Today's Objectives:
1. Explore how a growth mindset can be integrated into mentoring
2. Practice communication skills for providing constructive feedback

Activities for Today:
1. ENGAGE: Growth mindset activity from Learn.Inspire.Foster.Transform
2. EXPLORE: Entering Mentoring “In Over His Head”
3. ELABORATE: Active Listening and your personal mentoring case studies
4. EXPLAIN: “Mentor Interview About Making Research Posters” to use with undergrad mentees

ACTIVITY 1. ENGAGE—What’s a growth mindset?
(Adapted from WSU LIFT activity co-facilitated by Cara Hawkins-Jedlicka, Matt Peck, Janet Peters)

1. We are going to set up a continuum space with panic, growth, and comfort zones along a number line.
2. Move along the continuum to indicate what “zone” you are in when...
   a. Trying a new food.
   b. Rewatching a favorite show on TV.
   c. Repairing an instrument.
   d. Meeting somebody new.
   e. Not knowing the answer.
   f. Telling somebody you don’t know the answer.
   g. Setting research goals for yourself.
   h. Setting research goals for others.
   i. Receiving feedback from others.
   j. Giving feedback to others.
   k. Giving feedback to yourself.
3. What can a mentor do (for better or worse) to monitor or change a mentee’s zone?
4. Why do folks often feel incompetent when they are starting something new?
ACTIVITY 2: EXPLORE—“In Over His Head”
Source: Entering Mentoring

Extra Question: Identify moments in the case when the mentee and mentoring team are demonstrating signs of being in the comfort, growth, and panic zones?

Learning Objective:
Implement varied approaches to foster their mentees’ independence in scientific research.

Case Study: In Over His Head

An eager undergraduate student works in a team led by a theorist and a mass spectroscopist, along with other undergraduates as well as graduate students. The undergraduate’s job is to model organometallic reactions under study by the mass spectroscopists using a code the theorist wrote. He tears into the task, learns how to interpret the output which is in a rather obtuse format, and decides to test the validity of the code on his own before getting down to actual modeling. He builds a He2 molecule, which the code correctly shows falls apart. Everyone is happy and says, “Great, keep going.” Later, during an open house in the department, the undergrad sees some fantastic 3-D visualization software used by the X-ray crystallographers and realizes that if they could figure out how to get the output of the modeling code into a format usable by the X-ray crystallographers the group would have a much better visualization tool for the modeled molecular bonds. The team says, “Great idea!” and encourages the undergraduates to work on it, but no one has the time to help him in any significant way. The undergraduate hasn’t even had a coding class yet and feels this would be a monumental effort for him. He’s a bit shy about asking random people in the department for help, so while he thinks about the problem somewhat, the idea languishes.

Guiding Questions:

1. How do you determine what level of independence your mentee is ready for? How do you support their growth and balance that support with the other needs of the research lab?
2. How do mentees know what level of independence they are expected to achieve? Do they understand that this will change throughout their careers? How can you help them understand this better?
3. What is the mentor’s responsibility in this case for communicating the level of support needed and available?
**ACTIVITY 3. ELABORATE: Growth Mindset and Active Listening in Three Variations**

*Inspired by sources as noted below*

**Purposes:**
1. Practice active listening, and observe non-verbal communication used by others.
2. Foster growth by giving and receiving feedback about mentoring relationships.

**Tasks:**
**A. On your own (do a quick write or meditation):**
1. Identify a challenge that you are having in a mentoring relationship where you could use advice.
2. Plan to describe this challenge in about three minutes while protecting the privacy of others.

<< If you are having trouble identifying a mentoring challenge, look at some examples of common mentoring challenges in the “Sticky Situations” appended to the end of this packet.

**B. In groups of three or four. Communicating in three variations:**
   - Groups of three: Assign and use the #1, #2, and #3 labels
   - Groups of four: Assign and use the A–D labels.

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**ACTIVE LISTENING: Variation X**

*6 minutes: #1 explains mentoring situation. #2 and #1 then discuss a potential plan of action.*

*4 minutes: #3 (C,D) shares notes on tone, body language, facial expressions observed during their interaction.*

*Source: Entering Mentoring “Active Listening”*
ACTIVE LISTENING
Variation Y

3 minutes: #2 talks about their situation with #1 and #3 listening but not interrupting.

2 (B) → 1 (A)
3 (C,D) → 2 (B) → 3 (C,D)

3 minutes: Listeners each ask one clarification question for #2 to answer.

2 (B) → 1 (A)

4 minutes: #1 and #3 discuss a plan of action for #2 with #2 listening but not talking.

2 (B) → 1 (A)
3 (C,D) → 2 (B) → 3 (C,D)

Source: ABRCMS 2023; Weiwei Xu and Caleb McKinney

ACTIVE LISTENING
Variation Z

3 minutes: #3 tells #2 about their situation and #1 and #2 listens without interrupting.

3 → 2
2 → 1

3 minutes: #2 retells #3 situation as if they were #3 (using first person perspective)

3 → 2 → 1

4 minutes: #1 leads a discussion of the non-verbal communication observed

C → B → D → A

Groups of 4 break up into two pairs:

Source: Collette Taylor, VauLTS conference 2023

DISCUSSION QUESTION: What themes are emerging from these conversations and exercises?
ACTIVITY 4. EXPLAIN/ELABORATE—“Mentor Interview About Making Research Posters”

- Research poster-making is a common growth area for undergraduates and new grad students.
- Do you think the following tool would help you foster a growth mindset and align expectations with one of your mentees?

MENTOR INTERVIEW ABOUT MAKING RESEARCH POSTERS

Learning Objectives
Trainees will:
► Learn how to create a research poster.
► Learn disciplinary norms for graph or image construction.
► Set deadline(s) for poster completion.

Before you begin creating your research poster, interview your mentor to learn about the policy and formatting standards that you should use as a member of the research group.

1. How independent would you like me to be in making this poster (do you want to see the intro, then the methods, etc., or are you happy to see a completed poster for edits)?

2. Is there a template our research group uses that I should use? Is there an example that I can refer to?

3. What software program does the research group use to make posters? Are there particular parameters that I need to set, like height and width?

4. What software program does the research group use to make graphs? Do you have any tips or are there any formatting conventions that I should use to make the graphs?

5. What software program does the research group use to manipulate images? Do you have any tips or are there any formatting conventions that I should use to create images?

6. I will present the poster on [insert date]. By what date would you like to see the poster so that you have enough time to review it and provide feedback for revision?

7. What research funding sources should I cite on the poster? Are there any specific funding agencies or grant numbers that I should include?

Notes:

Deadlines:
MINI-CASE STUDIES: STICKY SITUATIONS

Undergraduate

Learning Objectives
Trainees will:
- Develop strategies to deal with difficult situations that may arise during the course of their research experience.

1. A trainee’s mentor wants an experiment done this week, but the trainee does not have the time to do it because of upcoming exams. What should the trainee do? How would you handle this situation if it were your mentor? Do you believe that your mentor values research over coursework? How do you know (or how would you go about finding out)?

2. A trainee has been working in a research group for a couple of months and found that he is not interested in the research project. He wants to change to a different project, but does not know how to approach his mentor? How would you advise this student? Would you handle this situation differently if this student was you? If yes, how so?

3. Someone in your friend’s research group gives your friend a new protocol that they say is better than the one that was given to her by her mentor. Which protocol do you advise your friend to use? What would you do if you were in a similar situation? What are the unintended consequences (positive or negative) of using a protocol from somebody other than your direct mentor?

4. Your mentor asks you to write an abstract for an upcoming conference. You’ve been in the research group for several months now, but still do not understand the project very well. You are worried that if you attempt to write the abstract, your mentor will find out how little you understand. What do you do? How could this have been prevented?

5. Your friend has been working in her research group for almost a semester, but still has not been given a research project. She feels that she is ready to do some of her own research, but instead is starting to feel like this research opportunity is a waste of her and her mentor’s time. What would you advise your friend to do? If this were happening to you, who in your research group would you approach to resolve it?

6. A student is extremely excited to have found a research position on campus. He arrived full of energy the first day and learned that he was “assigned” to a graduate student mentor by the PI of the research group, against the graduate student’s wishes to serve as a mentor. The graduate student acts distant, disinterested, and visibly annoyed every time the student comes to lab. What should the student do? Have you or anyone else in your research group experienced a similar situation? If so, how was it handled?

7. A classmate has an extremely busy semester juggling four courses (many with lab components), a part-time job, participation in two student organizations, and undergraduate research. She is devoting 10 hours per week to research and thought that this was a fair commitment. During her last meeting with her research mentor, however, the mentor was upset that she had not made more progress on her project. In fact, the mentor mentioned that he would not be able to write her a strong letter of recommendation for graduate school unless she started acting “more like a graduate student.” What should this classmate do? If this were you, what would you do?


8. Your friend has been assigned a mentor who does not share the same first language and is from a very different culture. He is having a hard time understanding what she is saying. He also feels that she has different expectations of him compared to his friend’s research mentors’ expectations. He mentions to you that he feels a little uneasy always asking her to repeat herself and also thinks that it is unfair that he is being held to a different standard than you and the rest of your friends. What would you advise him to do in this situation?

9. A trainee has been working in a research group for 3 months and has noticed that many of the other researchers in the lab do not use proper safety protocols (not wearing gloves when handling certain chemicals, not wearing lab coats or safety glasses when working in the cell culture room, not properly cleaning up chemical spills, etc.). She does not want to make a bad impression in the research group, but she is truly worried about the others’ personal safety. What would you advise this trainee to do? How would you approach your mentor to resolve your concerns if this was occurring in your research group?

MINI-CASE STUDIES: STICKY SITUATIONS

Graduate

Learning Objectives

Trainees will:

- Devise concrete strategies to deal with difficult situations that may arise during the course of their research experience.

1. Your mentor wants an experiment done this week, but you do not have the time because of an upcoming exam in your graduate course. In general, you feel the mentor does not appreciate how much time it takes to succeed in graduate courses. What do you do?

2. You have been working in the research group for several months and have found that you are not interested in the project you have started. You want to focus on a different research topic, one that is linked to a project you previously worked on. You mention this to your mentor, but she says that they do not want to pursue the new research because the group does not have the proper equipment or funding to support it. How should you respond?

3. Someone in your research group gives you a new protocol that they say is better than the one given to you by your mentor. Which protocol do you use? What are the unintended consequences (positive or negative) of using a protocol from somebody other than your direct mentor?

4. You want to go home for 10 days over the holiday break to visit your family, but your mentor is stringent on time spent away from the research group. You don’t recall anyone ever being away for more than a long weekend. How can you approach your mentor with this request?

5. You learn that your thesis advisor has assigned you an undergraduate student to mentor without discussing it with you. You are very busy, with multiple experiments that are critical to your thesis research to run in the next couple of months. You do not trust an inexperienced undergraduate trainee to do the experiments because they are very complicated. Your undergraduate student arrives on the first day, full of energy and eager to learn. You hope that your mentor has a research plan in mind for the student, but she acts distant and tells you that the student is “your responsibility.” What do you do?
