INSTRUCTIONAL DESIGN AND ASSESSMENT

Enhancing Pharmacy Student Business Management Skills by Collaborating With Pharmacy Managers to Implement Pharmaceutical Care Services

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Objectives. Based on the Task Force on Professionalism recommendations for enhancing pharmacy students' management skills, a required course was redesigned to require students to work together in groups to develop business plans for implementing a patient care service for the manager of an existing pharmacy.

Design. A survey instrument assessing student perceptions of their ability to contribute to the development of a business plan to implement a pharmaceutical care service was administered once to the graduating class of 2003 and twice to the class of 2004, 1 year prior to enrolling in the course and again after they completed the course.

Assessment. The class of 2004 showed statistically significant improvement in their perceived ability to perform all business plan activities after they had completed the course compared with their perceptions of the same abilities/skills prior to taking the course. Furthermore, after completing the course, the class of 2004 indicated a slightly higher ability to perform the business plan functions than the Class of 2003.

Conclusion. Pharmacy students' business management skills in implementing pharmaceutical care services can be enhanced using a group project to develop business plans.

INTRODUCTION

Over the past 3 decades, many articles describing both the need and the urgency for changes in the practice of pharmacy have been published. The implementation of clinical practices in inpatient settings was well described in the 1970s and 1980s. In 1990, Hepler and Strand provided the conceptual groundwork to advance the practice of pharmacy and coined the term *pharmaceutical care*.[1] Since then, the pharmacy profession has devoted considerable effort to describing new innovative services and identifying barriers to change.

During the past decade, many professional pharmacy organizations and groups have identified the need to stimulate leadership to advance the practice of pharmacy. Due to economic pressures and the large number of stakeholders involved in healthcare, the successful implementation of new pharmaceutical care services requires effective planning and evaluation. Successful implementation of a new service also requires obtaining internal, as well as external support for a change of the pharmacists' duties and responsibilities. In order to effectively communicate to the constituencies affected by the new service, a clearly defined mission statement as well as objectives and operational elements must be developed. Business consultants and business schools have established the use of business plans for large and small businesses to guide the development of a comprehensive plan. Books and journal articles are available that can help individuals or groups that wish to organize a business plan. Colleges of Pharmacy have also worked with professional pharmacy associations such as the American Pharmacists Association (APhA), American Society of Health-System Pharmacists (ASHP), and the National Community Pharmacists Association (NCPA) on seminar programs and publications designed to support pharmacy groups that want to plan and implement a new pharmaceutical care service.

In 1995, the American Pharmacists Association's Academy of Students of Pharmacy (APhA- ASP) and the American Association of Colleges of Pharmacy's Council of Deans (AACP – COD) formed the Task Force on Professionalism, culminating in the 2000 publication of the

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"White Paper on Pharmacy Student Professionalism."[2] The recommendation of the joint Task Force on Professionalism focused on 4 phases of professional socialization of pharmacy students. These 4 phases were (1) recruitment, (2) admission, (3) education(al) programs, and (4) practice of pharmacy.

Of particular relevance to training pharmacy students are the recommendations on education and practice of pharmacy. The Task Force's recommendations concerning education and practice included enhancing management skills such as using preceptors as mentors in the classroom, defining desired professional outcomes, incorporating teamwork, stimulating critical thinking, and problem-solving using case studies.[2] In 2000, Ukens provided further support for the Task Force's recommendations by describing both the extent of and challenges to implementing pharmaceutical care in pharmacy practice.[3]

In order to encourage and facilitate implementation of pharmaceutical care concepts by future pharmacists, a required course in the PharmD curriculum was redesigned at the University of Toledo College of Pharmacy in 2001. The new course design required students to work together in groups developing business plans to implement a patient care service for the manager of an existing pharmacy. The goal of the *Management Topics for Clinical Practice* course was to create an environment in which students could learn new techniques that they could use to enhance the practice of pharmacy and to effectively communicate with management in any setting within the health care system.

DESIGN

Course Description and Explanation

Management Topics for Clinical Practice is a required 2-credit-hour semester course in the pharmacy curriculum at The University of Toledo College of Pharmacy. It is taught in the fifth academic year of didactic coursework, and immediately prior to students enrolling in full-time clinical clerkships. The course is scheduled for weekly 2-hour classroom sessions over a 15-week semester calendar. By the time students enroll in this course, they have completed two 3 semester-hour courses in pharmacy and healthcare administration. The first course presents information on the organization, financing, and delivery of healthcare in the United States. The second course presents information on the theoretical concepts and applied techniques for resource management and marketing issues that affect the delivery of pharmaceutical care.

The course is designed to provide PharmD graduates entering the practice of pharmacy with an awareness of the management skills required in the workplace. The course fosters effective communication with upper management (designated as "The Boss" for this class), as well as the acquisition of knowledge and skills necessary for excellence in entrepreneurship, resource management, and business operations. Students learn how to develop a business plan and evaluate programs. Additional factors that influence drug use and pharmacy reimbursement policies are emphasized in the lecture portion of the course. This information facilitates student understanding of the environment in which the proposed pharmaceutical care services are to be implemented. Working in student groups facilitates the development of several skills including communication, critical thinking, problem-solving, and team-building.

The initial development of the course utilized several resources as required reading materials including: Susan Jacksack's book, *Business Plans That Work for Your Small Business*,[4] *Practice Management Module: Ambulatory Care, Clinical Skills Program*, available from the ASHP,[5] and Monograph #7, "Creating a Pharmaceutical Care Marketing Plan,"[6] available from the APhA. The second offering of the course added the monograph on evaluation, "An Evaluation Framework for Community Health Programs,"[7] as a required reading.

Course Objectives

Upon completing the *Management Topics for Clinical Practice* course, the student should be able to:

1. Identify clinical management skills and concepts and use them to both define and solve problems related to the implementation of pharmaceutical care services in practice environments. These skills and concepts include: negotiation, decision-making, problem identification and solving; strategic management; analysis of strengths, weaknesses, opportunities and threats (SWOT); legal structures; financing a business or project and program or service evaluation.
2. Incorporate in a business plan the appropriate principles of pharmacoeconomics and outcomes research, formulary management, drug utilization review, and member satisfaction strategies.
3. Critically evaluate management skills, resources, third-party contracts, and legal requirements.
4. Demonstrate leadership skills.
5. Work within a group to accomplish team goals.
6. Communicate management concepts in a clear and concise manner. (This includes both verbal and written communication.)
7. Use the World Wide Web and e-mail as communication tools and methods of gathering information.

Table 1. Practice Environment and Proposed Service

Site Type	Proposed Service
Traditional Chain*	Diabetes
Independent*	Lipid
Ambulatory Clinic*	Hypertension
Independent*	Osteoporosis
Food Chain Store*	Asthma
Food Chain Store*	Diabetes
Food Chain Store†	Lipid
Food Chain Store†	Immunization
Hospital†	Operating Room Pharmacy
Hospital†	Critical Care Pharmacy Residency
Independent†	Compression fittings

*Class of 2003
†Class of 2004

Table 2. Course Schedule of Activities

Week	
1	Group and Project Assignment
2	Boss presents and explains desired outcomes to assigned group
3-7	Assigned readings and lectures about business plan structure and content
5-10	Group presentation on value of service and evaluation criteria of proposed service
7	Part I: Organization PlanPart II: Marketing Plan Drafts and Group Peer Evaluation
9	Part III: Operations and Management PlansPart IV: Program Evaluation/Financial Plan Drafts/Group Peer Evaluation
11	Final Business Plan and Group Peer Evaluation
12-15	Individual Evaluation of Business Plans and Group Persuasive Presentations of Plan

Course Organization

In preparation for the course, the instructor contacted selected pharmacy managers in the Toledo, Ohio, metropolitan area. The selected managers practiced in independent, chain, and hospital pharmacies that had a history of offering innovative pharmacy services. Table 1 summarizes the practice environments of the pharmacy managers recruited for the course and the type of service proposed in the business plan. Three of the sites were utilized for both the 2003 and 2004 class, but had a different service proposed each year. Additionally, all of the managers had previously served as mentors to pharmacy students from The University of Toledo. Each pharmacy manager who agreed to participate was asked to serve as a "boss" for a group of 5 to 7 pharmacy students. The groups were assigned to develop a business plan in conjunction with the boss for implementing a pharmacy service at the boss's practice site. Each participating boss was provided with reading materials and a course syllabus outlining the course schedule, student group responsibilities, expected role of the boss, and the recommended components of a business plan. The schedule of course activities is shown in Table 2.

In the first week, the pharmacy students formed groups and the instructor assigned projects. In the second week, each boss met with their assigned group (1) to outline the project the group would develop and (2) to establish how and when the group would interact with the boss. In weeks 3 through 7, students were assigned required readings related to developing a business plan. During this time, lectures were presented to the class that included recommended business plan structure and content, formulary and DUR issues, legal considerations, and insurance program member satisfaction strategies. Additionally, each student group gave a 30-minute presentation reviewing the literature, justifying the value of the proposed serv-

ice and outlining criteria that would be used to evaluate their proposed service. To provide structure to the project development by the group, the business plan was divided into 4 parts: Part I: Organizational Plan; Part II: Marketing Plan; Part III: Operations and Management Plan; and Part IV: Program Evaluation and Financial Plan.

In weeks 7 and 8, drafts of the organizational plan and marketing plan were submitted to the boss and the instructor. As part of the materials submitted in week 7, as well as in weeks 9 and 11, each student was required to complete a peer evaluation instrument of each student member in their group. This provided a basis for grading and group management. During week 9, drafts of the operations, management, and financial plans were submitted to the boss and to the instructor for review. The boss provided the group with feedback that was to be addressed in the final draft of the business plan. The finished business plan was submitted in week 11. From weeks 12 to 15, the groups gave a 30-minute persuasive presentation of their business plan to their peers and their boss. Each student was required to prepare a written critique of the business plans presented by the other groups using specific criteria introduced in the required readings. Through the critiques and presentations, students were exposed to diverse business plans designed to implement pharmaceutical care services in different pharmacy practice environments. Writing critiques reinforced the student's own knowledge of the critical components of a proposed business plan and provided additional feedback for the students who were presenting.

METHODS

A survey instrument was administered to the graduating class of 2003 during the final week of spring semester

Table 3. Profile of Respondents

Characteristic	Class of 2003 N=39	Class of 2004 N=23
Ethnicity, n (%)		
White	31 (79.5)	20 (87.0)
Asian/Pacific Islander	5 (12.8)	2 (8.7)
Other	1 (2.6)	1 (4.3)
No response	2 (5.1)	0
Gender, n (%)		
Male	7 (17.9)	11 (47.8)
Female	30 (76.9)	12 (52.2)
No response	2 (5.1)	0
Age, y		
Range	22-31	22-29
Median	23	23
Mean	23.8	23.7

2002. The survey instrument consisted of 6 demographic and opinion questions and 16 statements asking the students to rate their ability to contribute to the development of a business plan to implement a pharmaceutical care service. The statements in the survey instrument were constructed based on the course objectives. Reliability analysis of the survey instrument used Cronbach's alpha. The survey was face-validated to check for appropriateness of the instrument to course objectives. Construct validity was tested using a rotated factor analysis with extraction. The data collected from the class of 2003 served as baseline data for comparison with the class of 2004.

The same survey instrument was administered to the class of 2004 one year prior to enrolling in the course and again after completing the course. The 2 survey administrations to the class of 2004 enabled a compari-son to be made for students prior to taking the course and after taking the course. A teaching assistant administered the survey instrument during the last class of the semester. The instructor was absent from the classroom during the administration.

RESULTS

The demographic charactistics of the respondents outlined in Table 3 had a total of 62 responses, 39 from the class of 2003 and 23 from the class of 2004 (post). The reliability of the survey was 0.9113. Factor analysis extracted 3 components: (1) ability to contribute to writing a business plan in a group, (2) ability to perform business plan functions, and (3) working with upper management. The components explained 70% of the total variance in the construct. Of this, component 1 accounted for 43%, component 2 for 18%, and component 3 for 9% of the variance.

There was no statistically significant difference in age between respondents from the 2 classes. The largest proportion of students (53%) had worked in a chain pharmacy environment only, 8% had worked in an institutional environment only, 6% had worked in an independent pharmacy environment only, and 23% had worked in both a chain and an institutional environment. Overall, 38% of the respondents had worked in more than one practice environment. The numbers of students who had work experience in a pharmacy chain environment was similar for the classes of 2003 and 2004 (54% and 52%, respectively). The number of students who had worked in both an institutional and a chain pharmacy was similar for the classes of 2003 and 2004; 21% and 26%, respectively.

Table 4 shows component 1 of the factor analysis, "ability to contribute to writing a business plan in a group." There was no statistically significant difference

Table 4. Ability to Contribute to Writing a Business Plan in a Group

Abilities	Class 2003 Post-Course, % N=38	Class 2004 Pre-Course, % N=17	Class 2004 Post-Course, % N=23
Drug literature review			
Low	7.9	0	0
Intermediate	28.9	29.4	8.7
High	63.2	70.6	91.3
Working with group to reach goals			
Low	0	5.9	0
Intermediate	5.1	5.9	4.3
High	94.9	88.2	95.7
Evaluate coworker contribution			
Low	2.6	0	0
Intermediate	17.9	29.4	4.3
High	79.5	70.6	95.7

Note: Percentages may not add up to 100 due to rounding off. There was one missing value for Class of 2003.

in the responses to any of the questions that pertained to this domain for the classes of 2003 and 2004 the class of 2004 post and prior.

Table 5 shows component 2 of the factor analysis on "ability to perform business plan functions." Chi square analysis ($p<0.05$) showed that there was only one item within component 2 for which there were statistically significant differences between respondents who had taken the class (classes of 2003 and 2004), namely the item "students ability to outline goals and objectives." However, in the pre- and post-course surveys completed by students from the class of 2004, there were 5 items for which responses were statistically different. These items were (1) write a mission statement, (2) write an executive summary, (3) conduct a SWOT analysis, (4) carry out a market analysis, and (5) provide solutions to barriers.

Table 6 summarizes component 3 of the factor analysis on "working with upper management," which had only 1 item and was not statistically significant within this domain. There were statistically significant differences for this factor between the responses on surveys for the classes of 2003 and 2004 and between the responses on pre- and post-course surveys for the class of 2004.

DISCUSSION

There was no statistical difference in the student responses related to the students' ability to contribute to group projects and perform drug literature reviews (Table 4). This result may reflect strength in the curriculum that requires students to work on group projects and perform drug information functions from the time they enter the third-year professional division. The class of 2004 showed statistically significant improvement in their perceived ability to perform all business plan activities after they had completed the course, compared with their perceptions of the same ability prior to taking the course. After completing the course, the Class of 2004 also indicated a slightly higher ability to perform the business plan functions than did the Class of 2003.

The major modification of the course presented to the class of 2004, when compared with the class of 2003, was an increased emphasis on program evaluation. The instructor and the bosses felt that the aspect of program evaluation was lacking in the plans completed by the Class of 2003. Interestingly, the class of 2003 indicated they had a high level of ability to outline the criteria for evaluating the effectiveness of a proposed pharmaceutical service. This can be attributed to a lack of emphasis in required reading materials and direction within the syllabus for the Class of 2003. Most business plan develop-

ment guides focus on financial performance and do not discuss program evaluation in nearly the depth required to guide students. Due to these realizations, the students in the 2004 class were required to read and complete class exercises based on a monograph from the Center for the Advancement of Community Based Public Health (CACBPH) titled, "An Evaluation Framework for Community Health Programs," written under contract with the Centers for Disease Control and Prevention (CDC).

The Class of 2004 indicated a lower level of ability to evaluate a proposed service that probably reflected their greater awareness of the complexity of program evaluation. Certainly, the finished projects by the class of 2004 included a much-improved section outlining the proposed methods each group recommended for evaluating their proposed pharmaceutical service. The bosses and the instructor observed more clearly stated components in the business plans, such as the SWOT analysis, mission statement, definition of stakeholders, and program objectives. Each of these components was essential in the development of an evaluation methodology to fully evaluate and develop effective feedback mechanisms for a proposed pharmaceutical service.

The Class of 2004 reported a higher degree of agreement with the premise that they have a responsibility to work with management to develop pharmaceutical care services than the Class of 2003. It was of interest that the Class of 2004 had a higher degree of agreement about the responsibility prior to the course, when they were fourth-year students in a 6-year program, than they did after completing the course, when they had completed the fifth year of a 6-year program. In addition to completing the course, the students completed another didactic year with 30 semester hours of pathophysiology and therapeutics, and most had one more year of pharmacy internship than the Class of 2003. Whether these differences impacted on their perception is not known.

CONCLUSIONS

Utilizing a group project to develop business plans significantly improves the students' perception of their ability to perform specific functions required to develop a business plan. Increasing the students' exposure to methods for evaluating services improved their overall confidence in performing functions associated with developing a business plan. Future research should focus on documenting whether the course experience influences students' attitudes concerning both their responsibility to work with management in developing pharmaceutical services and their ability to provide the needed leadership for advancing the practice of pharmacy.

Table 5. Ability to Perform Business Plan Functions

Function	Class 2003 Post-Course, % N=39	Class 2004 Pre-Course, % N=17	Class 2004 Post-Course, % N=23
Prioritize project activities			
Low	0	0	0
Intermediate	28.2	17.6	4.3
High	71.8	82.4	95.7
Evaluate risks and benefits of service			
Low	2.6	0	0
Intermediate	28.2	41.2	13.0
High	69.2	58.8	87.0
Prepare a business plan			
Low	10.3	11.8	0
Intermediate	33.3	47.1	26.1
High	56.4	41.2	73.9
Write a mission statement*			
Low	2.6	0	0
Intermediate	15.8	41.2	4.3
High	81.6	58.8	95.7
Outline goals and objectives*†			
Low	5.1	5.9	0
Intermediate	20.5	52.9	4.3
High	74.5	41.2	95.7
Write executive summary*			
Low	7.7	29.4	0
Intermediate	15.4	35.3	21.7
High	76.9	35.3	78.3
Conduct SWOT analysis*			
Low	5.1	17.6	0
Intermediate	25.6	47.1	8.7
High	69.2	35.3	91.3
Carry out a market analysis			
Low	17.9	11.8	0
Intermediate	12.8	47.1	26.1
High	69.2	41.2	73.9
Identify financial requirements			
Low	12.8	5.9	0
Intermediate	25.6	41.2	21.7
High	61.5	52.9	78.3
Identify barriers to implement service			
Low	5.1	5.9	0
Intermediate	10.3	35.3	8.7
High	84.6	58.8	91.3
Provide solutions to barriers*			
Low	7.7	11.8	0
Intermediate	23.1	41.2	8.7
High	69.2	47.1	91.3
Outline evaluation criteria			
Low	2.6	5.9	0
Intermediate	12.8	52.9	21.7
High	84.6	41.2	78.3

Note: Percentages may not add up to 100 due to rounding off
* Statistically significant difference at $p<0.05$ for the class of 2004(pre) and 2004(post)
†Statistically significant difference at $p<0.05$ between the classes of 2003 and 2004

Table 6. Responsibility to Work With Upper Management

Function	Class of 2003 Post-Course, % N=39	Class of 2004 Pre-Course, % N=17	Class of 2004 Post-Course, % N=23
Responsibility to work with management*†			
Strongly Disagree	23.7	5.9	8.7
Agree	71.1	5.9	56.5
Strongly Agree	5.3	88.9	34.8

Note: Percentages may not add up to 100 due to rounding off. There was one missing value for Class of 2003.
*Statistically significant difference at $p<0.05$ for the class of 2004(pre) and 2004(post)
†Statistically significant difference at $p<0.05$ between the classes of 2003 and 2004

REFERENCES

1. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm*. 1990;47:533-543.
2. Hill HT. White paper on pharmacy student professionalism. *J Am Pharm Assoc*. 2000;40:96-102.
3. Ukens C. Pharmaceutical care 10 years later. *Drug Topics*. March 6, 2000: 76-84.
4. Jacksack M. *Business Plans that Work for Your Small Business*. Chicago, Ill: CCH Incorporated, 1998.
5. Practice Management Module. Ambulatory Care, Clinical Skills Program. Bethesda, Md: American Society of Health System Pharmacists, 1999.
6. The Dynamics of Pharmaceutical Care. Enriching Patient's Health: Creating a Pharmaceutical Care Marketing Plan Monograph #7. American Pharmaceutical Association. Available at www.aphanet.org/education. Accessed January 2003.
7. Barker QE, Davis DA, Gallerani R, Sanchez V, Viadro C. *An Evaluation Framework for Community Health Programs*. The Center for the Advancement of Community Based Public Health, June 2000. Available at www.cdc.gov/eval/evalcbph.pdf. Accessed January 2004.