Review

Moving from Medieval Apprenticeships to Reflective Practice

Review of: *Entering Mentoring: A Seminar to Train a New Generation of Scientists*, by J. Handelsman, C. Pfund, S. Miller Lauffer, and C. Pribbenow; 2005; 152 pp.; University of Wisconsin Press (Madison); ISBN: 0-299-21570-9

Reviewed by Keith Garbutt, Department of Biology, West Virginia University

INTRODUCTION

The university is an institution with its roots in the medieval period. For example, the gowns and regalia we don for ceremonies such as convocation and graduation harken back to the robes worn by the clerics who founded the early universities. In spite of our proud preservation of such centuries-old traditions, we still like to think that our modern institutions have progressed somewhat from the early days of Padua and Oxford. However, in at least one critical aspect, we continue to operate in recognizably medieval conventions. The training of the next generation of the professoriate remains a process that reflects the apprentice system of the guilds of the Middle Ages. In any reasonably sized laboratory, we find undergraduate and graduate students who could quite easily be considered junior and senior apprentices. Postdocs correspond to medieval journeymen, and, of course, the professor in charge of the group would have been known as the “master” in the guild system. Although this apprentice model has admirably served those of us who have successfully made it to the professoriate/master level, it also has left us with some serious deficiencies in training faculty, especially in the areas of teaching and mentoring.

At most institutions, the apprenticeship programs we currently use to train our students in the elements of teaching and mentoring are a process of modeling. If the model is good—if the master provides a living example of excellent teaching and mentoring to the apprentices—then we have a reasonable chance of turning out individuals who themselves will be good teachers and good mentors. But, if the model proves to be an indifferent or poor teacher or mentor, then we will be turning out a new generation of scientists who are equally indifferent or poor teachers and mentors. This modeling system is analogous to the ways in which most of us approach parenting: we simply apply the skills, attitudes, and approaches we absorbed from our caregiver models to our children. However, as we grow older, we all discover, to our horror, that we are turning into our parents:

we did not only learn and apply the effective ways in which we were guided and nurtured but also the flawed approaches and perspectives. I fear that many of us are also discovering, to our equal horror, that we are turning into our advisors.

In many research programs, the individuals who bear responsibility for the day-to-day activities of the undergraduates in a laboratory are the graduate students and the postdocs. Thus, these senior apprentices and journeymen would benefit from learning the skills and approaches needed to be effective mentors for these undergraduates. Conversely, the undergraduates would have a more rich and successful experience in our laboratories under these skilled mentors. *Entering Mentoring: A Seminar to Train a New Generation of Scientists*, from the Wisconsin Program for Scientific Teaching, was developed for this purpose and aims to break the cycle of developing mentoring skills exclusively based on the models provided by one’s own mentors. The authors make some fundamental assumptions about the situation in which mentoring will take place: it was designed for, and works exceptionally well for, a life sciences program that has a summer research experience for undergraduates. However, our experience has shown that it also works in a regular semester setting and for graduate students from a wide range of disciplines.

Entering Mentoring provides a detailed plan for conducting a seminar that helps graduate students and postdocs reflect seriously upon the process of mentoring research students. Because the program is set up primarily with a summer undergraduate research experience in mind, it includes plans for a series of eight weekly sessions that, concurrently with their work with the students in the summer program, lead the graduate student or postdoc mentors through the intellectual issues, technical issues, personal growth issues, and interpersonal issues associated with effective mentoring. The concurrency of the seminar with mentoring practice provides richness and relevance to the theory and information presented in the seminar. As a result, the undergraduate “mentees” immediately benefit from the improving mentoring skills of their graduate student or postdoc mentor.

DOI: 10.1187/cbe.05-11-0128

Address correspondence to: Keith Garbutt (kgarbutt@mail.wvu.edu).

In considering the feasibility of offering a seminar during the summer, one issue that certainly raises its head is whether we can afford the time to do such a thing. Having now used this manual on two occasions, my response would be, “Not only can we afford the time, but also we absolutely must afford the time if we are going to make the experience for undergraduates in our laboratories a truly exceptional one.” In addition, because of the rich background provided in the manual, the time needed for the seminar leader to prepare is relatively modest. Although I would not agree with a professor who claimed that it was possible to prepare for this course in the elevator on the way to the seminar, certainly it is not necessary to put in many hours of preparation before leading the seminar. The materials presented in the book and some supplementary readings prepare one well to lead a quality seminar.

The description of each session is split into facilitator’s notes and materials for the mentors, including readings on topics such as scientific teaching, the role of mentor, the challenges and benefits of diversity, and, worthy of special mention, an excellent essay by Jo Handelsman: “Righting, Writing.” Each weekly session leads the participants through the process of mentoring, initially beginning with establishing a good relationship and developing a philosophy for mentoring. It then covers topics of communication, goals, and expectations. One session is devoted to evaluating the progress of both the mentors and their mentees, and the manual provides evaluation protocols for the mentee, the mentor, and the facilitator of the program. Other sessions are devoted to applying the wisdom of the group to help mentors who face situations that are proving to be challenging or troublesome. The final session revolves around preparation and discussion of the formal “mentoring philosophy” of each of the mentors, including how this statement might be viewed by a search committee.

We have now offered the *Entering Mentoring* seminar at my institution on two occasions: once during the regular semester and once over the summer. On both occasions, the seminar was offered for credit. At the first offering, students in the Department of Biology, my home department, were encouraged to take the seminar if they were working in a laboratory with undergraduate students, but it was not mandated. Additional individuals attended from other departments, in response to an e-mail sent out by the Office of Graduate Studies. This inaugural semester session included

15 students. The summer session was linked to an EPSCOR Research Experience for Undergraduates (REU) Program award.

In fact, the reviewers of the proposal commented positively on the inclusion of the mentor training in the proposal evaluation. Faculty who wished to take part in the REU program were required to assign a graduate student or postdoc as a mentor, and the mentor was required to attend the *Entering Mentoring* seminar. Perhaps surprisingly, faculty were very supportive, and a mentor was assigned from all 23 laboratories, although a couple of the mentors were not initially as engaged as the participants had been in the first offering when all the mentors were volunteers.

In both the semester and the summer incarnations, the program worked well. However, as with any “course in a box,” there are ways in which it can be modified and improved to fit the needs of any particular institution. During the first iteration, we discovered that some issues arose regarding concepts of ethics and fairness in the research environment. Thus, we modified the program in our second iteration to include an extra pair of sessions on basic ideas of ethical behavior within a research environment. Based on these sessions, we also gave a similar ethics seminar to the incoming undergraduate research students, many of whom seemed not to have had any training in this area.

I am sure that as the *Entering Mentoring* seminar is used at other institutions, others will find elements that they would like to add to the program. The beauty of its structure as only eight sessions means that the addition of extra modules is usually quite straightforward, particularly if one is offering the seminar during the regular semester rather than during a summer session. Additionally, elements of the manual can be used outside the seminar. For example, I used the “Righting, Writing” essay this semester with an incoming class of freshmen. It was exactly the tool I needed to help these students begin to understand the procedures of writing appropriately in the biological sciences.

Overall, *Entering Mentoring* is an excellent manual for taking an important step in moving from a medieval apprentice model to a more purposeful, reflective model for learning how to be an effective mentor. It provides a solid framework and foundation to explicitly teach the concepts of mentoring to our graduate students and postdocs, hopefully helping them be better mentors than we are ourselves.