TRAINING SCIENTISTS TO MAKE THE RIGHT MOVES

A Practical Guide to Developing Programs in Scientific Management

Burroughs Wellcome Fund

Howard Hughes Medical Institute

Chapter 1

GETTING STARTED
Deciding Whom to Train and What They Should Learn

Almost daily you hear pleas for more help with a range of issues for early-career scientists, from time management and mentoring to grantsmanship and tenure. You realize the time has come to develop or expand current efforts in scientific management training. How do you begin? Whether you are thinking about putting together a single workshop or a full-fledged course, you first need to understand the training needs at your university or professional society. Ask yourself the following:

❖ Who are the people I want to reach?

❖ What are my goals? How will I know if the training has been successful?

❖ What topics should be covered? What will make this an attractive offering to the group of participants I want to reach? What content is essential versus optional (or already provided in another venue)?

IDENTIFYING YOUR TARGET AUDIENCE

In designing scientific management training activities, audience and topic can be a chicken-and-egg question. It makes sense to decide whom the training is for before you choose what topics to cover, but there can be some logic in reversing the order. For example, if you have identified holes in what scientists are taught, you will need to ascertain who will benefit most from fill-the-gap sessions.

Some topics identify their own audience. For example, interviewing for a first faculty job is a subject of distant interest to graduate students and early-stage postdocs but is relevant to senior postdocs. Junior faculty would be interested in lab staffing issues or the tenure process.

When Your Target Audience Is Mixed

Your audience may not necessarily be made up of just one group of people, say, all basic research scientists or all physician-scientists. For example, if roughly half the content you want to cover is germane to both basic scientists and physician-scientists and half is of interest to only one group, you may find that a parts-and-whole agenda can work well. You could design half the sessions for everyone to attend and the remaining half as simultaneous workshops tailored to each group. Segmenting the audience in this

way can help ensure that attendees will find the training relevant and worth their time. However, if this is a first-time offering, you may want to find a way to make it available to all your constituents, regardless of their status. If it evolves into a yearly event, it can be offered to a more limited audience each time on a revolving basis.

Mixing Career Levels of Participants

"You have to weigh the value of having a diverse group in terms of career level against the value of targeting the content to a specific group. The evaluation of the 2002 BWF-HHMI Course in Scientific Management showed that there is definitely a benefit in terms of the informal mentoring that can occur when the group is diverse. The course participants who were a bit farther along in their research careers were able to talk about their experiences with the junior-level people, answer their questions, and offer advice."

—Maryrose Franko, HHMI

SETTING GOALS AND OBJECTIVES

Take some time to think through the goals for the training session. What do you want participants to know and be able to do when they complete the training and in the months and years that follow? This exercise will help you

- ❖ Shape the goals for the training program as a whole.

- ❖ Determine the topics to be covered, and develop the learning objectives for a particular session.

- ❖ Identify speakers.

- ❖ Develop an evaluation instrument to determine the success of the training.

- ❖ Market the training by telling prospective participants what knowledge and skills they can expect to gain.

Reaching a Shared Vision for the Training

"It may be helpful for the planning team to discuss what they envision as a successful program in scientific management training. A starter for such a discussion might be the following phrase: 'I will consider the training a success when….' This type of brainstorming can generate a lot of creative ideas for the training, as well as bring the team closer to a consensus on what the goals of the training should be."

—Joan Lakoski, University of Pittsburgh School of Medicine

Q
A

What is the difference between goals and objectives, and what are some examples in the context of scientific management training?

Goals are broad statements about what you want to accomplish in the training; they frequently are not measurable. Objectives are specific things you want participants to learn; these are measurable. Examples include:

Session on mentoring

Goal: To understand how to be a good mentor and how to be mentored well

Objectives:

❖ Be able to describe strategies for giving productive feedback

❖ Be able to identify strategies for mentoring people from different cultural backgrounds

❖ Be able to describe strategies for asking for help and feedback

❖ Be able to find mentors outside one's training stream

❖ Be able to get the most out of mentors assigned by your institution

Session on navigating the university structure

Goal: To gain knowledge about the organization of a typical university

Objectives:

❖ Be able to describe the administrative structure of a university and the roles and responsibilities of the executive officials

❖ Be able to identify university staff who can help a beginning investigator advance his or her career

❖ Be able to describe the resources available to a beginning investigator

❖ Be able to describe the responsibilities of faculty outside the laboratory

SELECTING THE TOPICS

You probably have more than an inkling of the gaps in the training for beginning scientists that currently is provided by your society or university. You probably also have a good idea of what certain groups want from training because they've been telling you informally. Even so, you will likely want to gather data in a more systematic way to confirm your initial impression and to help you gain support for the training from your organization's leadership. Here are some ideas for how to go about this.

Conduct a Survey

One option for determining what topics to cover is to hold a focus group with your target audience, but that can be expensive and time-consuming to organize and conduct. Experienced planners note that a survey can provide much the same information. You may want to survey the needs and interests of only your target trainee group or poll a broader sample. For example, you may want to survey scientists who are at a slightly more advanced career stage than your target group and ask them what information would have helped them prepare better for their careers. One planner at a university surveys not only members of her target audience but their department chairs, division chiefs, and sometimes a few deans as well. Keep in mind that your target trainees may not necessarily be aware of what they should know. In some cases, you might have better insights into their needs from your own knowledge and survey findings or from other organizations' survey findings.

See page 88 in chapter 9, "Evaluating the Training," for the names of some Web-based survey tools.

Tip | Short and simple surveys can suffice—for example, a one-page questionnaire that asks respondents to rank a list of topics or to write their own top choices in order of priority.

Consider Feedback from Previous Training Events

If you have already carried out a training program, you can decide which topics to include in the new program based on the trainees' responses to previous offerings. For example, responses from participants in the 2002 BWF-HHMI Course in Scientific Management guided the revision of topics and formats for the 2005 course. See appendix 2, "The BWF-HHMI Courses in Scientific Management: A Case Study," for findings from the course evaluations, some of which may be relevant to the training you are planning.

What Postdocs and Junior Faculty Need to Know

"There are many areas in which junior faculty need additional training. It's important to have sessions on mentoring in a training program, whether it's done formally or informally. Junior faculty are begging for this. Also, we could all learn more about how to hire good people; most of us never had training in this area. Another area I believe new faculty need to know about is budgets—something else they haven't learned. Many people are resistant to personality profiling, like Myers-Briggs [personality indicator], but it's incredibly valuable.

"With the career clock ticking, organizational issues become relevant: Who's in charge of promotion and tenure, and what are the timelines? Simply knowing about the institution's resources is important. Are there internal grant-funding opportunities? What core equipment and resources are available? Who are the key institutional people, for example, heads of sponsored programs, who will help you with your grants? Young faculty may not know anyone other than their department chair. This is all about orienting our young scientists to their environments."

—Sandra Degen, University of Cincinnati and Cincinnati Children's Research Foundation

Gathering Ideas for Session Topics

"When we surveyed our members, we gave them 11 topics selected from the BWF-HHMI book, Making the Right Moves, *plus clinical practice management and basics. The top three topics—time management, job planning, and grantsmanship—were ranked about equally by the members, so we gave each one equal time of half a day."*

—Siobhan Corbett, Association for Academic Surgery

"I have conversations with faculty often about needs they see every day (e.g., acculturation issues, writing skills). I also ask postdocs informally, as well as through formal focus groups and electronic evaluations of other programs, to determine what skills they would like help enhancing."

—Melanie Sinche, University of North Carolina–Chapel Hill

Take a Look at What Other Organizations Are Doing

Visit the Web sites of professional societies and academic institutions to find out what topics they are covering in their training programs and what materials they have that could help you with topic selection. For example, the American Physiological Society (APS) and the Association of Chairs of Departments of Physiology (ACDP) have jointly published the APS/ACDP List of Professional Skills for Physiologists and Trainees (*http://www .the-aps.org/education/skills.htm*). Some program planners opt to model their offerings on the BWF-HHMI Course in Scientific Management (see appendix 3 for the 2005 course schedule).

Tip

A variety of resources for organizing a training program are available at *http://www.hhmi.org/labmanagement*. They are drawn from materials used for the 2005 BWF-HHMI Course in Scientific Management and those contributed by the Partners in Scientific Management and others involved in career development programs for early-career scientists. The resources include sample topic surveys, planning timelines, letters to trainees and speakers, registration forms, logistics checklists, brochures, session evaluation forms, and case study examples of challenges faced by early-career scientists. These materials may be used, distributed, and modified for noncommercial, educational purposes.

Q A

What do I need to watch out for if I want to use someone else's materials?

If you want to use or adapt someone else's training materials, you will need to be clear about what is required from the copyright owner in terms of acknowledgments and permission and the conditions for use. Contact the person or organization to obtain this information. Ask them if parts of the materials belong to someone else; if so, you will have to contact that other person or organization as well.

If you want to use BWF-HHMI's *Making the Right Moves* in your training, you may do so provided that the copyright and any other notices found on the title page of the book appear in all reproductions, that use is for non-commercial educational purposes only, and that the material is not modified in any way.

Build on Your Organization's Existing Training Activities

Most academic institutions and professional societies already offer some career development activities. For a coherent and comprehensive approach to scientific management training, consider how to dovetail new topics with what already exists. One professional society's committees review the topics they have covered in previous years. With that information in mind, they do some brainstorming to come up with new topics or popular topics that could be approached from a new perspective. They also take a look at which groups have not been served recently and sometimes develop a session specifically for them.

How Much to Cover?

You will probably have the choice of covering many topics somewhat superficially or a few in more depth. Budget factors can tempt planners to include as many different topics as possible to make the most of funds earmarked for the training. Convenience—having to organize an event only once—can also prompt organizers to offer many, rather than a few, topics. You will also have the choice of making topics relevant to a specific group (e.g., senior postdocs) or more broadly applicable along the training continuum. The latter approach works well in some cases, but you risk producing a program that is of marginal value to anyone (see page 3, "When Your Target Audience Is Mixed").

Take Care with the Title

The title of your training activity should be clear. As one program planner cautions, this is not the place to be creative. You want the title to be adequately and accurately descriptive so that it presents a compelling reason for your target audience to come to the training—and for funders to pay for it. You also want the title to make clear who your audience is. For example, if you offer a session for principal investigators titled "Laboratory Management Workshop," you may attract the wrong audience, for example, a laboratory technician who has the title of "lab manager" instead of principal investigator. Brevity isn't necessary—it is okay to use a two-part title with explicit information after the colon to leave no room for doubt on what your activity is about. Remember also that a "touchy-feely" title may be a turn-off to some audiences. You may want to test a few alternatives on members of your target audience before you finalize any marketing materials. (For more information about publicizing your activity, see chapter 7, "Recruiting and Registering Participants.")