions at specific students; underparticipants would be asked targeted questions.

Student Oral Reports on Readings

Students were asked to provide a brief synopsis of the reading assigned to them individually. Specifically, they were asked to describe what was thought-provoking to them about each article and to share their perceptions of the implications of each issue. Because of time restraints, students were randomly called on to orally report on these selected readings. Although it was impossible to require an oral report from every student during each session, all students were asked to report at least four to five times during the semester. The instructor kept a log on student's oral reports. During every session there were approximately two to five oral reports on readings. Stu-

dents were also asked to keep a synopsis of articles read and impressions in their written journal.

Students were encouraged to pose their own thought-provoking questions to the group during these reports. For example, one student asked when discussing specialization, "Do you really think that pharmacotherapy is a specialty and not a standard of practice?" This reflects the insight that students were able to develop from reading the articles.

Performance Proposals

The students were asked to submit a written performance proposal where they would outline their goals for this course and how they wish to achieve the grade desired. The instructor met with each of the students to review their proposals. This approach is an example of use of a cooperative learning technique for grading. This was a new approach initiated during the second offering. It was hoped to stimulate the students to a higher level of performance than the previous year.

Academic Journals

The students were asked to keep a written journal outlining their activities for this course and a synopsis of articles read. This was a new idea initiated during the second offering. None of the students, had ever been asked to do this before. The hope is to prepare them for maintaining portfolios in future jobs.

Small Group Projects

Students were asked to work in groups of five or six to design an assessment tool for determining minimum standards for pharmaceutical care in an institutional setting. This approach was used to cover standards of practice. Students were provided with existing standards from American Society of Health-System Pharmacists (4). Students were also allowed to use other published standards such as those of the Joint Commission of Accreditation of Health-care Organizations (5). Students were asked to select a group leader

to coordinate efforts. Students were encouraged to be creative and not to be concerned with simulating what the other group was doing.

Students chose specific standards to incorporate as minimum standards. Students were asked to choose standards that would help ensure quality pharmaceutical care. For example, if standards for a formulary or pharmacokinetic dosing services including pharmacist scheduling of serum levels was chosen, then students were asked to explain how these help to ensure quality pharmaceutical care. This exercise helped students to see the relationship of existing clinical practice standards to the concepts of pharmaceutical care.

Students were also allowed to work out the details of how this group project would be completed. In-class time to work together in their groups was provided. During class time, the instructor circulated between the groups and observed their interaction and provided guidance to keep them focused on selection of standards to help ensure quality pharmaceutical care. Students were also asked to submit peer evaluations of members of their group.

Individual Projects

There were three individual projects assigned to the students. These included an evaluation of a pharmaceutical advertisement, evaluation of a drug for formulary inclusion, and an evaluation of a published pharmacoepidemiologic study. For the evaluation of a pharmaceutical advertisement, assessment criteria were provided (6). All students had a different advertisement to evaluate which they personally chose. Some advertisements from which to choose were provided by the instructor. The students were also asked to give a brief oral presentation on their evaluation. During the course segment on formulary management, the students were asked to select a new drug released within the past six months and evaluate it using instructor-developed guidelines and criteria for formulary evaluation that were provided. The students were asked to submit a typed evaluation of the drug with a maximum length of three pages. The intent was to introduce students to a standardized approach for formulary evaluations and information systems by requiring students to use existing formulary monograph services, such as *Facts and Comparisons* or *Micromedex*. By only giving the students two

weeks to complete this project and a three-page limit to their evaluation, the students had to learn to use existing information systems and a standardized approach to formulary evaluations.

During course sessions on pharmacoepidemiologic methods, students were asked to evaluate published pharmacoepidemiologic studies. Background readings on pharmacoepidemiologic research and how to evaluate published studies were provided (7). Students were assigned one study from the Drug Surveillance Network, and asked to critically evaluate the limitations of the study methods (8). Findings were presented in both written and verbal form.

RELATIONSHIP OF INSTRUCTIONAL ACTIVITIES TO COURSE OUTCOMES

Specific learning objectives for each topic were developed. Among these objectives were a number of outcomes specified in the Commission to Implement Change Background Paper II. These outcomes included critical thinking, problem solving, communication, ethical principles, leading, and becoming a lifelong learner. Specific examples of how these outcomes were addressed by the student learning activities in this new course are summarized in the following paragraphs.

Critical Thinking/Problem Solving

Students were asked to critically read articles on contemporary issues and then provide a perspective in class on assigned readings. The extensive classroom discussions also provided the students with opportunities to develop critical thinking. For example, the ethical issues topic allowed students to evaluate ethical cases using a problem-solving methodology. Students also evaluated published pharmacoepidemiologic studies to determine the limitations of these studies. The student project involving evaluation of pharmaceutical advertisements also required critical thinking because they needed to evaluate information presented in advertisements. Students used decision-analysis methods to evaluate a new drug for formulary inclusion. The design of an assessment tool to evaluate

quality pharmaceutical care provided another opportunity to facilitate development of critical thinking and problem-solving competencies by evaluating standards of practice and synthesizing this information as part of an assessment tool for quality pharmaceutical care.

Communication

Both oral and written communication competencies were further developed through the instructional strategies used in this course. Students were asked to submit written reports on their assessment tool for evaluating quality pharmaceutical care and their drug formulary evaluations. Throughout the course, students were asked for oral reports on assigned readings. Students also orally presented their assessment tool for pharmaceutical care and their evaluation of a pharmaceutical advertisement. By placing primary weight for student evaluation on classroom participation, students were encouraged to ask questions and respond to questions in class. The students were also required to communicate with one another during group projects like the standards of pharmacy practice exercise. The students kept a written journal summarizing their activities and synopsis of readings. Some students who chose to work for an "A" grade prepared written concept papers. Others gave community talks on pharmaceutical care. One student wrote a lay article for publication in something like *Readers' Digest* on pharmaceutical care and the role of the pharmacist. Another student met with her congressman to discuss the role of pharmaceutical care with health-care reform.

Values and Ethical Principles

Extensive discussion on implementation of pharmaceutical care was integrated in most of the topics presented. The proceedings of the invitational conference on pharmaceutical care served as a major primer for the discussion on pharmaceutical care. By this discussion, it was hoped to empower students to value and accept responsibility for patient outcomes. The Joint Commission on Accreditation of Health Care Organizations (JCAHO) movement to patient out-

comes was explained to reinforce the value of the necessity to accept direct responsibility for patient outcomes (9). Sensitivity to ethical issues was also addressed by devoting two class periods to evaluating how to critically evaluate ethical problems and make decisions using ethics case examples.

Leadership

It was the instructor's premise that these postbaccalaureate Pharm.D. students should become leaders to implement pharmaceutical care and the changes described in the AACP Background Papers. Characteristics of a leader versus follower were discussed during the course introduction and when reviewing the Background Papers of the Commission to Implement Change (1). Students were sensitized to the idea that they were selected as postbaccalaureate Pharm.D. students based in part upon their leadership potential and were expected to become leaders within the profession after program completion. The importance of belonging and participating in professional organizations was also discussed. It is noted that by providing brochures for the local hospital pharmacy organization, ASHP, and ACCP, about 80 percent of the students joined these organizations. Students were required to attend the state hospital midyear meeting held locally.

Lifelong Learning

The rigor and importance of board certification in pharmacotherapy and the recertification requirements were discussed. By contrasting this with the current professional continuing education requirements of most states, the importance placed by board certification on becoming a lifelong learner was illustrated. The students were also encouraged to review current literature for other articles of relevance to the discussion topics and to integrate these into the class. This would be one evidence for exemplary performance in the course.

Educational research has demonstrated that one means to influence students' attitude is for the instructor to model the desired behavior (10). The instructor by her example of continuing to learn,

motivation, and professional growth also provided a role model as a lifelong learner. Specifically, the instructor shared why she conceived this course and *volunteered* to teach it. As a full professor, the instructor was not required to teach another course as she already had a full load. However, the instructor strongly believed in the need for this type of course and had a desire to continue to learn as well. Thus, this course was developed and innovative instructional strategies were selected and employed based upon research and self-study completed by the instructor.

Assessment Methods

Student evaluations of the course were performed during each offering. The evaluation tool used is found in Appendix B. Overall, the evaluations were very positive. Average scores were 4.40 on 24 of the questions (Appendix B). Students expressed the feeling that the instructional strategies used were new to them but were enjoyed. This course was rated in the top 10 to 25 percent by all of the students.

During the first offering, student performance was strictly evaluated based on attendance, participation (assigned readings and asking and responding to questions), and completion of projects. No further attempts to evaluate the students were made at that time. During the second and subsequent offerings, performance expectations were set higher and additional criteria were used to assess student learning and performance. The minimum acceptable grade is a "B." To earn a "B," the student must attend class, participate in group work and class discussions, read assigned articles, complete all assignments, complete and submit a course evaluation and a performance proposal, and keep a written journal. To earn an "A," the student must demonstrate exemplary performance which is beyond the requirements for a "B." Student peer evaluations are used to evaluate performance in group projects. The instructor also assesses the quality of performance in class discussions and through the academic journals. Students could also submit additional discussion questions on the readings. Students could also provide additional literature and integrate these into the class discussions. A concept paper reflecting a deeper understanding of one issue could also be done to reflect higher level of performance.

SUMMARY

This course was originally conceived, developed, and implemented because of a need for students to be made aware of contemporary issues in order to develop a framework for pharmacy practice. The use of many active learning techniques that facilitate the development of competence in the areas of critical thinking, problem-solving, effective communication, professional ethics, leading, and becoming lifelong learners were used which reflect the spirit of the Commission to Implement Change In Pharmaceutical Education.

Student indicators such as the enthusiasm shared in class and student comments have also been very positive. The use of non-traditional instructional strategies and the extensive class participation and enthusiasm is rewarding to the faculty. The evolving nature of the course content is stimulating to the faculty as well.

It is felt that a course of this nature, which lends itself to use of various active learning strategies, should be required in all entry-level Pharm.D. curriculums. As our Pharm.D. class size increases to 100-150, this course could be offered multiple times in order to limit class size. Limiting class size to 20 to 25 is felt to be ideal in order to ensure balanced student participation in active learning exercises. We are investigating the redesign of classrooms to facilitate "cells" of 20 students within a large class of 100 plus. Each student could serve as cell leader during the course of the term. Each cell could essentially serve as an independent discussion group. Teaching assistants, who could be other faculty members, could serve as supervisors for three to four cells. The senior faculty would be the overseer for the entire class. Asking other faculty to participate in this process should also serve to sensitize them to contemporary topics and active teaching techniques. This concept of cells within a larger class is modified from the Billy Graham crusade approach and would allow for the active learning and discussions that generally occur within small classes.

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Appendix A

Course Syllabus

Title: Contemporary Topics in Pharmacy Practice

Class: Pharm.D. — first year

Credit: 2 semester hours

Course description:

Lectures, group discussions, and projects on current trends, issues, and developments in pharmacy practice. Special projects are also available for those who select an extra one credit hour.

Grading:

Each student is asked to submit a written performance proposal outlining his(her) goals for this course and how they wish to achieve the grade desired.

A written academic journal of time spent and projects and other proof of performance achieved is required to be turned in at midsemester and at the final class.

Grade C = failure to perform minimum

Grade B = minimum acceptable grade

- attend class
- participate in group work and class discussions
- read assigned articles
- complete all assignments
- complete and submit course evaluation

Grade A = exemplary performance

- requirements for B plus (could include these)
- submit supplementary questions on assignments for class discussions
- submit other read articles (not given) and integrate content in discussion
- consensus by peer review that made significant contribution to discussion and group projects and judged that outstanding quality of contributions
- writing an application or concept paper demonstrating an in-depth understanding of one issue in the course
- other creative ideas are welcomed as well

Final grade is based on combination of quantity and quality of work and is determined by the faculty.

Course Goal:

The student should develop a professional awareness and be able to discuss contemporary issues facing pharmacy.

Purpose for Course:

Pharmacy as a discipline is dynamic. The Pharm.D. graduate must be sensitized to relevant contemporary issues in order to develop a framework for pharmacy practice. Selected topics discussed help the graduate to be

made aware of contemporary issues that he/she will have to address in future practice. The student will also be introduced to administrative considerations in managing contemporary pharmacy services.

Selected Topics:

1. Contemporary issues in pharmacy education
 - pharmaceutical care/manpower issues
2. Pharmaceutical care
3. Health-care reform
4. Specialization in pharmacy practice
 - board certification
 - residency/fellowship programs
5. ASHP's Standards of Practice
6. JCAHO Standards and changing agenda
 - drug usage evaluation/quality assessment/outcome indicators
7. Ethical issues in clinical pharmacy
 - rationing/allocation of high-cost drugs
 - conflicts of interests with pharmacy industry
 - drug information issues
8. New frontiers in practice
 - ambulatory services
9. Economic values of clinical pharmacy services
 - cost-justifying/reimbursement for services
 - rising costs of pharmaceuticals
10. Formulary management
 - biotechnologic drugs; therapeutic interchange
 - cost-effective use of drugs

11. Pharmacoepidemiologic methods
 - postmarketing drug surveillance
12. Computerization/robotics and automation
13. New practice settings
 - managed health care
 - home health services
 - geriatric services; long-term care
 - patient-focused care

Appendix B

Student Evaluation of Contemporary Topics in Clinical Pharmacy

We would appreciate your completion of this evaluation form. Do not write your name on the evaluation.

1. The course objectives were satisfactorily accomplished.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

2. The amount of work required is appropriate for the credit received.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

3. In general, the instructional methods employed in this course were appropriate.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

4. I feel I benefitted from this course.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

5. The course assisted me to develop my critical thinking.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

6. The course assisted me to develop my problem-solving skills.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

7. The class discussions facilitated my obtaining the most from this class.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
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8. The course assisted me to develop my oral communication abilities.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

9. The course assisted me to develop my written communication abilities.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

10. The course has motivated me to desire to be a lifelong learner.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

11. The course developed my sensitivity to ethical principles.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

12. The awareness I developed of contemporary issues in this course will help me become a leader in the profession.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

13. This course increased my willingness to accept responsibility for patient outcomes.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

14. I desire to accept responsibility for patient outcomes.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

15. This course increased my awareness of my responsibility for pharmaceutical care.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

16. This course has increased my acceptance of the importance of the entry-level Pharm.D. degree.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

17. The readings assigned were very beneficial in developing my opinions on contemporary issues.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

18. The readings assigned were very beneficial in increasing my opinions on contemporary issues.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly
1	2	3	4	5

19. I enjoyed this course.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

20. I enjoyed the educational techniques used in this course.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

21. The course content was well selected.

Strongly Disagree	Disagree	No strong feeling	Agree	Strongly Agree
1	2	3	4	5

22. How appropriate were the assigned readings selected for each topic?

Poor selection		Adequate		Ideal selection
1	2	3	4	5

23. On the whole, was the classroom atmosphere conducive to learning?

No		Marginally		Yes
1	2	3	4	5

24. On the whole, how would you rate the overall performance of the instructor in this course?

Very poor		Adequate		Outstanding
1	2	3	4	5

25. How would you rank this course compared to other courses required in terms of longterm value for your professional career?

Top 10%	Top 25%	Top 50%	Bottom 25%	Bottom 10%
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26. What aspect of the course did you like most?
27. What aspect of the course did you most dislike?
28. Were there any aspects of the course that you would significantly change? Please explain how you would make these changes.
29. Which topics/exercises assisted you to develop your critical thinking and problem-solving skills?
30. Which topics/exercises assisted you to develop your communication skills?
31. Were there other contemporary topics that you felt should have been addressed?