

Mentoring

Overview

The word mentor has its origins in Homer's poetic epic, *The Odyssey*. In Homer's story, Odysseus, king of Ithaca, sailed off with his army to do battle in the Trojan War. Before leaving, Odysseus entrusted his faithful friend, Mentor, to care for and educate his son, Telemachus. The war lasted 10 years, and Odysseus' return trip took another decade. Meantime, back in Ithaca, noblemen were courting Penelope, the wife of Odysseus, in her husband's absence. Thinking that Odysseus would never return, these suitors wasted his possessions by staging numerous feasts and parties. Throughout all of this, Mentor faithfully performed his duties in caring for and educating Telemachus. His efforts were manifest in the young man Telemachus, who ultimately demonstrated he was worthy to be the son of Odysseus. Originating from this tale, the word mentor became synonymous with loyal and trusted friend, enlightened advisor, and teacher.

This document addresses issues of mentoring relevant to graduate and postgraduate training in all fields of study at Virginia Commonwealth University. Throughout this document the word trainee is used to describe the individual being guided by a mentor. Thus, a "trainee" may be a master's level or predoctoral graduate student, a postdoctoral student, or a health care resident or fellow.

A mentor should be experienced in his or her field, knowledgeable in proper methods of research, and have sound ethics. The mentor promotes communication and exchange of ideas, questions and concerns. The mentor also assumes responsibility for the conduct and reporting of scholarly activities. The mentor provides an appropriate environment in which the trainee may acquire both conceptual and technical skills.

Mentoring and its nature depend upon the activities and experience of both trainee and mentor. Mentoring is more than simple advising. Mentoring emerges from an extended relationship built on a foundation of both professional and personal knowledge. The relationship between each mentor and trainee must be based upon a common goal: advancement of the academic, career, and personal growth of the trainee. However, this is not the only effect of good mentoring; both mentor and trainee may benefit greatly from this relationship. Mentoring extends beyond the training phase of one's professional development, and often, mentor-trainee relationships may continue throughout the better part of a career.

Mentoring has many aspects, and mentors as well as trainees must be aware of some basic guidelines to aid them in tailoring the mentoring relationship to suit their specific needs and goals. Good mentoring does not necessarily translate into "time-consuming mentoring." To help save time and effort on both ends, there are a number of things for mentors, as well as trainees, to consider.

General Features of the Mentor-Trainee Relationship

A good mentor can help trainees to decide what options are available to them regarding graduate programs and career development. This requires the mentor to get to know the trainees and gain familiarity with his or her interests, strengths, weaknesses, and past experiences.

Mentor selection is usually based on three principal activities. The first is education; specifically the trainee can read research descriptions in advertising documents as well as published works of the prospective mentor to determine if his or her interests coincide with that of their graduate training goals. The second important activity in mentor selection is one of interpersonal interaction, both with the potential mentor and with members, including trainees, of his or her research group. It is in the best interest of the potential mentor and trainee to meet on several occasions and to discuss thoroughly the practical issues of dissertation research possibilities and the logistics of selection of a project. It is also appropriate to cover issues such as mentoring style in terms of supervision, general expectations and goal setting, and other personal and academic issues related to graduate training. Candid discussion at this point not only provides the basis for an intelligent decision on the part of both prospective trainee and mentor, but it also sets the stage for the free and open communication that must support the trainee-mentor relationship during formal academic training and dissertation research.

Initially, mentors should supervise the trainees' work closely and offer guidance in course programs. Care should be taken to ensure that proper methods are used, accurate and clear records are kept, and that all data are examined, analyzed and interpreted frequently and with attention to detail. The mentor should provide advice and honest appraisal of the trainee's performance, career development and opportunities.

The amount of contact a mentor has with each trainee will vary. Some trainees may be uncertain or lack confidence in the beginning of the mentoring relationship. The mentor may need to work more closely with these trainees for a period of time. However, mentors must be sure not to allow trainees to become overly dependent upon them. Some trainees may seem to only need to be "looked in on," but, even so, mentors should not assume that just because a

trainee seems confident and capable, they do not need attention and advice similar to that which other trainees require.

The extended period of research carried out under the supervision of a mentor is an important step in the maturation of the trainees. Trainees will, under the guidance of their mentor, become increasingly independent in their projects. This transformation is more easily achieved when the trainee is given competent training in the necessary skills. It should be kept in mind that each trainee has specific needs regarding career development. It is the responsibility of the primary mentor to recognize these needs by careful listening and observation.

Direct observation is a significant component in the early stages of training, but may wane and even disappear as the trainee progresses and matures. Observation of scholarly activities and related discussion takes place throughout the entire course of the trainee-mentoring experience. Regular face-to-face meetings, with relevant materials in hand, should characterize this activity. Mentors should observe their trainees as they present seminars, research reports, projects, exhibitions or journal clubs. This activity should persist throughout the training experience, serving two functions:

- ◆ It allows for continuing analysis of trainee progress in scholarly activities.
- ◆ It provides an excellent forum for the mentor to comment on and critique the professional communication skills of the trainee.

One of the unique aspects of graduate mentoring is the degree to which the trainee is dependent upon the mentor. In many cases, this dependence is grounded in finances with the mentor-controlled research providing stipend support and often tuition and fee payments. Almost always in the laboratory sciences, the mentor's grant provides the resources which are critically needed for trainees to perform and complete their dissertation research. Moreover, the mentor is usually directly or indirectly involved in providing or securing the resources for trainees to attend meetings or workshops that are important to their training experience. Finally, trainees are critically dependent upon their mentors for a position when they finish their programs. Such positions might entail postdoctoral training, or employment in academics, industry, or government. Such dependence on the mentor's evaluation continues well into the trainee's career; for example, applying for a position beyond a postdoctoral training experience usually involves the predoctoral mentor providing a letter of recommendation. Thus, there is a profound dependence of the graduate trainee on his or her mentor. This dependence can be considered in terms of the vulnerability of the trainee to abuse of power. Although such abuse would seem antithetical to the basic premise of mentoring, trainees can be victims to such circumstances. Such abuses of power can take the form of acts of commission

as well as acts of neglect. The trainee usually finds himself or herself in a difficult position when such situations emerge. The very person that should be available to solve the problem at hand turns out to be at the heart of the problem. Nonetheless, the mentor should be directly approached if the trainee perceives such problems. Communication between mentor and trainee can be an effective way to resolve the situation. In addition, graduate advisory committees, other faculty, and departmental chairs can usually help in these circumstances, if they are approached. Problems of this type may progress if the trainee fails to, or puts aside addressing them. Dependence on their mentors at a time when they feel abused by the same person presents trainees with a dilemma that is not easily resolved. This dilemma is, for a time, more easily avoided and such a course of action is a virtual guarantee that the problem will get worse.

Core Values of Mentoring

Communication. Free and open communication flows from an atmosphere of mutual respect and trust in a successful mentor-trainee relationship. Good mentors are critical and demanding of their trainees and these characteristics should be explicit in all forms of communication with the trainee. When mixed with compassionate personal support and enthusiasm for the work, trainees are likely to recognize helpful criticism and guidance and not confuse these messages with displeasure, hostility, or intimidation. Such interchange, in turn, cultivates a collegial relationship between the participants as together they share and analyze information, critique each other's ideas, and solve problems with each other's help. Attribution of credit and recognition of accomplishments should be clearly articulated. Taken together, these activities are the important first steps in the broad-based socialization of a young scholar. Indeed such mentoring activities are setting the stage for a career's work. That is, these same activities continue throughout a scholar's career in differing contexts and scales. A good mentor is a good listener. Try to listen to the entirety of what the trainee is saying. Do not interrupt or begin to create judgments until the trainee is finished. Be aware of tone of voice and body language. When you think you understand what the trainee is asking or telling you, repeat your understanding of what was said. In this way you may be sure you have understood the trainee correctly. By being a good and nonjudgmental listener, you help the trainee to feel more comfortable in confiding or trusting in you, and the mentoring relationship will benefit greatly from this.

Respect. Trainees should feel comfortable with their mentor, but even so, some trainees may be shy or reluctant to seek help. A good mentor is approachable and available. An *exceptional* mentor is observant and may notice a particular trainee who is shy or reluctant and approach them to discuss possible reasons for their reluctance or shyness; an exceptional mentor is not

only teacher and role model, but someone the trainee trusts, respects and is comfortable speaking with.

Trainees should be clear and concise in communicating thoughts, ideas, and questions to their mentor. Be sure to include all pertinent information that may affect the understanding of the mentor.

Personal respect is absolutely necessary on both sides of the mentoring relationship. Mutual trust is another essential ingredient for a successful mentoring relationship. Throughout the relationship the trainee must trust their mentor's advice and actions that bear on their training programs. Most trainees at the early stages of their programs depend strongly, if not exclusively, on their mentor's knowledge and expertise in helping select a viable dissertation research project. A mentor who has developed a reputation for recommending changes in their trainee's dissertation project at the least sign of failure may have difficulty attracting trainees. Such actions tend to reduce confidence and undermine trust in the mentor's scientific decision-making style. Mentors, on the other hand, cultivate a trust in the caliber of work performed by the trainee over the course of the dissertation research project.

During an active mentoring relationship the mentor is able to gauge a trainee's performance by three principal means:

- ◆ Direct observation in scholarly activities.
- ◆ Viewing the trainee's raw and analyzed research data.
- ◆ Listening to trainees present their ideas and data in both informal and formal settings

Based on these observations, the mentor, over time, develops a degree of confidence and trust in the trainee's operating style. Such observations continue throughout the course of graduate training to a greater or lesser degree.

All of these things, as well as the specifics of each individual mentoring relationship, combine to form an image in the trainee's mind that will outlast any specific speeches. This image will stay with trainees long after they have graduated, and, if they mentor in turn, may help them better mentor a new generation of trainees.

Teaching by Example. Mentors demonstrate and teach style and methodology in doing research. Especially during formal training, mentors share their talents for defining problems, asking questions, and selecting the means for solving problems and getting answers. This may be done in a very calculated way

where a novice is guided through a problem with considerable assistance from the mentor. Alternatively, mentors may convey their style and methods for problem solving by example, allowing trainees to make observations about the process. What is learned may vary from how the mentor formulates a hypothesis to how he or she keeps up with the literature and developments in the field. It is rare for the mentor not to make an impression in this setting, and the trainee usually assimilates some of the features relating to how the mentor deals with the theoretical and practical aspects of doing research. These mentoring issues can remain in play throughout one's career. For example they could apply to a young scholar doing postdoctoral training or to a seasoned faculty member doing a research sabbatical.

Evaluating and Critiquing Trainees and their Research In training, there are many opportunities for mentors to convey to trainees "how things are going". Whether reviewing results in a databook, listening to a presentation, lecture, or seminar, or critiquing a manuscript or dissertation the mentor can and should provide constructive criticism. Such activities give the mentor a chance to identify problems and propose remedies and to challenge the trainees to refine their research skills. In practical terms, these opportunities often allow the mentor to help improve the trainee's communication skills. These activities also continue throughout a career. For example, scholars may develop mentor-protégé relationships with colleagues who read and critique their proposals, manuscripts, or other writings.

Trainees should be open to constructive criticism from their mentor, and be willing to listen and interact regarding comments, suggestions, and questions from their mentor. They should also be willing to inform their mentor of any problems or complaints.

Trainees should be committed to the goal of their research as well as their own personal goals. Open communication and willingness to ask for assistance are two major keys to success in research training. Trainees should also be sure to take advantage of the varied knowledge of all of their mentors if they have more than one.

Promoting Career Development and Socialization. Mentors are advocates. They look out for the professional health and well-being of their trainees. Mentors can promote trainees' careers in many ways. They can help with insight, information, and advice about career planning. Mentors may help trainees understand and practice "networking" by encouraging them to communicate with other scholars, and by introducing them to other scholars whenever the opportunity presents itself. Mentors help trainees develop and refine appropriate interpersonal skills such as negotiation, mediation, and persuasion. Later in a career, a mentor may promote a protégé by suggesting

their name as a speaker, a conference organizer, or by submitting their name for service assignments that are part of good professional citizenship. Nominating trainees or protégés for awards can also be done to foster and enhance one's career.

Mentors provide information to trainees about the workings of the profession. This may involve familiarizing trainees with policies, guidelines, and regulations about the conduct of scholarly activities. Normative standards pertaining to authorship, peer review, data sharing or collaboration are things that trainees may hear about first from their mentors. Mentors make trainees aware of the ethical responsibilities of scholars and provide by example and instruction the tenets of responsible conduct in scholarly activities. In short, the trainees' entry into the profession involves learning appropriate behaviors, and mentors take an active role in this process.

Varying Activities of Mentors. The primary duties of a mentor change over time. At any moment, mentoring duties may involve different facets of activity. Switching one's duties from mentor-advisor to mentor-confidant to mentor-critic might occur over the span of a day or even over a few hours. Being responsive to the necessity of changing one's mentoring demeanor requires critical personal attention and oversight. Mentoring is a one-on-one activity. It is typically depicted as an intense relationship between mentor and trainee that demands continued personal and intellectual involvement on the parts of both parties. Mentoring relationships are intricate interpersonal relationships that work best in an atmosphere of mutual respect, trust, and compassion. Mentoring is dynamic and complex. Simplifying the scope of mentoring duties and responsibilities is misleading and counterproductive. A mentor is not just a patron (resource advisor), or just a supervisor (overseeing a dissertation), or an institutional linkage between trainee and the academic administration or, finally, just a role model. Mentoring roles overlap and receive differing emphasis depending on specific circumstances and changing trainee needs.

Exclusivity and Multiple Mentors. Trainees benefit from having multiple mentors. Different mentors will have different strengths, styles of teaching, ideas, and methods. Trainees must be open to discussing their problems or questions with different mentors. A mentor must also be comfortable with other mentors advising their trainees. There is no such thing as "possessiveness" in a good mentoring relationship.

VCU graduate programs mandate that an advisory committee guides each predoctoral trainee and the mentor is the trainee's principal advocate in this forum. At times however, members of the graduate advisory committee or even other faculty may assume transient mentoring roles. For example, a trainee in biochemistry may need to produce antibodies against a protein she has isolated.

To achieve this goal, an immunologist who may be a member of her advisory committee may scientifically mentor her. Mentoring activities in this case might involve instruction and advice regarding compliance with regulations concerning the use of animals in scholarly activities, the handling of animals in the called-for experiments, and relevant immunological methods needed to do the work.

Being in touch with academic status, intellectual development, and practical research progress of a trainee requires regular oversight, information exchange, and frequent and regular interpersonal communication. One critical issue is that of scholarly activities group population size. As the number of people in a group increases there is less time to conduct a proper and effective mentor-trainee relationship. Mentors need to face up to this reality as they weigh commitment, take on additional responsibilities, and, in general, "grow" in their training programs. There is a point of diminishing returns in terms of the number of trainees that can be effectively mentored. When that threshold is crossed the ability to responsibly guide trainees is compromised and the viability of the training experience is put in jeopardy. Poorly mentored trainees can unknowingly cut corners, make mistakes, or not recognize errors. Over time, such behavior can come back to haunt mentors by jeopardizing the credibility of their scholarly activities programs. Thus, neglect of mentoring responsibilities and duties can harm both mentors and trainees.

Some things to be sure of when establishing mentor-trainee relationships are:

- ◆ Each trainee should have at least one faculty member assigned to supervise them.
- ◆ Both trainee and mentor should understand the responsibilities assigned to each role.
- ◆ The number of trainees assigned to each mentor should be small enough that the mentors may interact closely with all trainees in matters of scientific interchange and supervision of all stages of research.

Guidelines for Formalizing Expectations

It is the responsibility of the trainees to:

- ◆ Show courtesy and respect to all faculty, staff, and fellow trainees, conducting themselves in a professional and mature manner.
- ◆ Respect time constraints of the faculty and recognize that faculty have the right to manage their time in a way which is academically productive.

- ◆ Take initiative during meetings, be prepared with an agenda of topics for discussion and prioritize them, addressing the most important issues first.
- ◆ Be clear and concise in expressing their understanding of what agreements have been made and what they, as well as the mentor, have committed themselves to doing.
- ◆ Keep in mind that their mentor is responsible for supervising accuracy, integrity, and validity of the trainee's scholarly activities, and conduct their scholarly activities appropriately.
- ◆ Give credit to the mentor, fellow trainees, or other contributing individuals, in research, publications and presentations.
- ◆ Keep the mentor's professional activities and prior scholarly activities in confidence in accordance with existing practices and policies.
- ◆ Keep themselves informed of regulations and policies governing their scholarly activities.
- ◆ Keep deadlines and other time constraints in mind.
- ◆ Be flexible in scheduling meetings but remain dedicated in getting information they need.
- ◆ Present finished drafts, rather than rough drafts, of documents to the mentor.
- ◆ Follow the advice of the mentor.
- ◆ Be forthright in asking questions or seeking assistance with subjects of even the smallest uncertainty or concern.
- ◆ Regularly communicate with mentors regarding progress of scholarly activities.
- ◆ Maintain certain personal distance as is appropriate in a professional relationship.

It is the Responsibility of the Mentors to:

- ◆ Help create a mentoring relationship that stimulates and encourages trainees to learn creatively and independently.
- ◆ Refrain from allowing personal rivalries with colleagues to interfere with mentoring duties.

- ◆ Interact with trainees in a professional and civil manner, keeping the University's policies regarding discrimination and sexual harassment in mind.
- ◆ Refrain from requesting trainees to do personal work (mowing lawns, babysitting, typing papers, etc.) without appropriate compensation.
- ◆ Consider the experience and skill of each trainee and apply that knowledge to the type and level of supervision needed.
- ◆ Be regularly available to provide assistance or answer questions regarding scholarly activities, scholarly, or artistic work. It is advised that mentors set up specific times for meetings with their trainees.
- ◆ Evaluate trainee progress and performance in regular and informative ways, without regard to religion, race, gender, sexual orientation or national origin of the trainee.
- ◆ Encourage graduate trainees to participate in professional meetings or perform or display their work in public settings.
- ◆ Educate the trainees in matters of academic integrity and the appreciation and respect for the work of others.
- ◆ Educate the trainee in the proper care and usage of equipment where appropriate.
- ◆ Familiarize themselves with policies that affect their graduate trainees and educate the trainees regarding these areas.
- ◆ Discuss laboratory, studio, or departmental authorship policy with graduate trainees in advance of entering into collaborative projects.
- ◆ Assist graduate trainees in developing proposal-writing skills, where appropriate.
- ◆ Discuss with the trainee what scholarly activities the trainee should undertake. This decision should be based on the ability of the scholarly activities to provide new knowledge that is important to the specific field of the trainee, as well as contributing to the trainee's career development.
- ◆ Assist the trainee in researching background literature relevant to the proposed project.

- ◆ Clearly express expectations of trainees and keep these expectations in mind throughout the mentoring relationship.
- ◆ Acknowledge trainee contributions to scholarly activities presented at conferences, in professional publications, or in applications for copyrights and patents.
- ◆ Monitor the trainee's progress, through departmental requirements, teaching requirements, as well as departmental, school, and university deadlines.
- ◆ Supervise all aspects of scholarly and research activities and experiments as well as the acquisition, recording, examination, interpretation and storing of data. It is not considered sufficient to merely edit the final manuscripts.
- ◆ Observe trainees on a personal level as well as academic, looking out for changes in personality or behavior that could be signs of excessive personal or academic stress or substance abuse. Times of particular stress may occur at times of transition or as deadlines approach. Trainees may require closer supervision at these times, since they may be negatively affected by stress. Mentors should also be aware of their own stress levels, as their ability to supervise may be affected in the same manner.
- ◆ Guide the trainee in preparation for the written and oral comprehensive examination and to conduct the trainee's oral comprehensive examination.
- ◆ Guide the trainee through the organization and writing of the thesis (dissertation) to meet University requirements.
- ◆ Post, upon satisfying the completion of the thesis, the form for the final defense of thesis with school dean's office no less than ten working days prior to the planned date of defense.
- ◆ Assist the trainee in making final (post-defense) corrections in the text or format of the thesis, and submission of the appropriate number of copies to the office of the Dean of the **Graduate School** for final signature within five working days after the defense and **BEFORE** the trainee leaves the University for postdoctoral training or a faculty position.
- ◆ Prepare trainees for competitive employment, being sure to portray a realistic view of the field and the market and making use of professional contacts for the benefit of the trainees.
- ◆ Maintain certain personal distance as is appropriate in a professional relationship.

Resources

The following documents were used in the development of this document:

A guide to training and mentoring in the intramural research program at NIH:

<http://www1.od.nih.gov/oir/sourcebook/ethic-conduct/mentor-guide.htm>

Ethical conduct in research, scholarship and creative activity. Office of Research and Program Development Policies and Procedures:

<http://www.und.edu/dept/orpd/plcyproc/ethcndct/part2.htm>

Guidelines for good practice in graduate education. University of Oregon:

<http://darkwing.uoregon.edu/~gradsch/guidelines.html>

Guidelines for investigators in scientific research: Supervision of research trainees: Recommendations:

<http://www.hms.harvard.edu/integrity/scientif.html>

How to get the mentoring you want. University of Michigan, The Rackham School of Graduate Studies:

<http://www.rackham.umich.edu/StudentInfo/Publications/StudentMentoring/contents.html>

Macrina, Francis L. (2000). Mentoring. (Chapter 3). In Scientific integrity: An introductory text with cases (2nd Edition). American Society for Microbiology Press, Washington.

Other Internet resources include:

Adviser, teacher, role model, friend : On being a mentor to students in science and engineering. (1997) Washington, DC: National Academy Press.

The full text of this book is also available on-line at:

<http://www.nap.edu/readingroom/books/mentor/>

The VCU Faculty Mentoring Guide:

<http://www.vcu.edu/teaching/bestpractices/medicinementoring>

The Web site of The National Electronic Industrial Mentoring Network for Women in Engineering and Science may be found at:

<http://www.mentornet.net/>

