The Hixon Writing Center at Caltech

Research Contextualization Activities for Mentors and their Mentees

This handout presents a number of possible activities to help build a mentoring relationship with your mentee and improve their research fluency. In addition, these activities will challenge you to improve your understanding of your field of research and provide an opportunity to practice key communcation skills required for a successful career.

Activity description	Research benefit to you	Research benefit to mentee	Writing and communication benefit to you	Writing and communication benefit to mentee	Time required
Present your research poster to your mentee.	Presenting your poster to a new (non-expert) audience may challenge you to articulate the significance and implications of your work in novel ways. You may receive questions about your work that you hadn't considered before.	Mentee has the opportunity to learn about the motivation/goals of your work and see where individual experiments or projects fit into the "big picture."	This activity gives you the opportunity to practice your poster talk or your "30 second elevator pitch."	Mentee gains practice interacting with the poster presentation genre, a form of communication they will likely use frequently in their current and future careers.	**15-30 minutes** of presentation and Q&A.
Demonstrate how to perform a literature search for your mentee. Show how to navigate the literature database (e.g. Web of Science) most relevant to your field. Consider asking them to find 1-5 papers on a topic relevant to their research project.	Literature searches help you build an idea of the research landscape in your field and quickly identify relevant new research or new journals.	Mentee learns how to access information independently about the field and the lab.	Practice peforming literature searches will help you gain and retain fluency with a number of different journal catalogs.	Mentee will begin to see and appreciate patterns among the search data regarding relevant journals or the most recent research trends. Skimming search results will help them begin to learn the language of the field, including key words associated with their project.	**5-30 minutes** to perform one or more literature searches.
Assign your mentee to interview the other members of your research group or any relevant collaborators. Consider giving them a list of "interview" questions to guide discussion about the lab's research or research relevant to the mentee's research project. You may suggest that your mentee write up a summary of their discussion or the responses to their interview questions.	This exercise challenges you to think about how your research fits in to the lab's research as a whole, and/or what potential crossover or collaboration potential may exist. This may renew or refresh relationships within the lab or with other collaborators.	Mentee has a structured opportunity to meet and interact with the other members of the research group. They grow their scientific network as well as gain exposure to multiple viewpoints about research in the field.	By reviewing your mentee's summary of the discussion or interview Q&A, you can practice critiquing the correctness and clarity of another's writing in a low-stakes setting, an indispensible skill required during research, publication, and hiring processes.	Mentee will practice writing about the current research in the group in a low-stakes environment. This is great practice prior to writing a research update or possibly a formal research abstract or proposal.	**15-30 minutes** to identify relevant group members and draft guiding questions for discussion.
Assign articles to read, such as a review paper on the general area of study, a seminal research paper in the field, or a research paper from your lab or project. Ask your mentee to take marginal notes, summarize the core message or main approach, and/or create a list of questions about the research.	Picking out a review paper or a new research paper in the field will help you stay up to date with current research. You can also use the practice of answering your mentee's questions to help you increase familiarity with technical details or significance of the subject matter.	Relevant research articles can provide "pre-packaged" contextualization of the research area, the lab, or their research project.	Selecting and reading articles will give you practice reading, critiquing, and anticipating your mentee's questions about the research. Studying journal articles will also help familiarize you with how authors approach writing for different audiences (review vs. research paper).	Mentee gains valuable experience reading, digesting, and critiquing published work. They begin to read articles not just for their technical content, but also as models for later writing they will do, both for their project and throughout their research career.	**0-30 minutes** to select papers to assign; **30 minutes** to review their summary and respond to questions.

Activity description	Research benefit to you	Research benefit to mentee	Writing and communication benefit to you	Writing and communication benefit to mentee	Time required
Meet and discuss research in the field or in the lab, using published papers or unpublished protocols/results. Consider providing them with a list of guiding questions to try to answer as they read to help them prepare for your discussion and increase knowledge retention.	Discussing research with a young scientist provides an opportunity to practice articulating the "big picture" significance of your work with someone who may not be familiar with work in the field. One-to-one discussions will also help develop a relationship with your mentee and improve your mentoring skills.	One-to-one discussions with a mentor will allow them to ask repeated or more detailed questions and help give them a better understanding of the subject matter and/or approach.	Anticipating and responding to questions, about both technical and communication (journal articles) aspects, will help prepare you as a group leader and/or reviewer. Discussion also gives you the opportunity to practice talking about your work.	Mentee will practice summarizing, paraphrasing, and critiquing published work. Discussing prior work together will help prepare them for reviewing literature in future writing tasks. Mentee will likely spend more time reviewing materials if they expect to discuss them afterward, improving their likelihood of retention of the information.	**0-1 hour** if selecting an article, reading it, and preparing questions; **1 hour** discussion with mentee.
Attend a research seminar together and discuss the presentation afterward. Ask the mentee to take notes for discussion during the talk and/or write a brief recap of the talk.	Attending seminar talks is an important way to expand your knowledge by learning about cutting-edge work, and to extend your career network.	Mentee is not only exposed to cutting-edge research, but they also learn how you as a scientist evaluate the information in the talk and contextualize its relevance to your own work.	Each seminar presenter will have a different presentation style, from how they prepare their slides and present their data, to how they speak and interact with the audience. Attending talks will expose you to a wide variety of communication practices so that you can try to mimic or adapt techniques you find effective.	Mentee is exposed to the important communication genre of research seminars and grows familiar with their format and goals.	**1 hour** seminar talk followed by **30 minutes** discussion with mentee.
Teach a series of brief "lessons" on key topics to instruct your mentee how your/their research fits into the lab's work and the research field as a whole. Consider scheduling weekly one-to-one meetings, each focusing on one research question or topic.	Teaching technical information to a non-expert is an incredible opportunity to master the material. Giving lessons to your mentee helps you build a comprehensive understanding of your work in the field. Additionally, hosting or even developing a series of "lessons" for your mentee gives you experience teaching and in curriculum design, two skills that are essential for being a great professor or educator.	Mentee gains an large amount of relevant knowledge in a very short period of time. Their work in the lab has immediate context and relevance. Their ability to ask questions in a one-to-one setting helps avoid any misconceptions or misunderstanding.	The series of "lessons" might take the form of an outline of research topics you discuss, a series of research papers that follows a theme or progression, or even might be a set of mini-lectures or slides you develop. Each of these approaches gives you experience contextualizing your work and practice articulating its motivation and significance. Creating visuals of your own to help explain these topics will also help you build a repertoire of figures that can be used in future talks or publications.	In addition to learning technical content, your mentee will also learn how to present information within a relevant context to aid their understanding of complex technical topics. Depending on the format your "lessons" take, they may also gain exposure to other communciation genres, such as outlines or presentations (e.g. PowerPoint slide decks).	**1-2+ hours** to prepare each "lesson" and approximately **1 hour** to present and discuss it with your mentee.
Other					