Evaluation of Practice Site Learning Experience for Entry-Level Doctor of Pharmacy Students

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The purpose of this investigation was to evaluate an entry-level learning experience involving 55 pharmacy students and to determine if explicit pre-site discussion of intended outcome objectives added value to the experience. All students were required to complete a daily log and a written summary of the experience. Students were also given a pre- and post-site self-assessment survey concerning their awareness, understanding, and mastery of the desired outcomes. With a few important exceptions (no pre-site discussion group), the students indicated through written reports and answering of surveys an increased awareness and understanding of the desired outcomes as a result of the program. The students were particularly interested in interacting with patients and lack of such interaction was often associated with negative impressions of the experience. An analysis of written reports indicated such programs are most likely to be successful when the desired objectives are discussed with students before the visit and when the student is exposed to a variety of experiences, particularly interactions with patients.

INTRODUCTION
Prior to the vote of the 1992 AACP House of Delegates in favor of an entry level Doctor of Pharmacy degree, the appropriate entry-level degree for pharmacy programs had been discussed at many institutions(1). One beneficial consequence of this discussion, along with the publication of the Background papers regarding pharmacy education(2,3), has been a renewed emphasis on curricular changes necessary to ensure optimal student outcomes. A recent survey of curriculum committee chairs revealed they felt their committees had substantial influence on the curriculum, but were often hindered by individual faculty and departmental concerns(4). The authors of the survey recommended that curricular changes transcend these barriers and focus on achieving outcomes that are consistent with the school’s mission.

As such changes are being developed and implemented at colleges of pharmacy it is essential that the impact of these changes be evaluated. Although it is not well-documented in pharmacy educational literature, most educators could name several new or revised classes not properly evaluated. Recent changes in the curriculum at a college of pharmacy provided the opportunity to assess one new program. There were two purposes to this investigation. The first was to evaluate entry-level pharmacy students’ awareness, understanding, and mastery of desired outcome objectives associated with a practice site learning experience. The second purpose was to determine if explicit, pre-site counseling regarding the objectives added value to the site experience.

METHODOLOGY
This investigation involved fifty-five pharmacy students in their first year of the professional curriculum (fall semester) of the entry-level Doctor of Pharmacy program. Students were enrolled in a class designed to expose them to pharmacy practice issues earlier in the curriculum. The class titled, “Beginning Pharmacy Practice,” was a two-semester hour credit course. As part of this course, students were assigned to clerkship sites where they would spend approximately three to four hours during a single visit to observe daily activities at the site. The site assignments were made by a member of the college staff not involved in the study. While true randomization (e.g., using a computer-generated random numbers table) did not take place, there was no attempt by the staff member to assign specific students to specific sites. Approximately 75 percent of the students were assigned to hospital sites, 10 percent to community drug stores, and 15 percent to other settings (student health center, health maintenance organization, rehabilitation and long-term care facilities). The sites were chosen based on location (all had to be in the same city as the College of Pharmacy) and had an established relationship with the college (all had fourth-year pharmacy students performing clerkship rotations). Students were given the names of their site preceptors (pharmacists) who were ultimately responsible for setting up the time and day of the site visit. Fourth-year pharmacy students at all sites were requested to assist site preceptors in making this program a success.

Sixteen preceptors were involved in the site visit program with each preceptor assigned from two to eleven students. Eleven students (referred to as the counseled group) were assigned to a hospital site where a preceptor met with them prior to their site visit. This preceptor was interested in meeting with those students prior to their visit in order to describe the outcome objectives of the clerkship visits (Table I) and to assess the students’ baseline competencies relative to these objectives. The outcome objectives were derived from Background Paper II(3). Each of the objectives was discussed in detail and the students were questioned by the preceptor regarding their understanding of the objectives. For objectives that involved understand-
Table I. Outcome objectives for first year pharmacy students’ clerkship visits.

1. To understand the decision-making process involved in drug selection.
2. To understand the use of mathematics (e.g., kinetics) in solving problems related to drug therapy.
3. To understand the critical thinking (questioning attitude) process involved in drug selection.
4. To effectively communicate with patients and other health professionals.
5. To understand how ethical dilemmas are resolved in the health care setting.
6. To understand the role that pharmacists play in the health care system.
7. To understand the successes and failures of pharmacy in the health care system.
8. To have a “comfort level” with the place of pharmacy in the evolving health care system.
9. To feel motivated to learn more about the role of pharmacy in the health care system.
10. To develop leadership potential in the field of pharmacy.

ing material, students were asked to provide specific examples of the objective to substantiate their competence. It was not expected that the entry-level students would achieve complete mastery of the objectives. However, it was expected that students would at least demonstrate improvements in their awareness and understanding of some of the objectives (e.g., understanding the role of pharmacists in the health care system) as determined by the evaluation process. Fourth-year students on clerkship rotations at the counseled site attended the pre-site meeting with the site preceptor and entry-level students, to be better informed of the purpose of the program and help ensure its success.

The noncounseled (traditional) group consisted of forty-four students assigned to any clerkship site other than the counseled site. There were no pre-site meetings between preceptors and students in this group (it was not prohibited or suggested by the course instructor). Also, in contrast to the counseled group, outcome objectives were not discussed with any of the students assigned to the traditional group.

The course instructor defined minimum expectations for the experience (Table II) and all site preceptors, as well as all students in both the counseled and traditional groups, received copies of these expectations. Either the site preceptor or the fourth-year student discussed these expectations with the entry-level students during the site visit. These included discussing a typical day at the site, reviewing patient charts or profiles, discussing clerkship opportunities for students, and observing a fourth-year pharmacy clerkship student interacting with patients or healthcare professionals. The entry-level students were required to keep a log of their experiences that could be used to provide a written summary of the visit.

All entry-level students (counseled and traditional groups) were specifically instructed to complete the written summary of the experience off-site to ensure that their comments were an honest and unbiased assessment of the visit (admittedly from the perspective of the student). The students were required to include the following information in the summary: the high and low points of the experience, a typical day at the site, types of patients followed, the titles (e.g., RN, MD, RPh) of the health professionals who interacted with the students and the quality of the interactions, the amount of time spent with the site preceptor, the number of patient interviews for more than five minutes either involving or witnessed by the entry-level student, the number of patient charts or profiles reviewed at the site, and the types of clerkship experiences observed or discussed at the site (e.g., literature searches, drug evaluations, patient rounds). These written reports were analyzed using a constant comparative analysis(5). The purpose for this analysis was to progress from the student’s expectations of the experience to more comprehensive statements about the site visit.

All entry-level students were also asked to complete pre- and post-site self-assessment surveys to assess their awareness, understanding, and mastery of the outcome objectives listed in Table I. While it was not expected that the students would be exposed to all of the objectives during the site visit, their responses to the surveys would be expected to indicate when substantial exposure did occur. The pre-site survey consisted of 20 questions that was administered to all students. This survey was administered prior to the student counseling session in the counselled group. Eighteen of the questions used Likert-type scales and two of the questions required yes/no responses. Eight of the questions using Likert-type scales asked the students to rate their understanding of certain objectives. Eight other questions (also Likert-type) asked if the students could name specific examples of those same objectives. By asking for specific examples of the objectives, the survey (and the pre-site meeting in the counselled group) were used as objective support of the students’ subjective responses. The post-site survey was identical to the pre-site survey except for one additional question concerning the students’ desire to take the rotation during fourth year clerkships.

Inferential testing using repeated measures ANOVA was used for continuous data (e.g., survey responses) with a P< 0.05 being considered significant. An in-depth qualitative analysis of the entry-level students’ written summaries was also performed. This analysis included extracting the following information: the entry-level students’ interactions with the fourth-year clerkship students, any mention of discussions between the entry-level students and site preceptors, the students’ understanding of the purpose of the experience, the number and types of health professionals encountered during the visit, the number of patient encounters, the students’ understanding of the responsibilities of the preceptor and fourth-year clerkship students at the sites, any debriefing that took place between the students and site preceptors, and tangible actions taken by the student as a result of the site visit (e.g., purchase of a book). Multiple
Direct quotations were taken from the summaries, particularly those statements concerning the overall value of the experience. No attempt was made to question site preceptors or the fourth-year clerkship students at the sites.

RESULTS

Complete written information was not available from three students in the counseled and three students in the traditional group, hence their data were not included in the analysis. Of the remaining eight students assigned to the counseled group, all reported a better understanding of the objectives for the site visits compared to noncounseled students in the traditional group. Additionally, it was apparent from their written reports that the students in the counseled group felt the fourth-year students at the sites had been adequately briefed regarding the program.

In the traditional group, students were more likely to understand the objectives of the site visit when there was some introductory briefing by the preceptor or fourth year student. If the entry-level student was briefed, 67 percent (10 of 15) of these students understood the objectives for site learning experience. If neither the entry-level nor fourth year students had been briefed, 12 percent (3 of 26) of them understood the objectives for the learning experience.

In the analysis of the pre- and post-surveys, students in both the counseled and traditional groups concluded they had improvements \( P<0.05 \) in their understanding of the decision making process, the critical thinking process involved in drug selection, and their understanding of the mathematics involved in medication therapy. Students from both groups perceived improvements in their ability to communicate with patients and health care professionals \( P<0.05 \), their understanding of the role of pharmacists in the health care system \( P<0.05 \), and their understanding of the successes and failures of pharmacy. Overall, students felt more comfortable with the role of pharmacists in the health care system \( P<0.05 \). When testing for differences between the counseled and traditional groups, our results indicated no significant differences for any of these items based on the survey results. However, the analysis of the written summaries indicated all students in the counseled group understood the objectives of the program and felt the experience was valuable. This consistency was not seen in the summaries of students in the traditional group.

While not statistically significant at \( P<0.05 \), there were trends that emerged between the counseled and traditional groups for some of the written and self-assessment survey items. For example, students in the counseled group demonstrated less motivation to learn more about pharmacy on the pre-site self-assessment instrument compared to the traditional group. This had reversed on the post-site survey \( P=0.07 \). This finding was consistent with the written comments made by students. Twelve percent (5 of 41) of the students in the traditional group who did not have substantial interactions with the fourth-year student at the clerkship site, the site preceptor, or patients expressed negative statements regarding the site visit. For example, one student wrote, “My experience at the clerkship site was not enjoyable. I was very disappointed in the site visitation. One good thing that I felt I got out of this visitation site is that I know that this [clerkship site] is something I am most definitely not interested in doing as a rotation.”

In the counseled group the written statements by the students were uniformly positive, despite the unexpected finding that some of these students did not have discussions with patients as requested by the preceptor. One fourth year clerkship student who had been asked to involve some of the entry-level students in such discussions apparently did not do it. Typical comments from students in the counseled group were, “It was a privilege to watch how these highly motivated, highly dedicated (individuals) interacted with each other and the patients to achieve the best care possible. Seeing others suffer is a great motivation to provide the best care possible and keep focused” and “The high point of this assignment was being able to get a feel for what opportunities are available for pharmacists and how pharmacists are being utilized in this day and age. This was a terrific idea.”

On another question concerning the ability of the student to cite a specific example of how an ethical dilemma was resolved in a health care setting, the students in both groups had similar scores on the pre-site survey. On the post-site survey, students in the counseled group were less likely to state that they could cite such an example \( P=0.06 \).

DISCUSSION

Previous evaluations of entry-level site visitation programs have been published(6-8). Although the type and purpose of the evaluation instruments varied, the site visits were always a positive experience according to the involved students. Becker reported positive experiences by students and directors of hospitals involved in a shadow program(6). The students were requested to answer six questions regarding the three hour visit, and were “allowed” to write in additional information on the questionnaire. The majority of the students rated the experience either excellent or very good and none of the students rated it poor. According to the students’ responses, the limited review (either superficial or inadequate numbers) of patients’ charts was one notable weakness of the experience.

Rivey et al. examined a site visitation program involving community and hospital sites(7). Students were required to contact a community pharmacist of their choice concerning a possible site visit, while the instructor arranged the majority of hospital visits. All students were given a list of questions concerning community or hospital practices that were intended to stimulate a dialogue between student and preceptor. The site visits lasted approximately two hours. The students were asked to complete a survey regarding their experiences approximately one month after the end of the course. A different survey instrument was mailed to site preceptors. Using a Likert scale, attitudinal responses of students and preceptors concerning the experience were positive.

Of published evaluations of site visitation programs, the evaluation procedures used by Bucci et al.(8) appear to be the most comparable to those used in this investigation. In both investigations, written summaries and pre- and post-site surveys were used to assess mastery of stated objectives. Additionally, fourth-year pharmacy students were primarily responsible for exposing the entry-level students to site activities. However, in the study of Bucci et al.(8), students were assigned to a group with or without site visits. The students assigned to sites were required to turn in written summaries of their experiences while students assigned to the other group were required to write a paper on pharmacists’ roles and responsibilities in different practice settings.
Both groups were exposed to information (e.g., introductory material, career opportunities) in the didactic portion of the course. No statistically significant differences were found between groups based on pre- and post-site testing, although correct answers for knowledge-based questions were often higher on the post-site survey compared to the pre-site survey for students in the site-visitation group. The mastery of course objectives as determined by course evaluation revealed that students in the site-visitation group were significantly more likely to understand applications of the mastery of course objectives as determined by course evaluation material, career opportunities) in the didactic portion of the course before the site visit and again at the end of the site visit. Also the course instructor needs to take steps to ensure that minimal expectations (Table II) for each site are clearly communicated to site preceptors and clerkship students assisting in the process.

In summary, the ideal site visit should include a pre-site meeting with the site preceptor and fourth-year student to clarify the meaning of all objectives. Consequently, the preceptor or fourth-year student need to ensure this requirement is met. At the end of the site visit, the preceptor and student should meet to summarize and discuss the experience. Besides the other expectations, student-patient interactions are a crucial component in the success of this program.

CONCLUSION
This investigation reaffirms the results of previous work that demonstrates the value of experiential programs early in the curriculum. However, to help ensure success (from the students’ standpoint), such programs should have well-defined objectives (Table I) that are consistent with the College’s outcome objectives for students. It is suggested that these objectives need to be explained during the didactic portion of the course including interactions with health professionals and patients. However, it was discovered from the written summaries that some entry-level students were not introduced to patients by the fourth-year students. While these entry-level students were disappointed by the lack of patient interactions, their comments were still positive overall, apparently due to the well-defined objectives and wide range of other experiences.

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References