INSTRUCTIONAL DESIGN AND ASSESSMENT

Evaluation of a Seminar Pedagogy as a Means for Developing Positive Advisor/Advisee Relationships

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Submitted September 17, 2003; accepted November 26, 2003; published July 15, 2004.

Objectives. The goal of this project was to conceptualize, develop, implement, and evaluate a weekly, academic advisor’s seminar. The intent was to maximize the advisor’s exposure to his advisees and minimize the time dedicated to do so, while helping advisees begin to develop performance-based abilities. The seminar series involved dissemination of basic information to the doctor of pharmacy students about the College, faculty ranks, and curriculum vitae development, among other topics. Further, it encompassed career-planning exercises, including listening to and interacting with outside speakers, discussing curriculum/educational issues (eg, academic integrity), and conducting reflection exercises.

Methods. The evaluation component of this study used a single group posttest design with a retrospective pretest component. The self-assessment instrument was comprised of 10 assessment items and 5 open-ended questions. The Rasch rating scale model, in combination with the Wolfe and Chiu procedure, was used to evaluate data provided by the instrument.

Results. Curriculum vitae development was listed most frequently as the topic/concept that would be most useful to students’ professional development. Further, the ability of students to self-assess their learning needs improved as a result of the seminar. In addition, there was an increased student development of interpersonal communication skills and self-confidence in that skill. The last major finding demonstrated that, overall, students enjoyed and learned from the invited guest speakers. In particular, discussions on residency opportunities in the pharmaceutical industry were noted as favorites among the students.

Conclusion. This paper described an advising strategy that successfully nurtured pharmacy students in the development of their performance-based skills in a manner that was structured and time efficient.

Keywords: Advising, student mentorship, mentor, Rasch model, pharmacy students

INTRODUCTION

Typically, in schools or colleges of pharmacy, professional students are assigned to or select academic advisors from the faculty in the school or college in which they are enrolled. Sometimes this selection is informed, while at other times it is haphazard. At the University of Illinois at Chicago, doctor of pharmacy students select their advisors from a list of faculty members who have volunteered or were solicited by the College to be academic advisors. The listing contains information about the faculty member to help the students decide which faculty member might best fit their needs. Typically, the student then contacts the faculty member of their choice via e-mail or in person and makes arrangements to meet with the faculty member if the faculty member is willing to accept them as an advisee. In contrast, in other colleges or schools, the advisee is assigned to an advisor or to a person in a central office (eg, the Office of Student Affairs) who is responsible for all student advising.

Student advising is intended to serve several functions, among others, divided into coursework guidance, facilitating student registration, mentoring students in areas such as career planning, helping acclimate the student to the culture of the school/college, and facilitating networking (eg, summer internships, graduate school options, fellowship/residency opportunities). Habley’s organizational model for academic advising articulates the various iterations of academic advising commonly used in postsecondary education. However, none of the models assume that the student selects their advisor. Regardless of the system or the selection process, unless the system used is formalized and students take advan-
tage of this opportunity, they often progress through their professional program without ever meeting with their advisors.

The key factor in the success of an advising model resides in the degree to which there is a fit between the model, the institutional culture, and the level of student and faculty interaction. The culture includes the institution’s mission, the role of faculty members, various programs, policies, and procedures, and student needs that assist the student in gaining proficiency toward attaining a formal education and developing performance-based abilities (eg, communication skills, problem-solving abilities, interpersonal skills).³

The level of interaction between student and faculty member is greatly influenced by the amount of quality time dedicated to the advising model. To advise and interact with students with substantial depth is a laborious and time-consuming task. This expenditure becomes even more taxing as a faculty member accepts the responsibility for multiple advisees. Yet, the students are “the most important persons on campus” and it is a faculty member’s obligation and duty to nurture and help develop their growth as professionals and citizens.²

Some faculty members embrace the opportunity to advise students and are exemplary in doing so. Other faculty members desiring to be involved in the mentoring process may perceive they have little time to mentor in a manner that would allow meaningful contact with students and at the same time preserve the amount of quality time needed for other responsibilities they believe will, hopefully, ensure promotion (ie, research). Faculty members do have time constraints and academic advising is demanding, especially meeting each of their advisees on an individual basis. This is compounded when pharmacy students who need nurturing and development venture into their advisor’s office unannounced and sometimes at the worst possible time for the advisor. This damage-control approach consumes much time. Unfortunately, these faculty members may end up pursing a “closed door” policy in response to these challenges, and the responsibility to guide and nurture students becomes neglected.

The reality is that these faculty members could still have a “golden” opportunity to participate in a core component of student learning if the interaction were structured and delivered in a manner that was “win-win” for both parties. The students then have the opportunity to experience and know these faculty members (ie, basic scientists, clinical pharmacists), and correspondingly, the faculty members have the opportunity to demonstrate to students the true excitement and rewards of being a faculty member. In essence, a vital experience is one in which a faculty member serves as a role model and in doing so inspires some students to pursue graduate education, residency, or fellowship training and encourage others to enter practice in a traditional role.

Undergraduate education (ie, prepharmacy education) in a global sense is preparatory learning for entry into the professional pharmacy program. Once admitted into a college or school of pharmacy, the education each student receives goes beyond simple learning and is a matter of restructuring oneself as a healthcare professional, a process that can be accomplished only by following the model of a successful teacher. Although the word “mentorship” has no official status in academia (ie, no part in the tenure decision), faculty members who are successful mentors realize that mentoring results in immediate dividends postgraduation (eg, by the former student becoming a preceptor, giving financially to the college or school, or becoming a collaborator on future projects or a lifelong friend).³ There is an incredible and inescapable dynamic of power in the advisee-advisor relationship, and it is from these mentorship relationships that the future of pharmacy evolves. That is, the dedication to provide leadership for advancing the profession is subsequent to good advising and mentorship.

In an effort to develop student performance-based abilities and stimulate interest in the teaching aspect of academic life, Hammer et al and Draugalis et al have described innovative educational clerkships created specifically for fourth-professional-year pharmacy students.⁴,⁵ While these individual models have proven highly effective in mentoring students, and their value established in the one-on-one guidance and “hands on” experience that the students received from the faculty members, it is a challenge to the administration to foster and create opportunities for this kind of rich student/faculty interaction to occur with multiple students while conserving the time of the “involved” faculty members.

Typically, advisees have common concerns and questions. Rather than meeting with each advisee separately, it behooves academic pharmacy to consider implementing a new model that is structured in its approach to advising (ie, an advisor’s seminar). In this model, the faculty member dedicates a block of time each week (eg, 1 hour) to meet with his or her advisees in a group setting. Thus, questions can be answered for the entire group and the advisor can use the time effectively to enhance the advising experience and facilitate quality mentorship. One such option conceptualized to conserve valuable faculty time without sacrificing student contact time was the Advisor’s Seminar Series. This concept, conducted for students by their faculty advisor, is defined as a weekly
meeting with all advisees for a normal class period (eg, 50 minutes) during which common areas of personal and professional growth are addressed.

The objective of this manuscript is to describe and evaluate the experiences of the student’s first year in the Advisor’s Seminar Series, a student-focused model, which was conceptualized at the University of Illinois-Chicago College of Pharmacy, fall semester 2002 and spring semester 2003. The advisor’s seminar concept was designed to create a “win-win” situation for pharmacy students and their academic advisors. A model for student advising in which the student takes the responsibility for the selection of the advisor early on (ie, first professional year), and the advisor mentors and advises their students in a group setting using a course syllabus developed based on a needs assessment of all the advisor’s students, has not been reported to date.

**METHODS**

**Study Design**

This manuscript describes the details and specifics of the Advisor’s Seminar Series, which employed a new academic advising model intended to mentor students. The manuscript also describes the use of 3 scientifically sound techniques (ie, retrospective pretest-posttest, Rasch analysis, Wolfe and Chiu procedure) that facilitated the collection of validity evidence to support the inferences and interpretations of these data. To facilitate the seminar, each student enrolled in an elective course, *Special Topics in Pharmacy Administration* (PMAD 390), in the College of Pharmacy at the University of Illinois-Chicago for 1 credit hour per semester.

The evaluation component of this study used a single group posttest design with a retrospective pretest component. The number of items on the “Advisor’s Seminar Self-efficacy Questionnaire” was determined based on input from the administration of the students’ needs assessment the first day of class (Appendix 1), the needs of the student based on advisor’s experience, and competencies delineated in the College’s “General Outcome Abilities” document. The instrument included 4 items related to perceived agreement of outcomes from the student advising seminar and were measured using a posttest design (ie, “As a result of this seminar…”). A fifth outcomes item was added that evaluated self-perceived rapport (a critical component of mentoring and advising) with the advisor. Because of the challenge in evaluating what students perceive they have gained from the advisor seminar experiences when the internal construct may change as a result of the experience (ie, response-shift bias), 6 items were designed to be administered in a retrospective pretest-posttest design.

**Measurement Model**

The Rasch rating scale model was selected to evaluate the data provided by the instrument because it provides objective evidence that all the items measure the same construct (ie, have unidimensionality) and produce additivity of measures (ie, true interval level data) when the data fit the model. Another advantage to using Rasch analysis was that as few as 30 subjects may be needed to obtain useful information that allows the detection of differences when the instrument is administered in a pretest-posttest format. Four Rasch parameters were used to provide additional evidence to support the construct validity of the evaluation instrument. For the rating scale, the number of observations in each category, average category measures, mean-square (MNSQ) fit statistics for the measured steps, and category thresholds were evaluated. Following the evaluation of rating scale function, model fit (ie, MNSQ Infit and Outfit) and reliability were evaluated.

The Wolfe and Chiu procedure was used to compare pretest to posttest item and person values. The Wolfe and Chiu procedure uses an anchoring strategy for measuring change in person ability measures and item calibration values over time. That is, it provides a method for determining that the observed differences were the result of change in person measures due to the intervention and not due to changes in the measurement situation, regression to the mean, or maturation. The problem of detecting measurement of change over time is exacerbated when subjects interpret items and/or rating scale categories differently over time. In this study, the posttest responses were used as a benchmark in a retrospective application because this was the reference point of time when the instrument was being completed. Thus, using the retrospective pretest-posttest combined with the Wolfe and Chiu procedure reduces the effect that changes in subjects’ interpretations of questionnaire items and rating scale categories may have on the underlying construct. Furthermore, threats to the internal validity of the interpretations as a consequence of these effects are eliminated.

The Rasch rating scale models report values in logits. A logit is a unit of measurement calculated by the Rasch program that is used to transform raw scores to log odds ratios on a common interval scale. Simply put, logit units are analogous in function to other common units of measurement like degrees centigrade or centimeters. For a more complete delineation of Rasch modeling and the specifics of the rating scale model as used in pharmacy, refer to Jackson et al.

**Academic Advising Model**

First- and second-year professional students enrolled in the doctor of pharmacy program at the College of
Pharmacy, University of Illinois-Chicago, who were advisees of the primary author were solicited to enroll in a special projects course, ie, PMAD 390, *Special Topics in Pharmacy Administration*, for 1 credit hour each semester of the academic year. The option to enroll in the course was made available to the advisees and they were informed that this experimental course was entirely voluntary. Subsequently, each student was provided a verbal explanation of the course and given a syllabus (Appendix 2). Ultimately, because of time conflicts with other classes, to accommodate the students, it was necessary to conduct 2 seminar sessions in the fall semester of 2002 and, similarly, 3 seminar sessions in the spring of 2003 (ie, 1 for new advisees students, 2 for returning students).

The first session of the seminar each semester was devoted to an introductory/needs assessment session (Appendix 1) during which the students were instructed to write down their desires or topics of interest for the seminar. These were then matched against the authors’ list of topics/objectives and from there a class schedule of topics evolved. This initial session provided the needed “buy in” from students, consistent with adult learning theory, empowering students to take responsibility for and direct their own learning. Additionally, it clearly articulated the need for today’s student to answer the question, “what’s in it for me?” The integration of student needs with advisor insight also provided an opportunity to share with the students the College’s *General Outcome Abilities* document and to reinforce the idea that the students would be working toward developing these skills in the Advisor Seminar.

A central feature of the seminar series was to “get the students started on the right foot.” Each student was instructed to prepare a 2- to 3-page biographical essay for discussion in week 2. The intent of this exercise was to help the instructor get to know each student individually and set the stage for nurturing development of written communication skills. The next few sessions were devoted primarily to each student’s development of their first curriculum vitae (CV) through an iterative process with the authors who provided sample CVs for the students. The groups discussed the meaning of curriculum vitae (ie, educational life), traditional practical uses for the CV (eg, employment opportunities, scholarship applications, internship applications), and how their “pharmacy student” version of their CV could be used effectively in promoting their experiences and facilitating their own professional development.

Another important feature of the course was that periodically, guests of the advisor (eg, College of Pharmacy alumni, colleagues and friends, clinical practitioners, residents) were invited to share with the students about their careers and how they “created” their futures. It was intended to give each student the opportunity to ask questions, be inquisitive, and become reflective about their future plans. Each invitee was provided with a list of questions beforehand to guide their opening remarks and serve as a framework for discussion with the students. Because the invitees differed in practice-setting experience (eg, community practice, hospital practice, pharmaceutical industry), some questions were adapted to be consistent with that practice area. Appendix 3 lists sample questions that were supplied to a speaker from the pharmaceutical industry. The use of guest speakers also provided “networking” opportunities for the students.

The seminar allowed the students to learn about the College’s faculty culture (ie, academic ranks, promotion and tenure, nontenure appointments, committee work, instructor-course evaluations) in which they were immersed. In addition, weekly sessions also involved discussion of important topics, which are demonstrated in Appendix 4.

**Assessment Instrument Development**

The instrument and questionnaire format were adapted directly from an instrument developed by the authors that was designed to measure and document student-perceived learning processes and outcomes and had been used successfully to collect meaningful and useful data from students in a previous study.8

**Subjects**

The subjects used in this study were students in the doctor of pharmacy degree program at the University of Illinois-Chicago during the academic year 2002–2003 who were enrolled in PMAD 390, *Special Topics in Pharmacy Administration*, for their first semester. The University of Illinois-Chicago Office for the Protection of Research Subjects granted approval and exemption status for this research project. Students were informed that participation in completing the assessment instrument was anonymous and voluntary. The Advisor’s Seminar Self-efficacy Questionnaire was administered to 24 students participating in the Advisor’s Seminar.

**Development of Advisor’s Seminar Self-efficacy Questionnaire**

The Advisor’s Seminar Self-efficacy Questionnaire instrument consisted of the following: 5 learning-outcomes related items using a 4-point rating scale (ie, disagree, tend to disagree, tend to agree, and agree); 5 items administered in a retrospective pre/post format
using a 4-point rating scale (ie, weak, fair, good, very good); and 3 open-ended items related to Advisor’s Seminar topic content usefulness (Appendix 5).

Statistical Analysis

Data containing rating scale responses to the 10 items of the competition instrument were imported into Winsteps version 3.45 (Mesa Press, Chicago, Ill) to calculate statistics for the Rasch rating scale model.14,15 The output generated from Winsteps included separation reliability (item separation index and reliability, person separation index and reliability), category functioning indices (ie, average category measures and category thresholds), item MNSQ INFIT and OUTFIT statistics, and the item expected score map. SPSS statistical analysis system, version 11.0.1 for Windows (SPSS Inc, Chicago, Ill) was used to calculate t tests for evaluating retrospective pretest and posttest seminar evaluation data.

RESULTS

All of the students who selected the primary author as their advisor volunteered to enroll in the PMAD 390, Special Topics in Pharmacy Administration. All 24 students who attended the Advisor’s Seminar for their first semester completed the Advisor’s Seminar Self-efficacy Questionnaire.

Rasch Rating Scale Analysis and Model Fit

The number of observations in each category was greater than 10, average category measures increased with the rating scale categories, MNSQ statistics for the measured steps were between 0.6 and 1.4, category thresholds increased with the rating scale categories, and category thresholds were at least 1.4 logits apart and not more than 5 logits apart. Additionally, the shape of each rating scale distribution was peaked (Figure 1). Thus, the rating scale functioned as required for the sequential ordering of category meanings. This is a requirement of using the Rasch rating scale model.

Evaluation of INFIT and OUTFIT statistics for the items in the Advisor’s Seminar Self-efficacy Questionnaire showed that MNSQ values for the 10 items were greater than 0.6 and less than 1.4 for all items except item 10, “The advisor has established rapport with students during class,” which demonstrated a MNSQ INFIT of 0.7 and an OUTFIT of 0.3 indicated that responses for this item were overpredicted. That is, responses to this item may have exhibited some personal bias. This demonstrates the ability of the Rasch analysis, when the data fit the model, to detect bias (ie, a potential threat to internal validity). Thus, overall, these data exhibited good fit and supported the unidimensionality and local independence requirements of the model.

The separation index (ie, the extent that items are sufficiently spread out to define distinct levels of ability) for the 10-item Advisor Seminar evaluation instrument was 2.8, which translates to an item reliability (ie, the estimate of reproducibility of item placement within the hierarchy of difficulty across students of differing abilities) of 0.89, indicating that the items created a variable that was well spread out and that item placement along the scale was reliable. The person separation index for the 24 students responding to the 10 items was 1.0, which translates to a person reliability of 0.51 (analogous to Cronbach alpha).

Posttest

Analysis of data demonstrated that the rating scale structure was time dependent (ie, that lower categories were rarely used in the posttest data). Because measuring change over time requires a stable frame of reference, common scale calibrations were created by stacking pretest and posttest data as per the Wolfe and Chiu procedure. Thus, comparisons between pretest and posttest responses could be made.12

The results of analysis for the 10 items in the posttest and the student distribution are displayed with the expected score map (Figure 2). The information in this map represents what can be expected by each person and
item interaction (i.e., person endorsement for each item). Responses for each item relative to the group mean and plus or minus 1 and 2 standard deviations may be interpreted by using the student distribution curve located at the top of the figure.

For example, the distribution for item 3, “My ability to interact effectively (i.e., interpersonal skills) with my fellow advisees,” demonstrated that the mean for the student distribution (see dashed violet colored line in Figure 2) intersected the item response set just to the right of the colon (:) between G (Good) and V (Very Good). Thus, students from the “:” located to the left of the mean (M) and to the right of the distribution (depicted in green color) would have a higher probability of endorsing this statement as “Very Good.” Likewise, those students located to the left of the mean (M) for this sample (depicted in turquoise color) would have a higher probability of endorsing this statement as “Good.” Similarly, the results for the other 9 items would be interpreted accordingly.

The right side of the expected score map lists the 10 items in order of their difficulty to endorse. The item at the top, item 7, “As a result of this seminar, my writing skills improved,” was the most difficult item for the group to endorse, followed by item 4, “My oral communication skills in small groups.” The easiest item for students to endorse was item 10, “The advisor established rapport with students.”

**Retrospective Pretest to Posttest Comparisons**

The group means for student ability measures were -1.25 logits (±1.6 logits) and +2.54 logits (±0.96 logits) for the pretest and posttest, respectively. The difference in group means (dependent t-test) showed significant self-perceived improvement from pretest to posttest (t = 10.00, p < 0.001). This difference, presented in Figure 2, using the normative student distribution for the pretest (to be used in interpreting only items 1 through 5) and the normative student distribution for 10 posttest items. Student perceived improvement was demonstrated for all 5 retrospective pretest-posttest items. Comparison of individual student measures (i.e., pretest to posttest) showed significant student-perceived growth for 21 of 24 students (t > 2.09, p < 0.05). Two of the
remaining 3 students showed self-perceived growth, but the change was not significant. The last remaining student did not demonstrate self-perceived growth.

Comparison of Item Calibration Values Pretest to Posttest

While students perceived improvement for the 5 retrospective pretest posttest items, item calibration values from pretest to posttest were greater than 0.5 logits for 2 items. This resulted in a shift in the hierarchical ordering of these items. Item 2, “My knowledge about curriculum vitae development,” became significantly much easier to endorse favorably on the posttest than on the pretest \((t = 2.86, p < 0.01)\) relative to the other items. Item 4, “My oral communication skills in small groups,” became more difficult for students to endorse favorably from pretest to posttest as evidenced by the difference in logit calibration values of -0.92 logits (see Table 1). Because the rating scales functioned similarly in both the pretest and posttest, the use of normative distributions to describe the expected responses for these 2 items continues to function for interpreting the responses for these items.

DISCUSSION

Interpretations of Items 6–10

Items 6–10 are discussed first because these statements reflected outcomes-only evaluation and are easiest for the reader to interpret. Item 10, for example, was designed as a global indicator that the advisor was establishing a bond of mutual respect with the students. The posttest student normative distribution in Figure 2 showed the probability that all students agreed with this item, “The advisor has established rapport with the students during class.” This is consistent with the expectations of the researchers, as relationship development is a requisite for mentorship, which was identified as one of the 6 highest ranking needs identified by the students during their first session of the seminar. To be an effective advisor, the advisor has to develop a rapport with each of their advisees.

Four items, items 6–9, were designed to measure outcomes in a posttest only administration, and as such each item begins with “As a result of this seminar…” The posttest student normative distribution depicted in Figure 2 demonstrates the probability that all students agreed (green color) or tended to agree (turquoise color) with items 8, 6, and 9. Item 8, “As a result of this seminar, my ability to self-assess my learning needs improved,” was the second easiest of the 10 posttest items for students to endorse positively. Because motivation results from observing the discrepancy between what is (existing) and what could be (desired), getting students to identify their needs and then working to meet their needs throughout the semester is critical to the student developing self-assessment skills.\(^\text{16}\) The weekly group discussions motivated the students and this was a key component of the mentor/mentee relationship. Additionally, 2 in-class exercises that used a reflective technique were developed with the intent of helping students develop an awareness of characteristics and habits that lead to success, and values and attitudes required to help them achieve their goals. The strength of these findings is also consistent with comments made in the open-ended question section of the evaluation instrument. Several students commented specifically about the usefulness of these topics. One student commented, “The discussions related to self-improvement, knowing yourself and always striving to improve are keepers!” Another student commented, “These (reflective discussions) were the most helpful for me and always seemed to come at a time when I needed to hear them most.” The authors were especially pleased by the results of the learning outcomes for this item as the ability to self-assess is also a general outcomes ability of the College of Pharmacy that is desired in students and a key factor to developing habits that facilitate lifelong learning.

Item 6, “As a result of this seminar, my ability to blend knowledge with skills improved,” is also linked to

<table>
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<tr>
<th>Item #</th>
<th>Description</th>
<th>Retro-</th>
<th>Posttest</th>
<th>Difference</th>
<th>(t) test</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Knowledge about career choices in pharmacy</td>
<td>0.63</td>
<td>0.54</td>
<td>0.09</td>
<td>-0.41</td>
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<tr>
<td>2</td>
<td>Knowledge about <em>curriculum vitae</em> development</td>
<td>2.40</td>
<td>-0.27</td>
<td>2.67</td>
<td>2.86*</td>
</tr>
<tr>
<td>3</td>
<td>Ability to interact effectively interpersonal communication</td>
<td>-1.08</td>
<td>-0.93</td>
<td>-0.15</td>
<td>0.67</td>
</tr>
<tr>
<td>4</td>
<td>My oral communication skills in small groups</td>
<td>-0.23</td>
<td>0.69</td>
<td>-0.92</td>
<td>1.58</td>
</tr>
<tr>
<td>5</td>
<td>My self-confidence as a professional student</td>
<td>0.25</td>
<td>0.69</td>
<td>-0.44</td>
<td>1.08</td>
</tr>
</tbody>
</table>

\* Indicates statistical significance, \(\alpha = 0.05\)
a College general outcomes ability (ie, critical thinking and decision making abilities) and was the fourth easiest of the 10 posttest items for students to endorse positively. The positive endorsement of this item documents objectively, student-perceived seminar outcomes that showed improvement in an area where students were allowed to discover their knowledge and then apply it during class and outside the seminar. That is, that the content of the Advisor’s Seminar itself provided for application (ie, blending) of knowledge with skills in a practice setting that also facilitated the student’s ability to self-assess during the process.

Item 9, “As a result of this seminar, my interest in pursuing a career in pharmacy education has increased,” reflects the overall interest and desire of the authors to encourage students to consider this very important career path within the profession. As more colleges and schools of pharmacy are created, a key question is “where will the qualified new faculty come from?” So, it is incumbent upon existing faculty to create opportunities for professional students to learn more about what faculty life is all about and the richness that this career provides. It also demonstrates to the students that one does not necessarily have to be at “the top of the class” to pursue graduate study or residency and fellowship training. What they learn is that each one of them is capable. But, to achieve the goal of becoming a faculty member, there must be an intangible spirit from within (ie, “heart”) to become one and to possess the motivation and perseverance to do so.

As previously mentioned, item 7, “As a result of this seminar, my writing skills improved,” which was the last of the outcomes items to be evaluated, was the most difficult item for students to endorse positively. The posttest student normative distribution depicted in Figure 2 showed the probability that most students tended to agree (turquoise color), and only some students tended to disagree (yellow color). Again, the interpretation of the student’s responses for this item made sense to the instructors because writing skills were emphasized much less than oral communication skills during their first semester. Minimal emphasis was given to make the students write contemplatively about their experiences within the seminar series relative to the other objectives for the students’ first semester of the series. This finding also provides insight into areas in which the authors anticipate that development of additional exercises (eg, abstract and poster submission) will strengthen the student’s scientific writing skills in subsequent semesters as the advisees matriculate to the next professional year of study.

Posttest Interpretations for Items 1–5

Items 1 through 5 were designed to detect and quantitatively measure student-perceived improvement in specific knowledge or skills when the questions were administered in a retrospective pretest-posttest format. The area under the posttest normative distribution curve in Figure 2 demonstrated that for items 1–5 the probability that students would respond “good” or “very good” regarding knowledge about career choices in pharmacy, curriculum vitae development, ability to interact effectively (ie, interpersonal skills) with fellow advisees, oral communication skills, or self-confidence. These results suggested that overall the perceived outcomes from the student after completing the Advisor’s Seminar were favorable. However, because this posttest format did not differentiate what students gained as a result of the seminar process, a retrospective pretest component was needed to discern this information.

Retrospective Pretest-Posttest Interpretations, Items 1–5

The retrospective pretest, as evaluated with the Wolfe and Chiu procedure, allowed the participants to evaluate their perception of how they would quantify their knowledge or ability before the Advisor Seminar experience, anchored in a stable construct (ie, the item difficulties were the same pre-to posttest). That is, where changes observed in response probabilities are objective and not due to changes in the measurement situation or response shift. The evaluation of item calibration values is of particular usefulness because it provides objective evidence for areas that were well addressed and others that are in need of further attention.

The placement of the normative student distribution for the pretest and the normative student distribution for the posttest as shown in Figure 2 clearly illustrate the perceived improvement for each of the 5 items administered in a retrospective format. Item difficulty measures for the posttest and the retrospective pretest with their respective t tests for differences are listed in Table 1. The greater the logit value, the more difficult the item was to endorse. However, the change in the hierarchical ordering of these items further illustrates the strengths and weaknesses of the first semester of the Advisor’s Seminar series. In addition to the increase in positive endorsement of this item from pretest to posttest, item 2, “My knowledge about curriculum vitae development” became significantly easier on a statistical basis to endorse as a result of the students exposure to the Advisor’s Seminar (2.40 logits to -0.27 logits, t = 2.86, p < 0.01). The item calibration value from 2.40 to -0.27 reflects that this item was the most difficult item to endorse in the pretest, yet the second easiest of 5 items to endorse on the posttest. This gain in ability is consis-
tent with the students’ ranking based on their needs assessment (highest rank order) and the enthusiasm the students exhibited as they were developing their own CVs. While this paper discusses only the outcomes for students who completed their first semester of the Advisor’s Seminar, preliminary data for students enrolled in their second semester of the Advisor’s Seminar series demonstrated the strength of student-perceived need for CV development skills as it continued to be valued by the students and ranked second highest on the student’s needs assessment.

Item 3, “My ability to interact effectively (ie, interpersonal skills) with my fellow advisees,” was the easiest item for students to endorse positively in the pretest (-1.08 logits) and continued to be the easiest item for students to positively endorse (-0.93 logits). This made sense as the content of this item represented skills in which the student comes into the seminar with some level of mastery. However, growth in this area in a structured format continued to add to the maturation of this skill set. It was obvious to the authors that as the seminar series proceeded, students became more comfortable with the authors and one another and became less reluctant to share their opinions and/or raise issues. In essence, the environment that was created allowed students to “feel safe” when sharing opinions and thoughts. They could put forth their ideas without fear.

Similarly, item 1, “My knowledge about career choices in pharmacy,” remained relatively stable in its hierarchical placement and reflected positive growth from pretest to posttest. This was consistent with some initial awareness of pharmacy career choices that the students were exposed to during previous coursework. The specific content of the seminar series regarding career choices continued to exhibit growth in this area for students. This item also reflected the second highest rank order in their needs assessment. The luxury to be able to invite guests into the series provided a tangible richness as demonstrated by the positive student outcomes on the questionnaire. Students were able to hear the “wisdom” of the guest from the standpoint of their own development and gain their perspectives for “creating” one’s future. At the same time, students could ask questions and inquire deeper into the thinking of the guest. One guest actually “turned the tables” on the students by facilitating student discussion on what skills the students believed to be the most important for each of them to develop for their own skill set.

As stated earlier, student-perceived improvement was demonstrated for all 5 retrospective pretest-posttest items. However, items 4 and 5 became more difficult for students to endorse relative to the other items (ie, their oral communication skills and their level of self-confidence as a professional student). Item 4, “My oral communication skills in small groups,” demonstrated the largest item value difference from retrospective pretest to posttest. The item became more difficult to endorse by 0.92 logits, and hierarchical placement dropped from second easiest to the most difficult to endorse of the 5 retrospective pretest to posttest items. While the students’ communication skills continued to improve as demonstrated by the trend of the posttest results, this took a back seat to the other items in terms of student ability to endorse the item. What this tells the authors is that this finding is complex. First, with the continued evolution of the Advisor’s Seminar as these students matriculate to the next professional year of study, the content of the series will require more opportunities created to allow students to apply formally and develop their oral communication skills. These opportunities may include, for example, having each of the students be responsible for leading a discussion group at a time during the semester, conducting a formal presentation, or leading a journal article discussion or review. In addition, it also illustrates the necessity for the facilitators of the series to be inclusive of all students and make sure that all students are actively conversant during the series and not “hiding” or “warming a chair.”

Likewise, self-confidence (item 5) was slightly easier for students to endorse in the retrospective pretest than in the posttest (a difference in item calibration values of 0.44 logits). The calibration value for this item was evaluated as relatively stable from pretest to posttest. However, the authors were somewhat surprised that this item was the third most difficult item for students to endorse in the instrument (see Figure 2) because of the experience of the Advisor’s Seminar. A plausible explanation might have been related to the time when the posttest questionnaire was administered. For example, the second semester of the second professional year is intensive and exhibits what might be considered a heavy course load. Further, the students had just received the examination outcomes from 2 of their Principles of Drug Action and Therapeutics (PDAT) courses. Suffice to say that several students commented and shared openly how their confidence was influenced by the examination outcomes. The seminar series provided a perfect opportunity to reassure the students that they do know something and not to allow a poor examination outcome to lead to a loss of confidence.

Open-ended items 11–13

The responses to the open-ended questions in the Advisor’s Seminar Self-efficacy Questionnaire served as
A validity check for the responses to the 10 items that used a rating scale. The length and completeness of the written responses to the open-ended questions indicated that the students were serious about the opportunity to provide feedback.

As discussed in the methods section, the first meeting of the seminar included an introductory/needs assessment session. The ability/potential of this stage-setting exercise to empower the students was best summarized by one student’s comment, “The very first meeting is a keeper. It was great that the seminar was catered to our needs and concerns, and also integrated with what you (the instructors) thought was important.” Keeping in mind that this exercise was presented during the first session of the seminar and that the evaluation instrument was administered in the last session of the seminar, that this exercise was foremost in the student’s mind after an entire semester of exercises speaks highly of the instructors’ success in facilitating student “buy in.”

The responses to item 11, “List two topics/concepts that you have learned this semester which you believe will be useful to you in your professional development,” and item 12, “To date, select one seminar topic that you would consider a ‘keeper,’ and explain what components of the topic contributed to your decision,” are discussed together as a convenience because these areas, while different conceptually, produced responses that fit well together for discussion. The students ranked a wide variety of topics as a “keeper” and “most useful in professional development,” which supported that there was something for everybody. However, overall, the responses for discussion included 4 major areas.

The first major finding was consistent with the positively endorsed results of the retrospective pretest-posttest survey with respect to curriculum vitae development. That is, curriculum vitae development was listed most frequently (ie, 22 times) as the topic/concept that students thought to be useful in their professional development, or was listed as a “keeper.” Student-perceived usefulness of this topic was expected. However, the level of learning gleaned from this exercise was surprising. One student commented, “The red pen exercises (commenting about the color of the ink the instructors used to make comments on each curriculum vitae) are an excellent learning tool and provide a lot of insight.” Another commented, “This exercise gave me an opportunity to develop a curriculum vitae with guidance, and then reflect and focus my attention to areas that I need to develop.” Several students noted that the curriculum vitae exercise pointed out to them their need to develop further their writing skills (especially with reference to manuscript synthesis). The latter is a concept that will be reinforced in future semesters by the authors.

The second major finding gleaned from the open-ended items was also consistent with the positively endorsed results of the retrospective pretest-posttest. That is, the ability of students to self-assess their learning needs improved as a result of the seminar. The concept of comparing “what is” to “what could be” was reinforced continuously throughout the semester. In particular, the exercises presented early in the semester about “characteristics and attitudes of a leader” and “habits of success” were helpful in demonstrating that the concept of self-assessment is tangible and desirable. These also provided a forum for each student to provide their thoughts on the subject. Using the Delphi method, each student was asked by the authors to contribute to the discussion. This facilitated discussion and allowed the students to voice their opinion and at the same time hear those of the other students. This then provided a mechanism for the students to assess their own thinking and compare it to the other students for consistency and at the same time to learn other points of view.

The third major finding of the open-ended questions related to interpersonal communication. A goal of the first semester of the Advisor Seminar was to help the students develop their performance-based abilities, in particular, oral communication and interpersonal skills. An underlying goal of the instructors was to make the students “feel safe” when sharing their opinions, and thus, help them build self-confidence. Consistent with the positive results demonstrated by the retrospective pretest-posttest, several students commented in the open-ended questions about the importance of diplomacy in resolving issues and the value of having and applying good interpersonal communication skills. That is, “these skills are important everyday and everywhere.”

The last major finding related to career development. Overall, students enjoyed and learned from most of the guest speakers. In particular, residency opportunities and opportunities in the pharmaceutical industry were noted as favorites among the students. The invited guests (see acknowledgments) thoroughly enjoyed the interaction with the students. Some guests used the template questions to guide their discussions with the students. However, some diverted from the questions and took new directions for the discussion. Actually, one guest “turned the tables on the students” and challenged them to think of the necessary skill set they would need to develop to become effective practitioners. The students were very receptive and eager to learn from the guests as they represented the “real world” and showing enthusi-
asm, the students were motivated to ask questions. Another bonus for this activity was the networking that occurred between the students and the invitees. As a result of the seminar, 3 advisees secured summertime experiences (eg, 2 in the pharmaceutical industry, 1 in the Public Health Service). After the session, the invitees were also thanked in a letter from the main author and a copy was sent to the Dean of the College and to the guest speaker’s immediate superior wherever they were employed. This exercise also demonstrated the instructors’ enthusiasm for having the invitees return to the College, allowing the invitees the opportunity to share their wisdom with the students and gain some ownership in the students’ development and educational experience.

Item 13 asked the students to respond to the following statement: “To date, select one seminar topic that you would consider replacing with another topic, and explain what contributed to your decision.” Fourteen of the 23 students answered, “none.” This group of students indicated that all topics within the series were important. Typical responses from this group were “Most topics fulfilled my expectations,” “All the topics were great and relevant,” “I gained something from every lecture,” and “All were extremely rewarding.” There was no topic that the students felt should be replaced, which was gratifying to the authors and indicated to them that the Advisor’s seminar had succeeded. The few comments that were provided from the remaining 9 students dealt more with mechanics associated with specific sessions. For example, some guests could have allowed more time for student questions and interaction at the end of the session.

The open-ended questions also served as a quality assurance mechanism that gathered information that will allow the authors to improve the Advisor’s seminar. For example, during the semester the students were exposed to many issues related to pharmaceutical education (ie, residency preceptors, improving learning among students, academic integrity). Several students commented about their desire and need for more information about the requirements for pursuing advanced degrees, benefits/drawbacks of academia, research topics, and topics related to getting involved in pharmaceutical education as a career. This feedback was gratifying to the authors because this question had not been asked on the questionnaire. The students took time to share their insights and suggestions with the authors.

At present, the authors are developing a 3-year curriculum for the Advisor’s Seminar. The goal is to increase student involvement and ownership of the seminar as they matriculate through the curriculum. At the completion of the first year of the series, several students expressed verbally their desire to take more leadership and become involved/become more involved in developing and implementing future sessions to further their skills. At the beginning of the second year of the series, the needs assessment instrument was again used to determine student desires for the series. It was obvious from those students in the third-professional year that they desired more opportunities to “take the lead” during the sessions. In addition, the authors anticipate that the 3-year curriculum would introduce students to case studies and ethical dilemmas that would gradually increase in sophistication from the first- to the third-professional year.

**CONCLUSIONS**

This manuscript has described the conceptualization, development, implementation, and evaluation of the first year of an Advisor’s Seminar series as an alternative to the traditional one-on-one advising that takes place in schools and colleges of pharmacy. The intent of this endeavor was to demonstrate an advising strategy that would nurture pharmacy student development of performance-based skills (eg, interpersonal skills, communication skills) and provide a weekly forum for group discussions on a variety of educational topics and issues. This study reports the findings collected from the advisee’s first-year experience in the seminar series; however, students attend the Advisor’s Seminar continuously through the end of their third year in the program. For the Seminar to continue to nurture and meet the students’ needs, the content of the seminar changes as the students mature (eg, greater emphasis is placed on writing skills and behavioral interviewing techniques). Student enrollment in the Advisor’s Seminar series is voluntary and the credit received by each student counts as elective credit. Given that the enrolled students continue to elect the seminar series demonstrates that the content of the Advisor’s Seminar is of value to them. So much so that the authors have permitted several nonadvisees (ie, other pharmacy students who are friends of the advisees) to enroll in and complete the seminar. The Advisor’s Seminar experience also allows participating students to meet with alumni of the College and gain from their wisdom. To feed into this systematic approach to mentoring and advising, as the advisor’s students matriculate, the authors anticipate that many of them will return and contribute to future experiences of the Advisor’s Seminar.

At many institutions, academic advising must compete with faculty commitments to teaching, research, scholarship, and committee memberships. Thus, from a faculty perspective, the investment of time toward advis-
ing in the Advisor’s Seminar series was maximized in that the students met weekly with the advisor and conserved the overall time of the faculty member necessary to perform this important role.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the following individuals who met with the Advisor Seminar students to share their wisdom and enthusiasm: Ronald P. Betz, RPh, former Director of Pharmacy, Mt. Sinai Hospital, Chicago; Reginald A. Bogusch, RPh, formerly of Albertson’s, Inc., Franklin Park, Ill; Larry Bejnarowicz, RPh, formerly of American Drug Stores, Inc., Elk Grove, Ill; Heather Brockmiller-Sell, PharmD, BCPS, Clinical Coordinator; and Donald Lynx, RPh, MBA, Director of Pharmaceutical Solutions, McKesson Medication Management, Mercy Hospital and Medical Center, Chicago, Ill; Nicol’ George, PharmD, RPh, Senior Regulatory Specialist, Hospital Products Division, Abbott Laboratories, Abbott Park, Ill; Patricia M. Glosner, PharmD, Clinical Education Consultant, Pfizer Laboratories, Chicago, Ill; Dominique Kendrick, MBA, RPh, Regulatory Affairs Senior Specialist, Hospital Products Division, Abbott Laboratories, Abbott Park, Ill; James C. Mannion, PhD, CEO, Galleon Pharmaceuticals; Mark E. Schneiderhan, PharmD, Clinical Assistant Professor; Cristina Fernandez, PharmD, Resident; Carissa E. Mancuso, PharmD, Resident; and Jessica Tilton, PharmD, Resident, Department of Pharmacy Practice, College of Pharmacy, University of Illinois at Chicago. Dr. Everett V. Smith, Jr, Associate Professor, Department of Educational Psychology, University of Illinois at Chicago, is acknowledged for his measurement, evaluation, and statistics guidance for this manuscript.

REFERENCES


Appendix 1. Student needs assessment worksheet.

EXPECTATION RANKING EXERCISE

“My Expectations for the Advisor’s Seminar”

Name _______________________________________________

Instructions:

1. Please list six expectations that you hope to accomplish through your participation in this seminar series.

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2. Now, rank your expectations according to your relative importance and need. Make the most important #1, the next most important #2, and so forth.

1Adapted from T.A. Angelo, UC Berkeley Classroom Research Project (6/90)
Appendix 2. PMAD 390, Special Topics in Pharmacy Administration, Advisor’s Seminar Course Syllabus

Course Title: Advisor Seminar

Description: A weekly seminar series designed to draw selected second professional year pharmacy students together to discuss educational issues related to the second professional year. The course will also involve the development or updating of the student’s Curriculum Vitae and explore various pharmacy career opportunities.

Justification: There is an urgent need in the professional doctor of pharmacy program for improved and efficient counseling/advising of pharmacy students toward career planning. This planning should commence as early as possible within the professional curriculum. In addition, there must be opportunities for students to develop performance-based abilities (eg, oral/written communication skills, problem solving skills, interpersonal skills, diplomacy).

Course Objectives: Upon satisfactory completion of this PMPR 390 - Independent Study Project, the student will be able to:

1. describe the components of a curriculum vitae and prepare/update his/her own.
2. compare and contrast a professional degree from a graduate degree.
3. compare and contrast a pharmacy residency vs. pharmacy fellowship.
4. describe the components of a graduate study program.
5. list career paths open to the pharmacy graduate.
6. develop a plan of study for the remainder of one’s professional education, inclusive of elective courses.
7. identify summertime experiences in pharmacy to broaden one’s perspective of the profession and career opportunities.

Instructional Methods: Socratic method of instruction through one hour weekly meetings at a mutually agreeable time. Peer-assisted learning. In-class contact and networking with invited guests (eg, clerkship students, residents, alumni).

Evaluation Methods: Class participation, reading assignments, literature searching exercises, and written, reflective journal assignments. Students are expected to attend on a weekly basis. For every two unexcused absences, the student’s letter grade will decrease by one grade.

Appendix 3. Example list of questions.

Reflective Questions for Pharmaceutical Industry Guest

- What has happened to you professionally since you graduated from Purdue/UIC?
- What abilities are needed in your present position and how did your education prepare you for your position?
- What have you done to grow professionally to be able to handle your present position?
- What opportunities are available to doctor of pharmacy graduates in the pharmaceutical industry?
- What changes have you observed within the profession of pharmacy and the pharmaceutical industry and what do you envision happening in the future?
- What kinds of activities and projects would a student expect to participate in during a clerkship rotation with you?
- What is the most satisfying aspect of your position?
- What is the least satisfying aspect of your position?
- What advice can you give to these bright advisees/second professional year students?
Appendix 4. Content areas in the Advisor’s Seminar

• **Basic Student Information**
  - Professorial Ranks
  - How do I address a professor?
  - Promotion and Tenure
  - CV Development

• **Curriculum Issues**
  - Course content and sequencing
  - Why faculty evaluations?
  - Academic integrity
  - Review session for examination preparation

• **Career Planning**
  - Various Pharmacy Careers
  - Summer Opportunities
    - Public Health Service
    - Internships (eg, Pharmaceutical Industry, Managed Care, Community Chain)
  - Guests
    - Clinical Coordinators
    - Pharmacy Residents/Fellows
    - Clinical Education Specialists
    - Pharmaceutical Industry (eg, Regulatory, Manufacturing)
    - Hospital and Community Pharmacists
    - Pharmacy retirees

• **In-Class Exercises/Assignments**
  - Time Management
  - Reflective thought
    - Character/Habit Exercise
    - Success/Failure Exercise
    - Value/Attitude Exercise
    - What do we have to be thankful for?
  - Manuscript review/discussion with clinical faculty author

• **Course Evaluation and Retrospective Pre/Post Questionnaire**
Appendix 5. Advisor’s Seminar Self-efficacy Questionnaire

Consider your experience with the Advisor’s Seminar Course that you now have completed. Using the scale provided, please rate each statement by circling the response that best describes:

as you initially felt before you began this semester’s seminar course
as you feel now (after this semester’s seminar course)

1. My knowledge about career choices in pharmacy
   - Initially: Weak          Fair         Good         Very good
   - Now: Weak          Fair         Good         Very good

2. My knowledge about curriculum vitae development
   - Initially: Weak          Fair         Good         Very good
   - Now: Weak          Fair         Good         Very good

3. My ability to interact effectively (i.e., interpersonal skills) with my fellow advisees
   - Initially: Weak          Fair         Good         Very good
   - Now: Weak          Fair         Good         Very good

4. My oral communication skills in small groups
   - Initially: Weak          Fair         Good         Very good
   - Now: Weak          Fair         Good         Very good

5. My self-confidence as a first professional year student
   - Initially: Weak          Fair         Good         Very good
   - Now: Weak          Fair         Good         Very good

Using the scale provided, please rate each statement by circling your response

6. As a result of this seminar, my ability to blend knowledge with skills improved.
   - Disagree          Tend to disagree          Tend to agree          Agree

7. As a result of this seminar, my writing skills improved.
   - Disagree          Tend to disagree          Tend to agree          Agree

8. As a result of this seminar, my ability to self-assess my learning needs improved.
   - Disagree          Tend to disagree          Tend to agree          Agree

9. As a result of this seminar, my interest in pursuing a career in pharmacy education has increased.
   - Disagree          Tend to disagree          Tend to agree          Agree

10. The advisor (Dr. Popovich), has established rapport with the students during class.
    - Disagree          Tend to disagree          Tend to agree          Agree

The next items are presented in an open-ended response format. Please provide your responses in the space provided. If you need more space, please use the reverse side of this page.

11. List two topics/concepts that you have learned this semester which you believe will be useful to you in your professional development.

12. To date, select one seminar topic that you would consider “a keeper” and explain what components of the topic contributed to your decision.

13. To date, select the one seminar topic that you would consider “replacing with another topic” and explain what contributed to your decision.