

Career Series: VI. Career Exploration Finds a Place in the Classroom

MicrobeLibrary Article: *Focus on Microbiology Education*—Spring 2007 Issue
Publication Date: 5/1/2007

Author

Joanna R. Klein
Northwestern College, St. Paul, Minnesota

Abstract

*Joanna Klein has been a biology faculty member at Northwestern College for 4 years and teaches microbiology, genetics, and nonmajors biology. She received a B.S. in biology and a Ph.D. in genetics, both from the University of Iowa. She did postdoctoral training at the University of Minnesota and currently has an active undergraduate research program studying intron splicing in *Lactococcus lactis*. She is codirector of a local pilot program that partners college biology majors with underrepresented populations of high school students in a summer research project designed to develop both populations' knowledge and skills in scientific study and research.*

Article

At the start of my first year of teaching, a colleague encouraged me to find a way to help students better understand the career options available to them as biology majors. It was her impression that many students majoring in the life sciences were unaware of the array of career opportunities available to them and were not taking adequate steps to prepare for such careers. Surveys of my students have validated this claim. So my question was, how can I best help students in their exploration of careers in the life sciences?

One-on-one advising of students is an important and productive way to assist students in career preparation. The classroom is also a useful venue for career discussions. In fact, one of ASM's curriculum recommendations for microbiology majors is that the topic of "Careers in Microbiology" be integrated into core course material or offered as a stand-alone elective course. Here is how I have implemented it.

At my small liberal arts college, I teach a microbiology course each spring with a typical enrollment of 24 biology majors, primarily sophomores. In this course, I combine an assignment and an in-class activity to encourage students to explore career opportunities available to someone with a bachelor's degree in biology, with some emphasis on careers in microbiology. The activity is especially appropriate for students early in their undergraduate experience so that they can properly select courses and search out additional experience to achieve the necessary qualifications. I also strategically schedule the activity prior to class registration for the next term or prior to application deadlines for summer internships and jobs.

Students are given an assignment to complete outside of class in which they are directed to two websites, MicrobeWorld (<http://www.microbeworld.org/>) and the student section of the American Society for Microbiology (<http://www.asm.org/Education/index.asp?bid=1185>). Students are asked to read through the information and briefly describe in writing what they learned.

Interviews with a variety of microbiologists at MicrobeWorld provide an engaging glimpse into what it is like to be a microbiologist. This resource is especially useful when it is not feasible to invite practicing microbiologists into the classroom. For the next part of the assignment, students are asked to find a current advertisement for a job they would be qualified to apply for with a bachelor's degree in biology. I provide a few websites to get them started. This job advertisement forms the basis for a classroom activity.

During class, students are divided into groups of four to five and they take turns summarizing the job advertisement they located and describing the type of job, pay range, and qualifications. Students are asked to list the qualifications and required skills for the position and assess whether they currently have these. If they do not have a particular qualification or skill, they brainstorm ways in which they could acquire it. Finally, I have students make a list of skills they do have, pointing out that skills and techniques they have learned in laboratory classes may be appropriate to include on a resume. Following work in small groups, I lead a classroom discussion where I ask five to six students to share the job description they found.

During the final 10 to 15 minutes of class, information on internships, graduate school, and research is provided. I invite a specialist from the college career services office to give a brief presentation on internships (their importance and how to get one) and the services that the office provides to students. I present reasons to consider graduate school and what students can expect in graduate school. I also put a plug in for my research projects, hoping to interest students in doing an undergraduate research project with me in the future.

At the end of class, I collect the job advertisements and post them in a public area for all students to peruse. This becomes a valuable resource for all biology students, some of whom are currently looking for a position.

Surveys taken by students before completing the assignment and after participating in the class discussion show a significant increase in students' appreciation for what a microbiologist does, a greater awareness of the variety of career opportunities in the life sciences, and more knowledge of salary expectations for entry-level positions. Students found both the assignment and in-class discussion to be generally useful (Table 1). One student who found it less useful commented that it didn't focus on what the student was interested in doing because the student is not interested in biology as a career (switching majors). Another student commented that the bachelor's-level job identified looked boring and that jobs requiring a graduate degree looked more interesting. While this student questioned the value of limiting the assignment to entry-level positions, it seems that the assignment did reinforce the important message that further schooling is an attractive and realistic option. In a survey question asking what the most valuable aspect of the assignment was, value was ascribed to learning about internships, hearing information on graduate school, and discovering the types of jobs available and the necessary qualifications.

TABLE 1. Assessment survey results

| Survey question | Answer (%) | | | |
|--|----------------|----------|----------|----------|
| | Strongly agree | Agree | Neutral | Disagree |
| I am aware of career opportunities available to someone with a bachelor's degree in biology. ^a | 5 26 | 18 63 | 45 11 | 32 0 |
| I have an understanding of what it would be like to be employed as a microbiologist. ^a | 5 11 | 14 83 | 27 6 | 54 0 |
| I am aware of the approximate salary I could expect to earn with a bachelor's degree in biology. ^a | 9 0 | 36 89 | 45 11 | 9 0 |
| Completing the assignment regarding careers in microbiology and locating a job advertisement was a helpful activity. | 16 | 68 | 11 | 5 |
| The class discussion on careers was useful. | 21 | 68 | 11 | 0 |

^a For the first three questions, percentages of student responses prior to the activity are given in the top row, and postactivity responses are in the bottom row.

What are the benefits of exploring careers in a classroom setting? First, a properly designed assignment and classroom component creates an active learning process. The importance of gaining the necessary experience becomes immediately clear to students as they analyze job descriptions and their own skill sets and has more effect than hearing the same message from a professor or career counselor. Second, a classroom discussion exposes students to a wider variety of careers than if they had just been looking on their own. Third, students admit that having career exploration tied to a graded classroom activity provides the motivation they need to begin or continue considering their future career. Fourth, it is an efficient means of disseminating information to students—24 students in one hour versus 24 separate advising appointments. With proper design and timing, I'm confident that you will find a career exploration activity to be valuable for your students and a good use of your time.