

MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► NETWORKING



SOLUTIONS FOR STUDENTS

Most students hear about networking, but many do not know how to start and/or do not have the confidence to start. Understanding what networking is, why it matters (near and long term), and becoming equipped with tools to use can remove barriers and give students the confidence to start networking. Let's define networking: **Intentional relationship-building that enables mutual growth, opportunity-sharing, and learning.**

Networking is about **cultivating relationships over time**. It is important to start networking early!

Why it matters:

- **70–80%** of jobs are filled through connections.
- **References, collaborations, and mentorship** often come through relationships.
- **Academic hiring and conference opportunities** stem from peer and mentor networks.
- **Industry jobs are often not well advertised** and they often remain open for applications for only a few weeks.

This Spark is intended to provide methods to help students who are new to (or uncomfortable about), networking.



LEVEL 1: ESTABLISHING A NETWORK

LEVEL 2: ELEVATOR PITCH

LEVEL 3: CAREER NETWORKING



ACTIONS FOR FACULTY

- Help students think about the difference between networking and having a conversation.
- Help students think about the value of focusing on what to ask someone to learn, instead of simply chatting.
- Remind students that the person next to them would probably be happier talking about their passions and purpose than the weather and “what’s up.”
- Discuss with students the advantage of asking open-ended questions such as, “What roles and positions have led you to where you are today?” in lieu of “What’s your current position?” Have your graduate students make a point to talk to seminar speakers.

CONTINUED ...



FACULTY FYI

This **Spark** is intended to help students think through who they want in their network, *where* they fit in their network, and *why*.

Faculty should consider that a graduate student’s network is a representation of their research/research group. Consider how the student’s networking can be of value to your work and communicate that with your students.

A RESOURCE FROM:



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DIGGING DEEPER

- LinkedIn Account and/or a Blinq account.
- Book: **A Beginner's Guide to Networking** (Harvard business review)
- Book: **The Two Hour Job Search by Steve Dalton** (contains TIARA method).
- A three-circle model map (see diagram) to help organize your network.

EXTERNAL:

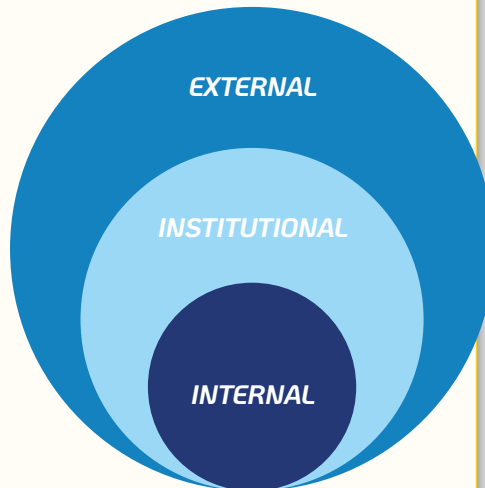
LinkedIn, peers at other institutions or businesses, alumni from your university
—job leads, cross-disciplinary projects

INSTITUTIONAL:

Campus/business unit collaborators and colleagues
—recommendations, visibility

INTERNAL:

Peers, advisors, lab members, co-workers
—support, writing partners



Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. List 3 people for each circle in the 3-circle model map.

Low-Stakes Everyday: Attend seminars and ask follow-up questions. Follow up with speakers. With a solid internal network in place, begin to branch out. **Attend conferences and Events.**

Don't stay in your advisor's circle—meet new people. Attend poster sessions, receptions, mixers.

Consider: Who supports you today? Who do you want to build a relationship with? Which category needs to be strengthened?

2. Draft your Networking Plan.

Write down: 3 people you want to reach out to and why.

Draft a deep question to ask to one of these 3 people

3. Prepare a 1-minute pitch about your research and goals

(See Level 2 for added support with this exercise.)

4. At the next conference attended, meet at least three new people. Include at least one person that you, prior to the conference, noted should be at the conference and is someone you want to add to your network.

5. Develop your LinkedIn account, or review it /update it if you have one.



ACTIONS FOR FACULTY

- Help students understand that networks are not built overnight, and that they are continually updated. Networking is a skill—not just for extroverts. Being shy or an introvert is not an excuse!
- Discuss tools to help students be organized and intentional with starting, building, and sustaining a network.
- Encourage students to step outside their comfort zone – the more they do that the easier it becomes.
- **GOAL Setting:** Agree on a basic networking goal with your student.

Don't stay in your advisor's circle – meet new people.



REFLECTION & NEXT STEPS

- **Student:** What is helpful/working?
- **Faculty:** What other basic networking skills should be discussed?



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Students who have primarily spent their academic time “*in the weeds*,” or on a variety of projects may struggle to develop a concise, “30,000 foot” elevator pitch. They may also struggle to go beyond what they are *currently* doing to what they want to do next. It can also be frustrating to take a large amount of knowledge/experience and pare it down to a three-minute talk.

Now that students have tools to establish and organize their network (*Network Spark 1*), the next step is developing a **concise and accurate message**. The message should convey the “*so what*” question of the research, and why a prospect should want you in their network.

This **Spark** helps students think about the type of information to include, and has exercises to develop an elevator pitch.



LEVEL 1: ESTABLISHING A NETWORK

LEVEL 2: ELEVATOR PITCH

LEVEL 3: CAREER NETWORKING



FACULTY FYI

As a mentor, it is important to help ensure that students have an elevator pitch. The pitch represents them and you/your research area, thus knowing their pitch is important.



ACTIONS FOR FACULTY

- Help students understand they are taking up other people's time with networking. Time is a valuable commodity, so students should be able to articulate, “What is in it for them? Why should they want to help *you*?”
- Work with students on how elevator pitches can be tailored for different audiences.
- Provide students with examples of good elevator talks, and/or ask students who have already developed an elevator talk to give theirs.
- Help students think about the message they will deliver and what, if any, *unintentional* message may be heard (*such as a misrepresentation of research being conducted*).

CONTINUED ...

A RESOURCE FROM:



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DIGGING DEEPER

- LinkedIn
- Examples from other graduate students or the Mentor
- Student Support Services (*search your school's website if you have not visited them*)
- Simon Sinek's **TED Talk** on **"Start With Why"**.
- John Swale's **"Moves" framework** (*establish a territory, establish a niche, occupy a niche*).
- **Reflection Tool:** Ask to hear others' elevator pitches. Reflect on what resonated with you and why?

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students ask others for their elevator pitches (*pick other graduate students or during a conference*). Have students listen for why that person is (*or is not*) someone they would want to work/collaborate with in the future – not because of the topic, but because of the perceived characteristics of the person giving the pitch.
2. **Draft a two- to three-minute elevator pitch:**
 - Ask others for a copy of their pitch; consider what is good about them and what is lacking.
 - Talks look different if you are early in your graduate journey (*research talk*) or closer to the end (*job talk*). Consider how in-depth your research plan should be, and how your research will benefit others.?
 - What outcome do you want? To gain knowledge? To collaborate on a project? To get a job? Other?
 - Regardless of the type of talk, consider: **a) what is the issue, b) what is a potential solution, c) how you can contribute to a mutual improvement, d) any ask you have, e) requesting a follow-up. Thank them for their time!!**
 - Listen, listen, listen to their feedback, questions, and body language!
3. **3) Practice your pitch** with your peers, mentor, and/or advisor.
 - Don't just ask if it was good – ask for constructive feedback regarding what their takeaways. Who did they think was the audience, what was the value to others, what was your ask, what is your interest.
 - Practice again, and then again: **"rinse & repeat"!**



ACTIONS FOR FACULTY

- Help students think of the two- to three-minute talk as a **story** that flows, conveys sufficient detail related to the subject, why it matters, and why it is imperative that an elevator pitch provide a succinct message on the **mutual** benefits between the sender and receiver of information.
- Discuss the concept of leaving an audience wanting more information and suggesting a follow-on deeper conversation.
- Remind students that elevator "talks" are not just for in-person conversation: they can be in writing, part of a LinkedIn/ Website, etc.
- **GOAL Setting:** Develop a networking elevator pitch goal with the student.



REFLECTION & NEXT STEPS

- **Student:** Ask yourself, "Did others hear what you intended them to hear?"
- **Faculty:** Help your students plan and schedule opportunities to give their elevator pitch.



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SOLUTIONS FOR STUDENTS

Pursuing a job or collaborative work opportunity often requires networking. Networking can allow for direct or once-removed knowledge of a trusted person to provide information to the student or the hiring group. However, many graduate students find it stressful to network on their own behalf, and ask others to assist with networking for them.

This **Spark** is intended to make networking for a job less stressful and more impactful.



LEVEL 1: ESTABLISHING A NETWORK

LEVEL 2: ELEVATOR PITCH

LEVEL 3: CAREER NETWORKING



FACULTY FYI

Students should have documented their value, network community, and elevator pitch prior to this Spark. This **Spark** provides suggestions for students in the job search process. Consider this as a tool when students approach *you* with a request for you to network for them; if you are using your social capital to set up an introduction or interaction, you will want to ensure the student does well!



ACTIONS FOR FACULTY

- Challenge students to update their networking “circles” if they have not done so in the last few months – it is a living document. Add potential companies/university contacts as necessary.
- Talk with students regarding how their **elevator pitch** could vary for different job goals.
- Remind students that active networking is different than having 500+ on LinkedIn; it is valuable for having a group of trusted people to ask for help in a job search, to collaborate with, and/or to understand the pros and cons of particular jobs.

Pursuing a job or collaborative work opportunity often requires networking.

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DIGGING DEEPER

- **Career fairs and conferences**
- Peers who are also in the job market **will have current** information on what is and is not working.
- Your advisor or others in your department (*perhaps others who worked in industry of interest*) are important **network connection points**.
- Though the internet and AI are good resources for generic advice and polishing the writing, they are not a substitute for what people on the *hiring side* say is important.
- Visit your **career services** department.
- **Personal website**
- **Business cards** – consider putting research interests on the back
- **Career Informational Handout** (on RDI website)

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students develop a networking plan related to getting a job.

Suggested items to include are:

- Their target audience. Consider doing this as a logic diagram. For example, if job hunting, do you want: Academia, Industry, or Other? For each of those, branch out – such as breaking Academia into tenure, non-tenure, research, teaching, administration, or dividing Industry into research, manufacturing, start-up, etc.
- Their “ask.” (In other words - desired outcome from the interaction.)
- Why they are a good “fit” for a particular job; their **benefits**, not just their **features**. (Explain to the student that their degree is a feature, but their benefit could be their expert knowledge in research methods. A feature is having an internship; a benefit is knowing how to use a scanning electron microscope from that internship.)
- Have them develop the plan for at least two different types of jobs (e.g., teaching position or tenure track position at a University).

2. Have your research group discuss the different networking audience considerations for:

- **Academic Jobs:**
 - Reach out to faculty where you’re applying
 - Mention shared interests.
 - Meet at conferences (*can lead to interviews*).
- **Industry:**
 - Find alumni or insiders on LinkedIn.
 - Customize your pitch to highlight transferable skills.
- **Government, National Labs, & Nonprofits:**
 - Attend webinars or fellow talks. (*Rely on referrals.*)

3. Power of Networking: Materials: a ball of yarn. Form a circle. Using a ball of yarn, have the first person state a career goal, a geographic preference, or a company/employer they are interested in. If someone in the circle has a lead, they raise their hand and you throw the ball of yarn to them. That person then states a goal, location, company and sees who has a connection. Continue the process until the group has a “spider web” of connections. Discuss the power of networking.

4. Build your Brand: Have students post on a regular cadence about their research, awards, service, conferences attending, etc.



ACTIONS FOR FACULTY

- Discuss with students the difference between **entry-level** networking (*simply meeting someone*) and **collaborative networking**, which includes acting in a peer-to-peer manner to negotiate mutually beneficial agreements (*work, grants, contracts, etc.*) or to solicit support from a trusted resource.
- **GOAL Setting:** Agree on a goal for the student to pursue relevant job-seeking networking activities.

Customize your pitch to highlight transferable skills.



REFLECTION & NEXT STEPS

- Consider your networking circles in relation to your research and your career planning; are there any gaps?
- Consider if (and if so *how*), your networking is improving your professional development, especially in terms of communication and potential collaborations.



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► PROJECT PLANNING



SOLUTIONS FOR STUDENTS

Students entering a **graduate program** have a variety of knowledge and skills related to *project planning and management*. Students may have participated in a senior design team, but there was likely a novice level of planning (e.g., *success-driven schedule was the plan*) by the team. Thus, the variety of backgrounds often result in a gap between what can be planned and the actual execution of the plan. For example, the plan may lack considerations for competing priorities (*coursework, research, personal commitments*), time delays, added data needed, difficulty in analyzing data, or having other resources (*people, equipment, receipt of materials, etc.*) available when needed.

Consequently, as students progress from completing assigned tasks to managing a complex projects that relies on collaborators (and often conflicting resources), they can feel overwhelmed and “stuck” when the project is not progressing as planned /hoped. Setting an actionable goal can help students to keep moving forward and avoid feeling overwhelmed.

As a result, the **first project planning Spark is related to goal setting**.



LEVEL 1: GOAL SETTING

LEVEL 2: BEING PRAGMATIC

LEVEL 3: PROJECT MANAGEMENT



FACULTY FYI

This **Spark** is for students who are new to project planning (i.e., *not just being on a project team*). The three Sparks on project planning are intended to build students' skills, enabling them to successfully set up and execute complex projects. Project management involves managing multiple facets (budget, communication, risk, resources, etc.) that were developed during the project planning stage with the outcome of achieving the project's goals.

Project planning is included as part of our series to help students set themselves up for success — as the old adage says, **“Failing to plan is planning to fail.”**



ACTIONS FOR FACULTY

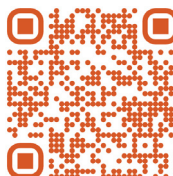
- Discuss with students the different types of goals they may have during their graduate studies. This includes long-term and short-term goals (e.g., getting their degree, finishing classes, finishing a literature review, authoring a paper, etc.).
- Discuss with students that project planning is more than scheduling; it includes having goals and knowing what is needed to reach the goals and how to handle the interaction of goals.
- Ask students to state the reasons for their goals as they develop them. If some of the reasons are personal, do not force a response, but remind them it is important to self-reflect on their reasons.
- Help students understand that goal setting is a first step to developing an action tracker as part of one's project planning portfolio.

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DIGGING DEEPER

- There are many tools available to help with goal setting. Two are provided here.
- **“Hunks, Chunks, and Bites”** goal setting. To use this tool, students should first break down their long-term goal (hunks) into smaller projects (chunks) and then into daily/weekly activity sized bites.
- **SMART** goal setting tool for chunks and bites.

S = SPECIFIC

M = MEASURABLE

A = ATTAINABLE

R = RELEVANT

T = TIME-BOUND

Please visit the [RDI Mentoring Sparks website](http://www.rdi-mentoring-sparks.com) for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students pick a **large project or goal** and break it into several chunks and each chunk into several bites. This work can be carried through the remaining project planning series.
2. Develop **SMART goals** from two of the bites. For each component, answer the following questions, as that will help develop the SMART goal technique:
 - **Specific:** What am I going to do? Why is it important to me?
 - **Measurable:** How will success be measured, how will you know you achieved the goal?
 - **Attainable:** What actions are needed to achieve the goal? What resources do I need?
 - **Relevant:** Is the goal worthwhile? How does it fit into my larger plans? How does it fit into my values?
 - **Timebound:** When will I complete the goal? Does it fit into my current schedule? Does it align with my other goals?



REFLECTION & NEXT STEPS

- **Student:** How does using a set process for goal setting compare to your previous methods?
- **Faculty:** Are there common opportunities for improvement related to how students think about their graduate time in terms of project planning and goal setting that you can explicitly talk about?



ACTIONS FOR FACULTY

- Help students to evolve in their goal setting skills by asking “how” and “what if” questions to the students as they present their goals. This is not intended to be used as a negative, but to generate thoughtful consideration by the student, help them think about risks & risk mitigation, and help them be pragmatic in their goal setting.
- Review students’ progress toward goals often (perhaps monthly or even weekly) to help them stay on track. Trust, but verify their progress. Have the student practice the art of providing objective evidence that they are where they say they are with respect to their goals.
- Provide formal feedback on students’ progress towards goals twice a year, with one of the times held during their annual performance review.
- **GOAL Setting:** Agree on a basic goal related to a joint project, such as a publication, conference paper, or individual project such as a qualifying exam.



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SOLUTIONS FOR STUDENTS

Developing a project plan is a great first step to helping students have a sense of direction as they navigate their graduate careers. However, it is easy to establish a plan based on what *can* happen, versus what is *likely* to happen. As an example, a committee meeting may be “planned” for December by a student, but may need to be changed by a week (perhaps a faculty was not consulted or their schedule changed) –which could result in months of time lost later in the project. When such scheduling delays happen, or when more refinement of work is needed that was not anticipated, students may lose confidence on when (or if) they will finish their degree, communication and relationships may be stressed, and they may become frustrated with people, not just the process.

The purpose of this document is to help students think through potential barriers to achieving their goals (especially related to time) and how to plan accordingly. The purpose is not to design a comprehensive project plan; that will be discussed in the final project planning document.



FACULTY FYI

This **Spark** is intended to support students with the practical/experiential aspects of project planning, versus the theoretical, purely success-driven, and/or isolated planning that tends to occur early in one’s career.

Planning is a first step for a successful project, but the plan must be reasonable and have contingencies for when “life happens” in order to be a good plan. Often, students with little experience in project planning do not know what a good project plan looks like and as the Faculty Mentor, you are able to help students develop a reasonable, actionable project plan. As students become more pragmatic regarding times and milestones, it should reduce the number of setbacks and time spent “re-planning” work.



LEVEL 1: GOAL SETTING

LEVEL 2: BEING PRAGMATIC

LEVEL 3: PROJECT MANAGEMENT



ACTIONS FOR FACULTY

- Show students example project plans and/or schedules from grant proposals you have written and how you track the work after winning work. Point out areas where changes were necessary and how they were handled.
- Ask students—who should have several goals documented—to show and explain their plans. Have the student articulate their top concerns for accomplishing the goals, and the top reasons why they can meet those goals. Work with students on developing contingencies to mitigate their top concerns.
- Ensure all students in your research group know which tools are used to track the research team goals (e.g., scheduling lab time or meeting times, developing research team goals). This can be part of the on-boarding of new students.

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DIGGING DEEPER

- There are many tools available to help with project planning. They can be standalone, cloud based, collaborative, etc.
- For this particular Mentoring Spark, action trackers and schedules are key tools. Examples include using excel, MS Project, Monday.com, SharePoint, Teams, etc., for project planning.
- Developing a presentation of the plan – this is a tool as it requires students to think through the interactions of the resources, schedule, timing, risks, etc., to develop the presentation.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. If the student participated in the round 1 Project Planning, they can use the same exercise project. Otherwise, have the student pick a project that involves using shared resources (*e.g., equipment, materials, people, or space*). Have the student present the plan, identify the top three risk areas, and provide contingency plans for those risks. Have students do this for each other so that they are both the presenter and the person critiquing a different student's plan.
 - a. If students struggle to articulate concrete risks, use the time to discuss risks as risk of **quality, time, resources, cost**, and to then think of a risk for each category.
2. Conduct mock project/design, thesis defense reviews. These should be short, 5- to 10- minute presentations with short Q&A sessions. Have students present their plan for completing one of their goals to the research group, then have the research group ask questions and “challenge” the plan.



REFLECTION & NEXT STEPS

- **Tool Usage:** The types of tools for tacking goals and tasks are as varied as the people using them. If a tool is not working for you, try a different tool. Ask yourself which features are helpful, which are not. What style works for you – Excel, cloud-based, color-coded, chronological, grouped by resource needed, grouped by goals, etc.
- **Experience:** Think about your experience with projects. What tends to slow you down? What tends to cause you stress? Ask yourself what you can do to be more efficient and less stressed.
- The ability to develop pragmatic plans to accomplish goals is a critical step in developing comprehensive program plans. The building blocks can be thought of as **1) set a goal, 2) plan to achieve a goal, 3) integrate a group of goals to achieve a higher-level goal, 4) repeat as program sizes increase.**



ACTIONS FOR FACULTY

- Ensure all students in your research group know which tools are used to track the research team goals (*e.g., scheduling lab time or meeting times, developing research team goals*). This can be part of the on-boarding of new students.
- Help them think of their graduate time as a project that is a stepping stone of their career with the goal of graduating.
- Provide time and space for students to gain experience. Presenting a thorough plan and defending it is a learned skill set. Practicing (as opposed to merely watching) is an important tool to gain those skills, and practice in a non-threatening environment is important to students' growth.
- Discuss the importance of being pragmatic. Life happens and though a “stretch goal” can be an ideal goal, the norm is that as plans progress, some change will be required. Thus, students need to be flexible and able to adapt to the change.
- **GOAL Setting:** Agree on a goal for the student related to required degree milestones, developing a project plan for a journal article, or, perhaps, a generic project plan outline.

Planning is a first step for a successful project...



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SOLUTIONS FOR STUDENTS

The purpose of this document is to help students develop a project plan to obtain their graduate degree. It is also intended to help students think about how project planning during their graduate school career may translate to their next job or career.

It is possible for students to traverse a graduate degree without having a documented plan. However, students with a plan that is actively managed are less likely to have “insurmountable” or unexpected barriers occur, and more likely to know when to ask for help.

Without a plan, students can feel lost and become anxious regarding graduating by a particular time, when to look for and get a job, and even knowing what remains to graduate.



LEVEL 1: GOAL SETTING

LEVEL 2: BEING PRAGMATIC

LEVEL 3: PROJECT MANAGEMENT



FACULTY FYI

This **Spark** is intended to support students as they develop a project plan that is realistic and useful for finishing their degree, and to help with necessary career skills.

Planning is one thing, proactively managing the plan is another. Post-graduation, students are expected to design and implement a project plan, such as a competitive grant proposal or industry work. Helping students transition from implementing a plan to *developing* a plan that includes budget, schedule, resources, and contingencies is important to help ensure success early in their career. As students are a reflection of their advisors, helping them be productive day one in a new position is important.



ACTIONS FOR FACULTY

- Provide time for your students to read about/learn about the basics of project management. This may be through the research group, a workshop, and/or reading reputable guidance.
- If your research group does not have a preferred method of capturing project plans, consider having several research assistants document a method.
- Ask students to show you their plan for graduating, not to merely talk through it, but *show* it and be able to defend the **plan** and articulate the areas that are primarily in their control, as well as the areas that rely on others. Have the students state how they plan to manage those situations.

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DIGGING DEEPER

- One of the most common resources for overall project management is the Project Management Institute (*who are associated with the project management professional [PMP] certification*). Their website offers a variety of tools and information on the basics of project management. **Caveat Emptor:** some of their tools are designed for very large programs, so students should be advised not become overwhelmed by thinking all those tools are needed for small projects.
- Refer students to the level 2 Project Planning Spark for the types of tools available to use.
- Consider having a shared research group folder with examples of project plans by current and former students.
- **Students should have a grasp of:**
 - a scheduling tool that includes resources needed and how the tasks interrelate;
 - an action tracker with due date, priority, and comments on what is needed to complete the task;
 - having a way of noting key milestones and critical items that may be at risk of completing on time or with sufficient quality.
- Workshops on project management or skill development workshops that may be offered through on-campus resources.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. If a student does not have a documented project plan for graduating, have them think about the requirements (*e.g., courses, research, thesis writing*). Depending on the student, have them develop a high-level plan for each main group of requirements by a set date. This may result in one, two, or three separate plans.
2. Have students integrate the plans developed in exercise 1. They should be able to “see” if the workload is manageable, if the flow of work makes sense, if resources are available when needed, and be able to speak to those topics. Students should look at the integrated plan and determine the top three risk areas, how they will track those risks, and the associated mitigation plans.
3. Have students present their plans to you and/or your research group and include how they plan to keep themselves on track.
4. Have students think about how their graduation plan fits into their career plans. At this stage, if there is a mismatch, have the student articulate the impact of a mismatch, and a plan to close the mismatch gap.



ACTIONS FOR FACULTY

- Help students understand and think about the level of detail needed for a degree completion plan. Specifically, students should: **1) have a timeline showing how tasks interrelate, 2) know what resources are needed for each task, 3) articulate how they will communicate their progress, and 4) contingency plans for key risk items.**
- **GOAL Setting:** Agree on a goal for the student related to their graduation or research plan. If they are within a year of graduation, perhaps a goal related to obtaining a job.



REFLECTION & NEXT STEPS

- **Student:** What, if anything, was surprising when major projects or activities (*e.g., classes, research, personal obligation*) were integrated?
- **Student:** Is having, and actively managing, a project plan saving you time or stress? Will it make communication easier? If not, why not – what can change so the plan and managing it is a value-add activity?
- **Faculty:** What are common areas of struggle for students at this level of project planning? What activities can you incorporate sooner in a graduate student’s tenure to help them prepare for this level of planning?



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► WRITING



SOLUTIONS FOR STUDENTS

If students do not have experience with academic writing, getting started can be hard. Variations in expectations across disciplines introduce additional challenges when attempting to find appropriate resources. Without understanding the specific purpose of the document they are generating, students may generate artifacts that do not meet advisor or disciplinary expectations. This can be frustrating for students and advisors alike, so **it is important to get started off right!**.



FACULTY FYI

This **Spark** aims to guide students in their writing approach, beginning with an evaluation of the document's objective and moving toward effective strategies for initiating the writing process.

Good written products require a basic understanding of how the written artifact is intended to function and being able to get "*words on the page*." For example, written exams demonstrate knowledge to the faculty in the department, whereas conference papers communicate research outcomes to *peers*.

“Good written products require a basic understanding of how the written artifact is intended to function...”

A RESOURCE FROM:



Use this QR code to access this and other Mentoring Spark tip sheets:



► LEVEL 1

LEVEL 1: GETTING READY TO WRITE

LEVEL 2: WRITING MECHANICS

LEVEL 3: GETTING WRITING DONE



ACTIONS FOR FACULTY

- Facilitate a discussion with students on the typical writing products across the degree (e.g., exams, proposal/dissertation, conference papers, journal articles). Talk about the purpose of the artifacts and where to find examples.
- Help students understand that with a few exceptions, academic writing is not intended to be creative, and there are formats and structures that align with purposes. Looking at multiple examples could be helpful in illustrating what is common content and what varies.
- Discuss disciplinary norms with your students. For example, how does author order work on conference or journal papers? What are expectations for author contributions?

CONTINUED ...



DIGGING DEEPER

- Disciplinary standards for author expectations can provide guidance. For example, the American Educational Research Association has standards for reporting research.
- Existing conference and journal manuscripts and dissertations can serve as useful models. Pay attention to *how* they are written, not just *what* is written.
- **Feedback is important for improving.** Books and websites help with learning how to give and receive useful feedback.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students read and reverse-outline a conference or journal paper. In this exercise, they could create a new template, or they could check how the manuscript aligns with the existing template. The focus is not on the content topic itself, but rather on what is being accomplished within the section. For example, the Methods section of a conference paper describes what data was collected and how, how it was analyzed, etc.
2. Scaffold students through a new writing product. Have them open a template and start outlining in each section. The next step is turning the outline into paragraphs. Start one section at a time so they do not get overwhelmed.
3. Have students practice free writing in the various sections of a template. This is just about getting words on the page, not editing to perfection.
4. Ask students to share writing with you before it feels done, so that together you can practice the giving and receiving of feedback.



REFLECTION & NEXT STEPS

- **Faculty:** Writing is a skill, and like all skills, it takes practice to develop. How can you establish and keep that frame of mind as you guide your student?
- **Student:** Feedback can be hard to hear, but is very important to developing writing skills. How can you remain open to feedback?



ACTIONS FOR FACULTY

- Create templates for common written artifacts such as conference papers, etc., used by your students. Include the section headers but also an estimate on what kind of content goes in each section and about how length is expected (#paragraphs) for each section. Talk through these templates with students.
- Start a conversation on when or how the student will ask for feedback, and how you will respond. Normalize imperfect drafts right from the start, and encourage sharing rather than waiting for perfection.
- If your campus has a Writing Center, encourage students to leverage the resources.
- **GOAL Setting:** Agree on a goal designed to help the student identify the appropriate structure of different written products they will be expected to generate, and get started writing.

Writing is a skill, and like all skills, it takes practice to develop.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► WRITING



SOLUTIONS FOR STUDENTS

Particularly in **STEM fields**, advisors often focus on feedback related to the research itself, and assume students can just “*write it up*” later after the results are known. Students may not have the necessary writing skills, and may not know how to ask for help this late in their degree progress. Students are not inherently good or bad writers, nor is knowing how to write an inherent skill. Good writers are students who have learned writing as a *skill*. Becoming adept at making arguments, and becoming more efficient in writing practices can significantly reduce the time and effort needed to generate written products.



FACULTY FYI

While writing is an important part of research, it is also a distinct skill that must be developed with intentionality. If students are not taught about writing, there could be a mismatch between advisor expectations and what the student delivers in terms of writing products. This mismatch can lead to frustration and degradation of advising relationships. This **Spark** is intended to help students develop general academic and disciplinary-specific writing skills.

While writing is an important part of research, it is also a distinct skill that must be developed with intentionality.



► LEVEL 2

LEVEL 1: GETTING READY TO WRITE

LEVEL 2: WRITING MECHANICS

LEVEL 3: GETTING WRITING DONE



ACTIONS FOR FACULTY

- Talk about writing as a skill and how it can be developed through practice.
- Discuss how to make arguments consistent with disciplinary expectations appropriately. Share some exemplar works.
- Ask your student to identify what makes writing hard for them, and identify strategies to overcome these particular challenges.
- Recognize that writing challenges are not always about the mechanics of writing; writing is a process, and the work of writing can be tangled with broader feelings and beliefs about competence, self-worth, pressures to “*just get it done*,” etc.

CONTINUED ...

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DIGGING DEEPER

- There are many books and online resources related to writing that can be helpful resources. Specific areas on which to focus are creating arguments, and understanding the use and function of different moves in academic writing.
- Work with a writing coach to teach your students the basics of good writing, and to teach *you* how to teach them.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Identify a complex paragraph in writing that is not yours or your students' (*so no one feels judged*). Work together on rewriting the paragraph to achieve a simpler form that is easier to understand.
2. Practice writing a different argument each month for the next 4-5 months. Having a clear and direct argument makes it easier to support with reasons and evidence.
3. Have your students identify a scholarly writing product that they admire for the writing (*not necessarily the content*), and discuss what makes this writing appealing.
4. Ask students in your research group to collectively talk about what makes writing easier and harder for them individually. They can learn from each other!
5. Reflect on your process for giving and receiving feedback. Identify what has been most helpful in terms of content and format for you and your student. Discuss what, if any, changes are needed.



REFLECTION & NEXT STEPS

- **Faculty:** What patterns do you notice in your student's writing? Are you constantly making similar edits in their work? How can you help them break unhelpful habits?
- **Student:** How has your writing developed over time? What areas of improvement do you still have?



ACTIONS FOR FACULTY

- Discuss different kinds of feedback and at what stages in the process/product each is expected. For example, giving grammatical feedback when the arguments are flawed may not be productive for the student or advisor.
- Focus on distinguishing feedback on **research** quality and productivity from **writing** quality in order to help students recognize these as different skills that must **both** be developed.
- Discuss appropriate use of generative AI in writing based on department, university, and disciplinary expectations. Similarly discuss plagiarism and use of citations, since there can be cultural differences.
- **GOAL Setting:** Agree on a goal for the student related to assessing their writing abilities and potential gaps in needed writing skills.

Good writers are students who have learned writing as a skill.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► WRITING



SOLUTIONS FOR STUDENTS

The final degree stages can be the loneliest. Students are immersed in a topic where they have become experts but still face a final examination to demonstrate having met degree requirements. As students approach degree completion, the written product can feel bigger and bigger and more and more important since it is the culmination of years of work. Because actually writing a thesis or dissertation is challenging, finding strategies to stay motivated and get the work done is important.



FACULTY FYI

A surprisingly large number of students do not complete their thesis or dissertation because they get stuck in the writing phases. Writing challenges are universal. Regardless of demographic background or discipline, students face similar challenges in academic writing, dissertation/thesis structuring, and completing the written document. Faculty should be aware that these challenges are common and not indicative of a student's potential or ability. This **Spark** focuses on helping students avoid getting stuck in the thesis and writing phases. Since the number of students graduating can be a metric of success for faculty, it is beneficial to the student and the advisor to avoid students getting stuck in the writing phase.

*Make writing manageable
by breaking it into parts
that are doable in smaller
amounts of time.*



► LEVEL 3

LEVEL 1: GETTING READY TO WRITE

LEVEL 2: WRITING MECHANICS

LEVEL 3: GETTING WRITING DONE



ACTIONS FOR FACULTY

- Incorporate conversations about challenges--skills and/or motivation--into advising practices that are designed to help students improve their skills. This may require faculty to develop these skills.
- Revisit feedback processes (*how the student asks and how the faculty provide it*) to align with the current writing tasks (*setting up the structure, content, polishing, etc.*). Discuss the feedback process including timing, format (*written/verbal*), and avoiding repetitive suggestion loops.
- Establish clear expectations for writing products (*e.g., timelines, formats*) so that the student knows what "done" looks like and what they are working towards.

CONTINUED ...

A RESOURCE FROM:



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DIGGING DEEPER

- Writing support groups, either in-person or online, can be helpful for students and often involves setting goals and celebrating accomplishments.
- Pomodoro and other methods of writing for set times and taking a break can be helpful.
- Leveraging time management strategies to accurately account for how time is being spent and adjust focus to writing time.
- Make writing manageable by breaking it into parts that are doable in smaller amounts of time. The smaller parts are less overwhelming to start but add up to the overall completion.

*Please visit the **RDI Mentoring Sparks** website for examples and links to these tools and resources!*



ACTIONS FOR FACULTY

- Offer encouragement on writing and give students time to write. Be sure you are not distracting the student from writing with tasks such as ordering supplies, training new researchers, etc.
- Recognize that students can have emotional barriers to writing (fear, perfectionism, exhaustion, doubt) and talk about ways to mediate those barriers.
- **GOAL Setting:** Set a timeline for degree completion as well as check points for revisiting the timeline.



EXERCISES FOR STUDENTS

1. Create a backward timeline. From the desired completion date, identify critical checkpoints and set writing goals to meet those checkpoints. Be sure that goals are realistic and doable. Consider aggressive goals vs necessary completion timelines.
2. Break the idea of “*writing the dissertation*” into manageable tasks-- chapters, sections, even paragraphs for tougher sections.
3. Ask your students to develop a common set of writing times and establish shared expectations around conducting those sessions.
4. Have your students try different environments for writing, track what works under what conditions, and generate a document as a reminder that getting writing done takes different approaches. For example, sometimes being around other people is helpful, but sometimes quiet is needed. Needs can change depending on the writing task.
5. When discussing what is working or not for students during writing sessions, also ask them about the emotional barriers to writing. Help them name what they are carrying emotionally and turn it into an action plan that can work for them.

“Writing support groups, either in-person or online, can be helpful for students and often involves setting goals and celebrating...”



REFLECTION & NEXT STEPS

- **Faculty:** Is the student setting realistic writing goals? Do they need adjustment?
- **Student:** What makes a successful writing day and how can that be replicated? What writing challenges are you facing?



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► ADAPTIVE PROBLEM-SOLVING



SOLUTIONS FOR STUDENTS

Early in a student/advisor relationship there may be a gap between the amount of detail a student needs and how much information an advisor provides. As an example, some students have conducted experiments per instructions while others have spent time designing experiments. This **Spark** is intended to help students ensure the problem/request is framed sufficiently. When insufficiently framed, both the requestor and student become frustrated, assumptions about ability may be made, and schedules are often delayed.

This first Spark in the adaptive problem-solving series focuses on expectations (*framing the problem*) as related to an advisor's study group or lab group.



► LEVEL 1

LEVEL 1: FRAMING THE PROBLEM

LEVEL 2: MAKING MEANING

LEVEL 3: DESIGNING YOUR APPROACH



FACULTY FYI

Students bring different undergraduate and life experiences to a graduate program. Thus, it is easy for there to be a gap between an advisor's expectations and a student's ability to understand expectations early in the faculty/student relationship. This **Spark** is intended to help identify potential gaps and assist the student in maturing their adaptive problem-solving skills to close the gap.

Adaptive problem-solving is included in the Mentoring Spark series to help faculty work with students as they move **from solving well-defined problems to solving amorphous situations**. This category helps faculty scaffold students towards independent research.



ACTIONS FOR FACULTY

- It is important for faculty to emulate adaptive problem-solving skills and how to frame problems, and frame expectations. Thus, several suggestions below are related to expectations of students in an advisor's research group or lab.
- Help students understand that research, by its very nature, does not always go as planned. Students may face added time to determine why, make adjustments to the plan, collect added data, re-analyze, and repeat as necessary until a unique contribution to the field is made. Thus, **have advisor/advisee discussions early and often regarding progress and the definition of "good enough."**
- Discuss expectations on the depth of data and analyses that are expected of the student (and timing for proficiency and expertise).

CONTINUED ...

Tools to help with problem-solving are vast and varied...

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DIGGING DEEPER

- Tools to help with problem-solving are vast and varied, as are methods to frame problems. It is not the intent of this Spark to list different types of equipment, books, or methods. We suggest you pull from your library or ask the student to research state-of-the-art equipment and/or books that are widely accepted for the type of research and problem-solving done in the student's academic field.
- What analytical tools are expected to be used? (e.g., Python, MATLAB, others)
- A whiteboard to draw and map the problems or research plans adds a depth to a verbal conversation and helps each participant to know if they are being understood accurately.

Please visit the RDI Mentoring Sparks website



EXERCISES FOR STUDENTS

1. Have the student read the project description for research similar to what they will conduct.
 - Have the student write down what problem is being investigated and several strengths of the research plan. Ensure the student discusses *Why* the strengths are strengths related to the research plan.
2. Provide the student with a prior research project method and results.
 - Ask the student to justify the approach and describe how the data analysis was conducted. Ask the student to provide a couple of potential weaknesses to the approach.
3. Have a student review a real lab or other assignment and rewrite it in their words based on **a) what they think is being asked, b) what additional information they would want, and c) a step by step instruction.** Discuss gaps in what was intended and what the student interpreted, and how to mitigate the gaps moving forward.



REFLECTION & NEXT STEPS

- **Faculty:** Are there any analysis tools the student should focus on mastering?
- Students should reflect on the notion that it is one level of knowledge to critique other peoples' work and another to design your own research and analysis plan.
- What steps should be taken to transition from *performing* research and analysis tasks to designing one's *own* research and analysis?



ACTIONS FOR FACULTY

- Help students understand key questions to ask for adaptive problem-solving: **a) what problem are they trying to solve, b) what data are needed to solve the problem, c) how can the data be collected, d) what data will help verify or strengthen the main data, e) what method will be used to analyze the data?** This suggestion can occur even if students are following an already developed scope of work (See the first suggested exercise.)
- Once data are collected, work with the student on understanding what can happen if data collection and analysis techniques are mixed and matched (*or unmatched*), and how to know enough data are collected.
- As a pragmatic example, consider using student on-boarding. What on-boarding is required for a student to be part of your research group and/or lab? For example, if a student will be using lab equipment, ensure they are tested out on the equipment, including understanding OSHA and EHS requirements of the lab space, equipment, and themselves. Will existing data be used that requires IRB, customer, or other approvals before starting? How are data protected, and where are they stored?
- **GOAL Setting:** Agree on a goal for the students related to their adaptive problem-solving growth, such as developing a "formula" or "process" to frame problems/requests.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► ADAPTIVE PROBLEM-SOLVING



SOLUTIONS FOR STUDENTS

Students and advisors may have a gap between expectations of what is a satisfactory response to a technical request. Is it providing the data, or is it providing recommendations based on analyzing the data and a gap on the detail required with the request? This gap, if left unchecked, can result in frustrations, including during the thesis-writing process.

This document is intended to help students think about their analysis, critical thinking, and argument skills, and to provide tools for moving from providing data to also providing the meaning of the data and subsequent suggested next steps based on the data.



► LEVEL 2

LEVEL 1: FRAMING THE PROBLEM

LEVEL 2: MAKING MEANING

LEVEL 3: DESIGNING YOUR APPROACH



FACULTY FYI

This **Spark** examines the transition from framing a problem to understanding what data are needed to solve the problem. Adaptive problem-solving can be thought of as a process and can help students become more independent researchers. This allows advisors to request information (results) based on increasingly higher level (*less defined, less task-like*) requests.



ACTIONS FOR FACULTY

- Be purposeful in discussing the advancement from reporting data to evaluating and synthesizing (*making sense of*) the data.
- Provide guidance, or a resource, to help students with knowing what makes a good “lab book.” By lab book, we mean a way to document items such as how critical information is captured for future reference, knowing of any preferred templates to use, or knowing how much detail regarding assumptions should be captured. Consider including what is not good, or what does not tend to work (*and why*). Consider this as an opportunity for a student close to graduating to mentor a new student to the research team.

Adaptive problem-solving can be thought of as a process and can help students become more independent researchers.

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DIGGING DEEPER

- Does the research group use a simple research charter statement/project form prior to conducting analysis? If not, consider if the research group should develop such a tool – sufficiently customized to support the group (*i.e.*, *not* a generic “Google-searched/AI” form).
- The research charter tool should include basic project information (*e.g.*, *researcher, project name, timing, purpose, etc.*) and project expectations (*ideal outcomes, data collection method, analysis technique, justification for method and technique*).
- Does the research group have a preferred documentation tool, “lab book” template, or Lessons Learned database?

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have the student fill out a research plan charter document **for an existing project**. Discuss how easy or hard it was to gather all the information needed. Discuss if any concerns (*technical, cost, skill set needed, etc.*) arose during the process of filling out the form.
2. For a research project the student is involved with, ask the student to **think of two ways** to analyze data or propose two ways to obtain data. Then have them present their argument, with claims on why each method is valid (*argument*) and why their preferred method is preferred (*argument*).
3. Using a real data set, practice presenting just the results, then a three-minute pitch on the *meaning* of the results, followed by what actions can be taken based on the results. Discuss with those listening (*advisor, research group, or both*) your confidence level and areas of uncertainty for each part.



REFLECTION & NEXT STEPS

- **Faculty:** Consider a conversation on how the student might improve their adaptive problem-solving skills and how current knowledge can be transferred to different situations.
- **Student:** Consider how you transfer your technical problem-solving skills to other situations.



ACTIONS FOR FACULTY

- Help students to evolve in their analysis skills by helping them understand what evaluating their data requires and ways to present/justify a decision on the **meaning of the data**. Discuss how the transition to making meaning of the data moves a student from a “technician” to a researcher.
- Discuss the three key elements of an argument: **claim, reasons, and evidence**, and how that process provides a structure for a logical, persuasive, and effective argument. Have students practice presenting their requests, arguments, and/or data using the “**claim, reasons, evidence**” format.
- **GOAL Setting:** Agree on a goal for the student related to making meaning of data. The tools below may help to establish the goal. As a suggestion, the goal may be written in a manner that the student needs to provide a method to solve a problem and either justify the method being used or provide a comparison of several methods.

Consider how you transfer your technical problem-solving skills...



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MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► ADAPTIVE PROBLEM-SOLVING



SOLUTIONS FOR STUDENTS

Students graduating with an advanced degree will obtain a variety of jobs. Regardless of the job, having the ability to **collect, analyze, evaluate,** and **report data** will be critical to their success. In addition, they may quickly be asked to (*or need to for grants*) design a study – not just follow a plan. For many students, the transition from enacting a research plan to designing a study based on an ambiguous ask (*or need*) is a struggle, and can leave one feeling anxious about their ability and/or quality of the research plan.

This document is intended to help students think about and evaluate their adaptive problem-solving skills with the result of ensuring they are capable of designing and conducting independent problem-solving. That is, being able to make meaning, find the “*so what*”, and make unique contributions. This also increases a student’s confidence in translating their abilities to other situations.



► LEVEL 3

LEVEL 1: FRAMING THE PROBLEM

LEVEL 2: MAKING MEANING

LEVEL 3: DESIGNING YOUR APPROACH



FACULTY FYI

This **Spark** is intended to help students think about designing their own research plans and/or demonstrate the ability to design a research plan to support their thesis.

The first two sparks on this topic involved students’ ability to frame ill-defined problems, determine data needed, and to provide solutions. This spark relates to the “*final*” step of recognizing a need and developing an approach to solve the need (*including developing the questions that must be answered to ensure the problem is accurately addressed*).

*The Adaptive Problem Solving series is an opportunity to help students develop their critical thinking skills and transition from evaluating and synthesizing to **CREATE** on Bloom’s taxonomy.*



ACTIONS FOR FACULTY

- Discuss the demarcation/potential demarcation between **funded research & GRA stipend** and Thesis research. How similar is the work, what are expectations for the differences?
- Be purposeful in discussing the process of designing a research plan capable of providing the information needed to advance a research project, or whatever work scenario is presented. Instead of presenting students with a plan and asking them to follow it, ask the students at this level to critique the plan or help design it.
- Discuss **Bloom’s taxonomy** with the student in the context of them being an expert, creating the ability to advance knowledge on a subject, and the importance of evaluation and synthesis.

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DIGGING DEEPER

- Keep records or a log book of methodological designs, data collection, and interpretation of results. This tool serves several purposes: *1) it allows for self-reflection, 2) it provides a method to help organize one's work, and 3) it becomes a reference of what research and analysis designs were used.*
- Resources include looking at what “good” looks like by having students read articles from the top-tier journals for your specialty area, and noting how the analysis sections are written.
- Introduce students to charter statements to help organize their plan.
- **NSF CAREER Award** abstracts – provides examples of well formulated and funded research plans..

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have the student fill out a research plan charter document to **propose a project** (*may be related to their thesis*). Have the student discuss their “pain points” and how they resolved them while developing their research plan charter statement. Discuss with the student the strengths and opportunities for improvement of their work.
2. Have students present their charter documents to other members of the research group. Have the students practice critiquing the research plan and practice defending their plan.
3. Have students present their progress at key points (*e.g., initial end of data collection*), an evaluation of the progress (*analysis to date, etc.*), and why or why not changes are planned.



REFLECTION & NEXT STEPS

- **Student:** How might improving your adaptive problem-solving skills improve your critical thinking skills?
- **Student:** What is your confidence level to not only design plans, but from learning how to design through uncertainty/ambiguous requests?
- **Faculty:** What analysis gaps are common amongst your students and how can you use your research group to minimize the gap for future students?



ACTIONS FOR FACULTY

- Continue to foster a research group environment of using a structured process to present arguments, define analysis plans, and debate their effectiveness.
- Support a research group structure of the more senior students taking a more active role in assisting students with less analysis background; *i.e., have the more senior students begin to take an expert and educator role in a planned and structured manner.*
- Help students to understand that if the data collected or initial analysis results suggest the research question may not be sufficiently answered, then corrections should be made. Help them to understand that as part of the process, recognizing a course correction is not a failure, and that the path to success is frequent reviews and (*if necessary*) course corrections as soon as possible.
- Support students in how they can present their work in a manner that explicitly states its value/ unique contribution.
- **GOAL Setting:** Agree on a goal for the student related to designing an approach to solve a real-world problem.

Continue
to foster a
research group
environment...



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MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► LIFELONG LEARNING



SOLUTIONS FOR STUDENTS

Many students struggle with knowing the expectations for success while pursuing an advanced degree, especially if they do not have exposure to others with advanced degrees. During the process of getting the degree, students do not always take stock of their competency levels in different skill areas, or what might be needed to get to (*or remain at*) an “expert” level. This self-questioning by the students as to whether or not they know enough can cause stress in terms of the **Impostor Phenomenon**, being truly ready to graduate, and/or to beginning their first position after graduation.

The act of pursuing an advanced degree suggests a self-motivation for continued learning. Conversely, lifelong learning requires students to realize that having an advanced degree is not the end of learning – that there is always room for improvement and growth.

This **Spark** is intended to set the stage to help students be successful in their future endeavors by thinking about (*taking stock of*) their levels of knowledge and areas of interest for continued learning.



LEVEL 1: TAKING STOCK

LEVEL 2: GROWTH OPPORTUNITIES

LEVEL 3: FLIPPING THE SCRIPT



FACULTY FYI

This **Spark** is focused on the importance of lifelong learning and introduces semi-annual reviews as a tool for tracking lifelong learning. This Spark series is intended to help graduate students think about learning *starting* with, rather than *ending* with, a degree. This series provides faculty with a tool to discuss the process of developing and improving lifelong learning habits and skills including competency wheels (level 1), individual development plans (*level 2*) and being in your future position (*level 3*).

Discuss the short-term and long-term benefits of lifelong learning.

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ACTIONS FOR FACULTY

- Discuss with students what being a lifelong learner means to you, and have the student articulate what it means to them. Consider including that lifelong learning requires intrinsic motivation to continue learning.
- Discuss with students what is necessary to obtain their degree in terms of expertise, and contrast it to being a national or international expert (*which happens over time and after graduation*).
- Help students think about their current level of competency and where it should be to graduate. Look for any potential gaps.
- Depending on their current career path (*e.g., industry or academia*), discuss how their individual competency wheel may look different.

CONTINUED ...



DIGGING DEEPER

- **Competency wheel** – typically including six to eight competency areas with levels of novice, intermediate, and expert. Individuals self-report on their level for the areas. Often, the person's manager/advisor also assesses the individual's level.
- **Competency wheel for lifelong learning** – are there any skill areas not on your competency wheel designed for your work and personal life? For example, self-assessment? What can be done to help develop your lifelong learning skill?
- **Consider the different Sparks (and topics) as a competency wheel**
 - **Reflection as a Tool**
 - Take stock of where you are in terms of adapting lifelong learning habits – do you learn only what is required or do you learn in addition? Do you look at your network as an avenue for lifelong learning resources?
 - If you want to improve your competency in some areas, what is your plan and what tool will you use to document your goals and plans?

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



ACTIONS FOR FACULTY

- Introduce students to competency wheels as a tool to determine and track the skills and knowledge they should focus on for the type of work they want to perform. Help students think beyond the technical skills to include items such as communication, writing, and the other Spark topics.
- Discuss the short-term and long-term benefits of lifelong learning.
- If appropriate, discuss the Impostor Phenomenon with students.
- **GOAL Setting:** Agree on a goal for the student related to understanding the importance of taking stock of what it means to be a lifelong learner.



EXERCISES FOR STUDENTS

The below suggestions can be done with individual students or as a research group. If done as a research group, the students can be given the autonomy to develop what they deem as important.

- **Group Work**
 - Have students write down the top 3 – 5 skill areas they would want on a competency wheel.
 - Have someone list out the items (*white board, online, etc.*).
 - Instruct students to then put a mark next to their own top three, based on the entire list (*an important item may appear that was not on their list*).
 - Develop the group's competency wheel based on the results.
- **Group Work**
 - Same as above, except the students write down their top six to eight skills.
- **Faculty Work**
 - Review and/or work with students to help them think about needed critical skills, and to review the competency wheels for gaps.

NOTE: The idea of competency wheels will be continued in the *Level 2 Spark*. If the student(s) become stuck, consider suspending this activity until *Level 2*.

Reflect on lifelong learning as an on-going process...



REFLECTION & NEXT STEPS

- **Student:** Reflect on lifelong learning as an on-going process, and one that should become a way of thinking and acting.
- **Faculty:** How often should each student's competency wheel be reviewed; is it different for individual students?



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MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► LIFELONG LEARNING



SOLUTIONS FOR STUDENTS

Students often struggle with knowing where their skills are in terms of **Novice**, **Intermediate**, and **Expert** levels; their exposure to date may cause them to over-assess their skills. When students overestimate their skill level, it can be stressful to hear that more depth of knowledge, research, analysis, etcetera, is needed. It can also cause conflict between a student and advisor if the way the information is communicated is such that each person is talking “past” the other person.

Using tools such as a competency wheel or an individual development plan (IDP) can help students accurately assess their knowledge and skills and document a plan for growth opportunities to aid in their lifelong learning.



LEVEL 1: TAKING STOCK

LEVEL 2: GROWTH OPPORTUNITIES

LEVEL 3: FLIPPING THE SCRIPT



FACULTY FYI

This **Spark** is focused on key competency areas for a student to improve while a graduate student, and on areas to strengthen after graduation. The competency areas will vary for every student.

As students graduate and begin (*or continue*) to build their reputation as an expert, regardless of it being within Higher Education, Industry, or some other sector, it is a reflection on the advisor and advancing knowledge in their area of expertise. Thus, it is to the advisor's advantage to help students be equipped for success regarding their lifelong learning and growth skills.



ACTIONS FOR FACULTY

- Revisit the competency wheel from **Level 1** if necessary. Explain how those skills, and improving them, can translate into an Individual Development Plan (IDP).
- Discuss the difference between a competency wheel and what the department's or research group's standard IDP entails. Discuss how they interrelate. (*If a standard IDP does not exist, see the exercises below.*)
- Work with students on what novice, intermediate, and expert looks like for each competency wheel area they developed during the first Spark. Discuss any gaps between the student's perception and yours.

Consider the potential value of having a competency wheel and IDP...

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DIGGING DEEPER

• Competency Wheel

- Visual with pie pieces representing critical skill areas for a competency. The competency may be lifelong learning, leadership, data analysis, chemical engineering, networking, etcetera. Each pie piece is divided into a novice, intermediate, and expert section. The user puts a mark for their current level and a star (*or other mark*) for where they want to be.
- Note that one does not need to be an expert on everything within each pie piece.

• Individual Development Plan (IDP):

- Includes goals and areas to improve over the next one to three years.
- Lists potential educational courses to take as part of the development.
- May assess level of proficiency (*novice, intermediate, expert*) for key competency areas.

• Reflection as a Tool:

- Visit your IDP on a regular basis.
- Take stock of what is in your IDP. Is it satisfactory for all of your expectations?

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Students should work with their advisor to develop the components for a competency wheel based on an agreed-to topic (*such as their area of research*).
2. Students should self-evaluate their level of competence for each area within the competency wheel.
3. Students and advisors should review the self-assessment and come to agreement on the final evaluation. If differences are difficult to resolve, students should seek an independent review from other students or faculty.
4. Students should develop a plan to improve their competency in areas that need improvement in order to graduate. If no areas need short-term improvement, a shift towards long-term goals should be discussed with the advisor.
5. The outcomes from item three and four should be migrated into an IDP.



ACTIONS FOR FACULTY

- Support students as they fill out an IDP in terms of setting goals and determining what training or skills should be included. Discuss how often meetings should occur to help ensure the IDP is successful.
- Help the student understand the purpose of semi-annual reviews – that they are tools to support students' development and not tools to surprise students with an unexpected review.
- **GOAL Setting:** Suggested goals for this Spark include one related to the student's current competency versus desired future competency, as it relates to their area of study, or one related to their IDP.

Students should develop a plan to improve their competency...



REFLECTION & NEXT STEPS

- **Student and Faculty:** Consider the potential value of having a competency wheel and IDP to serve as a roadmap for lifelong learning.

Students should self-evaluate their level of competence...

For more information: www.therisingdoctoralinstitute.com/sparks/



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► LIFELONG LEARNING



SOLUTIONS FOR STUDENTS

Students who are not used to self-reflection as a tool, to pushing themselves to embrace challenges, or to **taking ownership** of their educational journey, may feel stuck or unsure during their graduate tenure. They may have difficulty seeing themselves as the educator (*instead of the student*) or researcher employed by a corporation. So it's time to "flip the script" from being a student to being an actual contributor to learning.

This **Spark** is intended to help students think about their current lifelong learning skills, what they may want to improve, and what lifelong learning may look like post-graduation (*especially in light of the rate of change of many engineering fields*).



► LEVEL 3

LEVEL 1: TAKING STOCK

LEVEL 2: GROWTH OPPORTUNITIES

LEVEL 3: FLIPPING THE SCRIPT



FACULTY FYI

Lifelong learning requires people to be self-reflective, think critically, question the status quo, curiosity (*wondering "what if" and "why not"*), and gaining new skills. These tenets are important for successful navigation of an advanced degree. When lifelong learning skills are learned and practiced during pursuit of an advanced degree, it sets the student up for continued lifelong learning and success. Additionally, these tenets support students as they visualize themselves in the future, in their next and next positions after graduation.



ACTIONS FOR FACULTY

- Discuss with students the different tenets of lifelong learning and why they are tenets. For example, seeking constructive feedback, attending professional development events/workshops, etc.
- Remind students that graduation is not the end of learning, but in some ways the beginning of learning.
- Consider which, if any, Spark in this series should be re-examined with a focus on how it applies to lifelong learning.
- Discuss with students your approach to lifelong learning and what it means to you, how it has helped your career, and other motivating reasons for being a lifelong learner.

Remind students that graduation is not the end of learning...

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CONTINUED ...



DIGGING DEEPER

- A competency wheel with six to eight tenets for lifelong learning.
- An IDP that provides space for training, and a space for justifying that training in terms of a lifelong learning goal.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



ACTIONS FOR FACULTY

- **GOAL Setting:** Agree on a goal for the student related to a lifelong learning step. (This can be related to an area on the competency wheel, IDP, or other.)



EXERCISES FOR STUDENTS

1. Have students individually or as a research group develop or update a competency wheel for lifelong learning post-graduation, and document why each pie slice was chosen.
2. Have students write down areas they plan to continue learning in order to stay current in their field. Next, have students develop goals related to the learning areas (e.g., *certificate in X or PMP certification*) and then develop an actionable plan. See the Goals and Project Planning Sparks for assistance on this exercise as necessary.
3. Have students review the eight categories included in the Sparks series, and consider which of them support development of lifelong learning.
4. Have senior members of the research group mentor newer members to develop a competency wheel and/or IDP – in other words, flip the script!

When lifelong learning skills are learned and practiced during pursuit of an advanced degree, it sets the student up for continued lifelong learning and success.

Lifelong learning requires people to be self-reflective, think critically, question the status quo, curiosity (wondering “what if” and “why not”), and gaining new skills. These tenets are important for successful navigation of an advanced degree.



REFLECTION & NEXT STEPS

- **Student:** Reflect on the growth (if any) that occurred through the process of developing a competency wheel and IDP, and how that relates to lifelong learning skills.
- **Student:** Consider who may be a next or additional mentor after graduation.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► COMMUNICATION



SOLUTIONS FOR STUDENTS

Methods of communication (*as well as word choice, tone, etc.*) have changed significantly in the last 20 years (e.g., popularity of texting) resulting in frustrations by multiple generations on the “best” way to communicate.

A common communication problem is for someone to send out a message they believe is clear and have it received with a different meaning. The reason for confusion may not be the word choice, but rather how those words are delivered. Understanding that communication involves context, words used, and agreement of all cues (*e.g., verbal, body language, tone; written words, fonts, styles, and punctuations*) is important. Increasing one’s awareness of communication style can help improve accurate communication and reduce frustration.



FACULTY FYI

This **Spark** is intended to help students understand communication is more than just words.

Good communication is important for the advisor/advisee relationship and for the advisor’s lab efficiency. Thus, the time spent modeling and supporting students with good communication skills will pay dividends in the long run, including by reducing misunderstandings that can delay research progress.

Good communication is important for the advisor/advisee relationship and for the advisor’s lab efficiency.



► LEVEL 1

LEVEL 1: COMMUNICATION MODES

LEVEL 2: UNDERSTANDING OTHERS

LEVEL 3: EFFECTIVE COMMUNICATION



ACTIONS FOR FACULTY

- Facilitate a discussion with students on modes of communication. Talk about how each person interprets tone, body language, approaches, written fonts, and styles, etc. differently. It is important for the student to understand this is an open dialogue to learn from each other and not intended to determine what is “right or wrong”.
- Ask students to think about their tone and body language (*if verbal*), written styles (*email or text*) during communications with peers, faculty, friends.
- Help students think about communication as a research, networking, and life skill – not as a personality trait. There is always room to grow with this skill.
- Discuss the pros and cons of using AI to assist in writing emails.

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DIGGING DEEPER

- As appropriate, suggest that students read about the basics of body language and tone.
- A best-practice resource for communication is having a trusted other (*friend, mentor, partner*) to candidly help with one's communication, especially the "vibe" they give. The feedback should be supportive, truthful, and include strengths and opportunities for improvement.
- Use video as a tool (*could be Zoom, Teams, or actual video*). For example, record oneself during a variety of scenarios. The video can be used for a self-review of tone, body language, word choice, etc.
- Toastmasters – though this takes an hour a week, Toastmasters is an excellent resource for improving overall presentation and speaking skills.
- **Reflection as a Tool:** Consider how often others ask for clarification and if it is more often with any particular communication mode. Think of ways to reduce the number of unclear communications.
- AI is a tool to help write emails and other correspondence with a particular tone; however, one must understand the appropriate tones to use AI correctly.
- Center for the Improvement of Mentored Experience in Research (CIMER) Framework for Communication.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



ACTIONS FOR FACULTY

- Help students think about when to use which communication channel (*in-person, phone, text, email*) – include what is expected from your perspective and how/why it may be different than communicating with friends, family, or members of one's network.
- Discuss with students that the communication channel and mode/tone vary depending on the recipient of the message – that does not mean to not being true to oneself; it does mean having consideration for the recipient.
- **GOAL Setting:** Agree on a communication mode to modify that will result in better communication – that is, others will interpret that communication with more accuracy.



EXERCISES FOR STUDENTS

1. Research group role-playing – assign students as a presenter or receiver and ask them to take on different roles – the presenter may be very quiet or timid or loud and demanding, the receiver may be interested (*leaning in, looking at presenter*) or uninterested (*leaning back, arms crossed, looking at phone, emailing*).
 - a. Discuss how the different roles with essentially the same words took on different meanings.
 - b. Have students discuss how the different roles made them feel (conducting the role or watching the role). Note! the different roles are parts being played, and not a reflection on the student.
2. Have students ask a few people from different groups (e.g., a peer, network member, employer) to provide constructive feedback on the student's communication. What is good, what could be improved.
3. Have students think about what they like and dislike about others' communication habits and what if anything they may want to do with their habits based on those learning experiences.
4. Have students bring in an email, text, or other communication that did not go as planned. If they do not have one handy, have them write an email asking for help (could be analyzing data, a class, using equipment, etc). Have students pass those around the research group for feedback.

Consider how often others ask for clarification...



REFLECTION & NEXT STEPS

- Are you communicating in a manner you think is best for the recipient?
- Think about how you want to be understood and what that means for understanding others.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► COMMUNICATION



SOLUTIONS FOR STUDENTS

Methods of communication (*as well as word choice, tone, etc.*) have changed. The haste of quick communication often results in a lack of specificity (*e.g., using generic “this” or “that” vs a specific name*) allowing for confusion in message and/or instructions to act. Familiarity with a topic or idea may lead the communicator to leave out information that the receiver needs to understand the message. Poor communication is frustrating to all involved. Adding to that a potential power dynamic of student/teacher or student/manager can complicate the situation.

This **Spark** endeavors to provide methods to reduce frustrations. In particular, listening or reading for understanding could mean requesting clarification and/or verification of the received message to ensure that the intended message was received, and to reduce frustrations.



► LEVEL 2

LEVEL 1: COMMUNICATION MODES

LEVEL 2: UNDERSTANDING OTHERS

LEVEL 3: EFFECTIVE COMMUNICATION



FACULTY FYI

This **Spark** is intended to improve communication skills by providing suggestions on ensuring that messages are received accurately. In this age of rapid response and brief text messages, businesses are reporting a decline in communication skills of new hires. Both receiving information and replying with information is important for effective communication. Ensuring the request was understood is imperative for receiving an accurate response.

Within a faculty member's lab, accurate understanding of others can improve the research – and possibly even keep the lab environment safer.



ACTIONS FOR FACULTY

- Discuss with students the adage, “*we have two ears and one mouth so we can listen twice as much as we talk.*”
- Discuss that listening to others, regardless of position, is a sign of respect and should be practiced always.
- Discuss that good listening is proactive and takes effort; it requires more than hearing. It also involves paying attention to the context and cues. Discuss the challenges of communicating via email and texts.
- Help students verify their comprehension. This may include summarizing the information, paraphrasing, confirming actions they have, asking for clarity, and showing they understand what to do and when they need to complete it. Let students know that asking for clarity is OK.

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DIGGING DEEPER

- Paraphrase what was said to confirm accuracy. Do not interrupt unless you are getting lost in the message. Do not interrupt to “solve” or “rebut” what is being said (*you are not actively listening if you are talking*), and ask open-ended (*not yes/no*) questions to gain clarity.
- Remove distractions (*silence phones, turn off emails, close laptops, etc.*). Fully concentrate on the conversation versus “multi-tasking”; this minimizes communication errors, improves trust, and is more efficient in the long run.
- Use more than your ears to actively listen: pay attention to the tone, body language, and facial expressions. If the communication is written, pay attention to added styles (*italic, bold, underline, different colors*).

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students sit or stand across from each other. For the first two minutes, one side talks about their favorite food. Next, the other side explains to everyone what they heard. The original speaker replies if the explanation was accurate. This can also be done for favorite class, favorite aspect of research, etc.
2. Role playing is a good exercise for all communication areas. Have students simulate a meeting, with students being the recipient/customer (*of a product, research, or proposal*) and assign roles of **paying attention to the speaker** and **not paying attention**, being contrary or just agreeing, or asking curveball questions. Have a student be the speaker and present their work. Go around the room to learn how the customer behaviors influenced the speaker.
3. Have students bring in an example of feedback (*a homework paper, manuscript, proposal, etc.*) and practice providing a paraphrased understanding of the feedback and response. Include what is believed to be the underlying concern (*root cause*) for the feedback.



ACTIONS FOR FACULTY

- Remind students that replying to a message (*indicating that it was received*) is important— even if it’s just a quick response of “message received.” Some emails do not have an action, or the action may take weeks, in which case confirming receipt of the information is important.
- Help students practice analyzing what information received from others means for them. Ask them to recap a message, to reply with specificity the next steps; push back on vague responses such as, “OK”, or “I understand.” Ask students on a regular basis, “**OK, what did you hear me say?**” and ensure the students know this question is being asked to help develop the student’s listening skills, not to challenge them in a negative manner.
- **GOAL Setting:** Agree on a goal for the student related to listening/reading for understanding. A powerful goal will include why the area should be improved – that is, include the perceived communication weakness.



REFLECTION & NEXT STEPS

Active listening is tiring; it requires using all of our senses. Perhaps reflect on the importance of listening for understanding.

Active listening is tiring; it requires using all of our senses. Perhaps reflect on the importance of listening for understanding.



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MENTORING **SPARK**

► COMMUNICATION



SOLUTIONS FOR STUDENTS

Successful communication requires all people involved to send and receive messages clearly and to verify comprehension; gaps can occur when one or both parties are not adequately engaged. Poor communication can be misinterpreted as not caring, being rude, and other perceptions that can lead to frustrations, anxiety, and self-doubt.

In the haste of quick communication, people often leave out specificity, allowing for confusion or possibly giving an impression of importance (*or lack thereof*) that does not match their intent. Speaking or writing with consideration for the people receiving the information takes added thought and time, but often saves time and frustration by reducing miscommunications.



FACULTY FYI

This **Spark** is intended to support students' ability to ensure that the sending and receiving of information is in alignment and sufficient to promote next steps. With the number of acceptable professional communication modes expanding to include texting, instant messaging, Slack, Teams, etcetera, in addition to verbal and email/letters, effective communication is more complex than ever.

Good communication is important for the advisor/advisee relationship and for lab efficiency. The time spent modeling and supporting students with their communication skills will pay dividends in the long run.



► LEVEL 3

LEVEL 1: COMMUNICATION MODES

LEVEL 2: UNDERSTANDING OTHERS

LEVEL 3: EFFECTIVE COMMUNICATION



ACTIONS FOR FACULTY

- Discuss with students how and when different types of information sharing are helpful. For example, there are verbal, nonverbal, written, and visual types, and within each type there are variations; no one type is always best.
- Help students think about the communication channel – the medium used to convey information – such as email, instant message, face-to-face. Note that multiple types of communication can be used with these different channels. For example, pictures can be shown during a face-to-face or attached to an email. Consider which channel is preferred in which types of situations.

In the haste of quick communication, people often leave out specificity...





DIGGING DEEPER

- **Update/Feedback acronym: F.A.S.T.**

F = FREQUENT

A = ACCURATE

S = SPECIFIC

T = TIMELY

- Groups such as **Toastmasters** provide a friendly platform to practice speaking and see good practices.
- Use the **6Cs method** for providing information:
Clear, Concise, Concrete, Courteous, Complete, and Correct.

*Please visit the **RDI Mentoring Sparks website** for examples and links to these tools and resources!*



EXERCISES FOR STUDENTS

1. For giving clear, concrete directions: during a research group meeting, have a bucket and two/three objects that can be dropped into the bucket. Blindfold one person, move the bucket somewhere in the room, and give directions on how to get to the bucket and drop in the objects (*for added complexity, have multiple people give directions at the same time and/or task someone with being vague on purpose*).
2. For clarity: have someone verbally describe a picture while others draw what they are hearing. Discuss the variation in drawings.
3. Have students volunteer to review other's work, a paper review, conference proceedings, etc. Have them use the 6Cs method.



ACTIONS FOR FACULTY

- Discuss what a technical presentation looks and sounds like for different audiences, e.g., people who are less technical but control granting money; audiences who will implement the research findings, but are not researchers; and peers.
- Model effective communication by switching roles between listening and speaking and ensuring accuracy of what was said and what was heard. Use the tools suggested in the first two communication Sparks.
- Model effective communication by providing feedback in a timely manner that is specific and accurate. Keep the feedback non-judgmental/neutral by avoiding telling them what they meant, but rather what you heard and how you received it.
- **GOAL Setting:** Agree on a goal for the student related to clarity of a message and/or how it may be different for different audiences.



REFLECTION & NEXT STEPS

How can communication improve between the advisor and advisee?

As a next step, consider a joint faculty/student co-created set of communication norms and expectations early in the advising relationship to reduce misunderstandings and strengthen trust throughout the PhD journey.

Speaking or writing with consideration for the people receiving the information takes added thought and time, but often saves time and frustration by reducing miscommunications.



MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► CAREER PLANNING



SOLUTIONS FOR STUDENTS

Though some students pursue an advanced degree with a future job in mind, or have a current career path in mind, many do not. Some students pursue a graduate degree because it provides a stepping stone or additional time to determine their career paths (*e.g. in academia, industry, Government, non-profit, or entrepreneurship*). In addition, students may have a limited ways to think about which career outcomes are important for them. This can result in difficulty focusing on (*and committing to*) research goals and/or may create stress. This Spark is intended to help students think of job exploration as a process and to provide guidance on exploring potential jobs after graduation.



LEVEL 1: JOB EXPLORATION

LEVEL 2: JOB ACQUISITION

LEVEL 3: CAREER SKILLS



FACULTY FYI

This **Spark** is one of three intended to help students think about job explorations, job acquisitions, and job skills. Many graduate students look to their advisors for support regarding job openings and career options. In addition, the future work done by the graduate student reflects on the advisor; consequently, advisors may want to help students find a good match.

For clarity, we are using the following definitions: **General exploration/career discovery:** students engaged in opportunities to learn about a variety of careers. **Job acquisition skills:** skills to actually apply, interview, and be hired. **Career skills:** skills needed for the career.



ACTIONS FOR FACULTY

- Help students think about Career Planning in terms of career exploration/discovery, job acquisition skills, and career skills – and the ability to consider each “chunk” separately.
- Help students link their network (*see Network Sparks*) with learning about different types of careers related to their graduate studies and research
- Help students build understanding that the variety of jobs and careers available in the sciences and engineering evolve every generation; encourage students to network with people at a variety of points in their career – i.e., early career professionals and mid- late-career professionals.

It is important for students to begin thinking about the timing of their job search early...

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DIGGING DEEPER

- Have students contact the career services center (*name can vary by institution*) to ask about their services, especially related to self-paced career exploration software/websites.
- Have students ask peers who are on the job market to present, or have one of your students present, about their career exploration process.
- Though the internet and AI are good resources for some information about different types of jobs/careers, they do not necessarily reflect all of the pros and cons accurately. When students use these tools, talk to them about vetting the resulting information through trusted people.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students write down the type of career they think they are interested in (*and why*); list what resources they will use to learn more about the career(s). Have students include specific reasons for the interest, including factors outside of the work itself (*e.g., location, size of business, type of work being done, etc.*)
2. Even for those who “know” they want a career in academia, Government, industry, etcetera, challenge them to explore (*i.e., research via websites, people who work in that sector, news articles, etc.*) at **least three types of careers** in each of those two major sectors.
3. Have students map the types of careers within their network (see **Networking Sparks**), review their map for gaps in careers that interest them, and report back to your research group.
4. Have students attend webinars or talks about different types of careers. Set a target number of attendances for each semester (*which should be different for different students depending on their existing career experience*).



ACTIONS FOR FACULTY

- Encourage students, early in their graduate career, to think about their next role, while balancing that time with their work and studies. It is important for students to begin thinking about the timing of their job search early, but not at the detriment of looking for a job in lieu of graduating in a timely fashion. In addition, help students to consider which electives may be important early enough in their degree progress to be able to take the electives without delaying their graduation.
- Help students make connections between their coursework, research, and future work — not just the technical part, but also how their work can fit into different careers.
- **GOAL Setting:** Agree on a goal related to job exploration, such as investigating pros and cons of different career sectors.



REFLECTION & NEXT STEPS

- Consider your networking circles in relation to your career exploration. Consider purposeful expansion of your network to fill any gaps.
- Consider what the “just right” focus bandwidth of interests for a career is and how that can help job acquisition skills and skills needed on a job.

Many graduate students look to their advisors for support regarding job openings and career options.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► CAREER PLANNING



SOLUTIONS FOR STUDENTS

The process of obtaining a job varies greatly. This **Spark** is not intended to provide specific guidance, but rather to provide thoughtful consideration on the importance of *a) where to look for jobs, b) whether an opportunity may be a good fit, and c) tailoring documents to meet the job description.*

Regardless of the career sector, the future work done by a graduate student reflects on the advisor; consequently, advisors may want to help students find a good match.

As a reminder, the Spark on Job Exploration provides definitions for the Spark series.



► LEVEL 2

LEVEL 1: JOB EXPLORATION

LEVEL 2: JOB ACQUISITION

LEVEL 3: CAREER SKILLS



FACULTY FYI

It has been said that looking for (*and getting*) a job, is a job. At the risk of oversimplifying the process, getting a job includes finding a good job announcement, submitting an excellent application, having *the*, (*or one of the*), top interviews, receiving an offer, and accepting an offer. The knowledge, skills, and ability (KSAs) for acquiring a job are mostly different than the KSAs to get an engineering degree or KSAs at a job. Helping graduate students think about *a) where to look for a job, b) whether an opportunity may be a good fit, and if so, c) how to frame documents to show the student's value to the hiring entity can reduce stress by providing a process for students.*

Specifically, this spark is intended to help students think about what knowledge, skills, and abilities (KSAs) are important during the process of applying to, being considered for, and obtaining a job offer.



ACTIONS FOR FACULTY

- Explain to students that the process of acquiring a job typically requires multiple applications, as well as time to prepare, apply, and interview. In addition, the process is different for academic, government, and industry job openings. One example being that academia tends to have a hiring cycle, while industry hires as needed (*especially for advanced degrees*).
- Discuss with students *if* they should spend time investigating what jobs are available prior to the timing of actually applying for a job. There are arguments for Yes or No. Yes, to help them understand what is coming and what is needed to get those jobs, and No, to keep them from spending too much time job hunting versus finishing their degree.

CONTINUED ...

*It has been said that looking for
(and getting) a job, is a job.*

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DIGGING DEEPER

- Students should already be familiar with the school's career services (or similar name) support, if not, suggest they set up an appointment for a visit. This service should have recommendations on how to look for a job (job sites, career fairs, etc.) and also services related to helping with resume writing.
- Members of a student's network who have jobs similar to what that student wants— and students on the job market with similar interests—are both valuable tools/resources for knowing learning what is needed during the application and interview process.

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students gather a couple of job announcements and outline their applications; what needs to be tailored, what can be “plug and play” between them, and what might need to be started from scratch. We are not suggesting they make the documents, but to simply outline what is needed to allow for a discussion.
2. Have students make notes on the different job descriptions from the exercise above. **A) What skills and knowledge are required? B) What benefits does the job offer? and C) What are other strengths and weaknesses (such as location, travel, on-site/hybrid, etc.)?**
3. Have students review their networking map of careers and ask them if they have sufficient networks established, where are any gaps, and how they can use their network to help them acquire a job.
4. Have students review the CVs of faculty and/or recently graduated students who are in the same career sector for which the student plans to obtain a job. Have the student update their own CV based on strengths they recognize from reviewing the other CVs.



REFLECTION & NEXT STEPS

- **Student:** Consider your networking circles in relation to getting a job. Consider purposeful expansion of your network to fill any gaps.
- **Faculty:** Reflect on the mix of career sectors your students gravitate towards. Is there a particular job sector you could learn more about to help your students with their job acquisitions?



ACTIONS FOR FACULTY

- Have graduate students on the job market talk to your research group about how they are finding job openings and what the job application process includes.
- Have graduate students practice their job talks to the research group; not only is the practice helpful to them, but it will help other students realize what job talks entail.
- Help students to think about how their value will benefit a future employer (refer to the networking Sparks and Communication Sparks). When applying for jobs, it is important for students to respond to what is being asked, and not to simply submit a list of their skills.
- Explain to students that to submit their best application, they will need to tailor their resumes and CVs to fit the application.
- **GOAL Setting:** have students develop a goal related to investigating what knowledge, skills, and abilities are typical for a job advertisement.

It has been said that looking for (and getting) a job, is a job.



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► CAREER PLANNING



SOLUTIONS FOR STUDENTS

In today's hiring market, students need an edge to stand out and be considered for a particular job. One proven way to gain this edge is to reduce the hiring entities' perceived "risk" with applicants regarding their ability to work in a particular work environment.

Some students, especially those moving straight from high school to undergrad to graduate school, may have little experience outside of labs and research that they can use to demonstrate their ability to use their knowledge and skills. Their experience may be completely acceptable for some careers (e.g., *academia*), but may have perceived gaps for other careers (e.g., *industry*).

Specifically, this spark is intended to help students think about what knowledge, skills, and abilities (KSAs) are important for the type of career or job they want – and also to help them think about how to ensure that they can demonstrate their ability to use those KSAs in practice.



► LEVEL 3

LEVEL 1: JOB EXPLORATION

LEVEL 2: JOB ACQUISITION

LEVEL 3: CAREER SKILLS



FACULTY FYI

Though an advanced degree is designed to ensure students have at least minimum job requirements met and an expertise in their areas of study, that does not mean one's resume highlights (*or puts the best emphasis on*) the skills for every job posting. Thus, this **Spark** is intended to help students think about ways to gain experience *specific to the type of job* a student wants to pursue.

Regardless of career choice, the future work done by a graduate student reflects on the advisor; consequently, advisors may wish to help ensure students have all required job skills when they start the job.

(As a reminder, the Career Planning Level 1 Spark provides definitions for the Spark series.)



ACTIONS FOR FACULTY

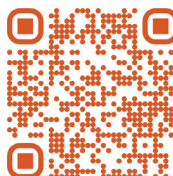
- Explain to students that different types of jobs will have different weightings on the KSAs for a job. For example, an academic job may have more autonomy than an industry job, and an industry job may require a different pace for problem solving and communication. Thus, students will need to be able to give examples of the appropriate abilities.
- Discuss with students the type of job they want after graduation, the likely critical KSAs, and ways to demonstrate proficiency. Talk about any areas identified as gaps, and how to gain the needed experiences.
- Point students to academic counselors (or as an advisor work with students yourself) to ensure any necessary electives are discussed for different types of jobs.

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DIGGING DEEPER

- Work with the student to help them think through how their resume/ CV will compare to others related to job skills – this may include having them talk with career services. Are there any future goals or next steps that surface from this exercise?
- **MyIDP website**

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

1. Have students write down the skill they want to use at a job. (*Examples could include writing, conducting data collection or analysis, writing computer programs, etc.*) Ask the students to think about their level of expertise in those areas. What can they brag about, what could they strengthen?
2. Have students think about and write down their experience using their academic knowledge, lab experience, working on grants, etcetera. Have the students include internships, externships, additional lab work, etc. Once they have the information written down, perhaps as a matrix of experiences / skills / knowledge, have them write down examples they can use during an interview or presentation to demonstrate their ability to use their knowledge and skills.
3. Have your research students work in pairs or small groups to practice saying their examples that demonstrate different KSAs likely for the type of job they want. Have the student(s) listening provide constructive feedback (*revisit the Communication Sparks as appropriate regarding the importance of listening to understand*).



ACTIONS FOR FACULTY

- Suggest that your students talk with recent graduates to find out any KSA areas those graduates would strengthen prior to graduation if they had to do it over.
- Encourage students to periodically review their CV for potential KSA gaps, and to start the reviews after they have spent time with job exploration and before they begin applying for jobs.
- **GOAL Setting:** have students develop a goal related to the KSAs needed for their preferred first position after graduation.

Think about any gaps in experience you have and why it is a gap...

In today's hiring market, students need an edge to stand out and be considered for a particular job. One proven way to gain this edge is to reduce the hiring entities' perceived "risk"...



REFLECTION & NEXT STEPS

Think about any gaps in experience you have and why it is a gap; what will you do to close the gap and make yourself more marketable for your ideal first position after graduation?



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MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► TIME MANAGEMENT



SOLUTIONS FOR STUDENTS

Good time management can improve a person's efficiency – and what person doesn't want to be more productive?

This spark focuses on techniques and tools to help structure one's time, better control one's time, and recognize how full our time is (*or isn't*). This document is intended to support *individual* time management improvements while the other Sparks in the Time Management series move toward *collaborative* time management.

This spark is also intended to help students see when they are headed from “*whelmed*” to “*overwhelmed*,” and to make purposeful adjustments.



LEVEL 1: BASIC STRATEGIES

LEVEL 2: SHIFTING SCHEDULES

LEVEL 3: ORGANIZATIONAL ISSUES



FACULTY FYI

This **Spark** is focused on basic tools and individual techniques for improving time management. Helping students to improve their time management can build confidence, earn trust from others, reduce stress, and improve performance. Thus, helping your graduate students improve their time management skills can benefit you and your entire research team.



ACTIONS FOR FACULTY

- Help the student think about the advantages of good time management: improved focus, a positive reputation (*getting work done by deadlines*), decreased stress (*not missing deadlines*), increased productivity, and improved confidence (*they can do what they said they would do*).
- Help students understand that time management becomes more important as they move from a “structured” environment to a more nebulous/unstructured environment. For example, from juggling several classes and life (*with the class work assigned*) to primarily research and thesis writing (*when the students will be independently responsible for managing their time and outcomes*).

“Good time management can improve a person's efficiency – and what person doesn't want to be more productive?”

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DIGGING DEEPER

• Prioritization Techniques and Tools:

- Eisenhower Matrix (*important/not important; urgent/not urgent*)
- High, medium, low method
- Impact over Time Ratio (*and focus on top 80%*)
- To Do lists and Action trackers: OneNote, Teams

• Hardware/Software Suggestions:

- Color coding for quick reference (*subject, person, priority*)
- Carry a notebook or other device to take notes
- Have a to do list – and look at your to do list. DO NOT overspend time developing your lists! It can be electronic or actual sticky notes – whatever works for you.
- Calendars & software: shared across devices such as Google calendar, OneNote, Teams

• Planning and Scheduling:

- Set daily and weekly goals
- Block time for the tasks related to the goals – be realistic with the time required
- Allow for unexpected delays
- Divide time based on urgent/not urgent – consider blocks of time for the not urgent

Please visit the RDI Mentoring Sparks website for examples and links to these tools and resources!



EXERCISES FOR STUDENTS

The below suggestions can be done with individual students or as a research group. If done as a research group, the students can discuss their time-wasters and schedules with each other.

- Have students identify their top three time-wasters.
- Have students group their requests and tasks for the next 2-3 months and think about the time blocks needed to do the work, what time of the day/day of week makes sense, and to schedule those tasks.
- Ask students if the remaining time is sufficient for a typical number of unexpected asks/tasks and for work taking longer than expected: are you “*whelmed*,” or heading to *overwhelmed*?



ACTIONS FOR FACULTY

- Discuss with students the concept that the time it takes to develop tools that work for them will pay dividends moving forward. (*Yes, students do have time to work on their time management skills!*)
- **GOAL Setting:** Agree on a goal for the student related to improving time management. The tools below may help to establish that goal.



REFLECTION & NEXT STEPS

- Think about *and list* a few ways to keep yourself motivated to stick with your time management techniques. Keep what works, change what doesn't. Know that what works for a friend, peer, or advisor may not work for you, and that is OK.
- **Consider each of these key takeaways:**
 - Time management is important from a holistic perspective of a “*work/ life*” balance perspective.
 - Time management relates to project planning – good project planning needs to have a realistic schedule, which requires people being able to manage their time to meet their commitments.
 - Individual time management skills are needed in order for a collaborative team to be able to establish time management practices.

Time management is important from a holistic perspective...



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MENTORING SPARK

Quick ideas to light up your doctoral conversations.

► TIME MANAGEMENT



SOLUTIONS FOR STUDENTS

Fundamental time management involves scheduling tasks given to us. But how do we manage our time when we need to develop the tasks ourselves, the time required is vague, and we have competing priorities with deadlines out of our control? This Spark endeavors to help students think about their time management planning, customizing tools to fit their needs, and realizing that time management is an *active (not a passive)* skill set that can be learned.

Good time management skills, especially for nebulous or self-directed work, is a necessity to be successful in one's career.



FACULTY FYI

This is the second of three Time Management Sparks. Students should be able to begin take ownership of their time and managing all of the pie pieces as they move from a somewhat structured schedule (*with primarily class work*) to an unstructured (*primarily research/thesis writing*) environment. Students should already have knowledge of time management tools available, prioritization techniques, and practicing basic time management.

Good time management skills, especially for nebulous or self-directed work, is a necessity to be successful in one's career.



LEVEL 1: BASIC STRATEGIES

LEVEL 2: SHIFTING SCHEDULES

LEVEL 3: ORGANIZATIONAL ISSUES



ACTIONS FOR FACULTY

- Help students understand that everyone deals with nebulous and changing plans, and that everyone has action items that are not within our control.
- Explain that it can be difficult to know how much detail is needed in a fluid plan, but that it becomes easier with practice, with experiential learning. Thus, starting sooner is better than waiting until we are becoming overwhelmed.
- Suggest newer graduate students ask peers (and those further along in their graduate careers) about their time management techniques and to see their process.
- Help students to understand that what works for one person may not work for them; thus, they should not think that copying a very organized person's method is always "the" answer.

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DIGGING DEEPER

- Discuss methods for maintaining a detailed action planner with consideration for delays and unexpected add-ons.
- Create a calendar with time blocks for efficiency of type of work being done & when. Are there department and/or University dates/activities to add?
- **Analysis:** Are you meeting deadlines (*self-imposed or otherwise*)? If not, do not *add* time; instead, use your tools to analyze why you are not accomplishing your time management goals.
- **Evaluate:** Manage your interruptions by managing your tools. Consider how you use tools such as email and texting. Can you block time for reading and responding to them? Can you work from different locations to reduce the distractions around you?
- Use the Hunks, Chunks, and Bites method to develop tasks towards your goals that are discrete and can be time bound.
- Consider color coding different projects to visually help you know what you are and will be working on. The colors can also be associated with importance or other factors.

*Please visit the **RDI Mentoring Sparks** website for examples and links to these tools and resources!*



EXERCISES FOR STUDENTS

There are two exercises to consider at this level. One is practicing the skill of managing your time, the other is evaluating what techniques work for you – being metacognitive about your techniques.

1. Think of 2 or 3 milestones you need/want to accomplish by the end of the academic year. For each milestone (“hunk”), break the hunk into several measurable “chunks”, then break each chunk into several “bites.” For each bite, consider the best environment in which to do the work (*lab, home, group setting, library, etc.*) and what resources are needed. Organize your time to work on these tasks to minimize travel, changing of thoughts (*e.g., going from research to a personal task, then back to research, may not be optimal.*)
2. In the beginning, review your progress weekly – what worked well and what didn’t, or was even stressful? If you did not stick with the plan, why not? Make corrections to the plan and change, as necessary, your time management tools. **Review this exercise with a peer who is also working on improving their time management skills.** Learn from each other; you do not need to reinvent the wheel!

Collaborative time management is the most efficient when the collaborating individuals already have good personal time management skills of their own.



REFLECTION & NEXT STEPS

- Time management and nebulous schedules are directly related to project management and communication.
- Time management also connects to topics such as writing and analysis in terms of thinking about what blocks of time are needed to do the work and what time of day is better for that type of work.
- Proceed on to the final time management Spark, deals with **collaborative** time management. Collaborative time management is the most efficient when the collaborating individuals already have good personal time management skills of their own.

Fundamental time management involves scheduling tasks...

For more information: www.therisingdoctoralinstitute.com/sparks/



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MENTORING **SPARK**

Quick ideas to light up your doctoral conversations.

► TIME MANAGEMENT



SOLUTIONS FOR STUDENTS

In today's environment, no one —not individual contributors, researchers, or students—works in a vacuum. Thus, it is important to discuss time management with collaborators to optimize the team's efficiency. Compromise to mesh the time management preferences of team members may be necessary. This document endeavors to provide suggestions and exercises to aide in an organization's or group's overall time management efforts.



FACULTY FYI

This **Spark** is intended for students who accept ownership of managing their time (*including flexibility to accommodate requested changes*) and focuses on skills to *collaborate with others*, enabling the organization to perform more time efficiently.

For this Spark to have real meaning for students, they need to understand the concept that what is good for the team is good for *them*.



LEVEL 1: BASIC STRATEGIES

LEVEL 2: SHIFTING SCHEDULES

LEVEL 3: ORGANIZATIONAL ISSUES



ACTIONS FOR FACULTY

- Discuss with students why communication is the key to good organizational time management. (*Communication helps to ensure all tasks are completed acceptably and on time, which allows follow-on tasks to be started on time.*)
- Discuss the importance of having a meeting agenda and planned outcomes for each meeting, and NOT just a “meet to meet”! When meetings happen, ensure they have a purpose, agenda, and timeframe.
- Discuss and agree on communication channels, and if they vary depending on content. For example, when to use email, when to text, when to update shared action trackers.

In today's environment, no one —not individual contributors, researchers, or students— works in a vacuum.

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CONTINUED ...



DIGGING DEEPER

Explore SHARED Tools for a Collaborative Team

- Shared folders and a shared naming strategy allow the correct document to be worked on.
- Shared calendars, if reasonable, or have a team calendar expedites scheduling and reduces emails.
- Shared action tracker, risk matrix, and other project management tools allow task owners to update their status and to see the statuses of other contributors.
- Pre-developed email headings.
- Color-coding different projects or tasks to visually help you know what you are (and will be) working on. The colors can also be associated with importance or other factors.
- Software such as: Asana, shared Gantt chart, Slack, Teams, etc.
- Collaborative time management includes planning tools such as:
1) Communication channels and when to use email, when to text, when to update shared action trackers. 2) Time blocking and/or knowing each person's time blocks, such as best times for meetings (*days of week/time of day*), when people are reading & responding to emails, writing times, etc.

*Please visit the **RDI Mentoring Sparks** website for examples and links to these tools and resources!*



EXERCISES FOR STUDENTS

These exercises are intended to be done in a team setting.

1. Have a time management meeting with the core team (*possibly facilitated*).
 - Have each person write down their best practices and biggest time wasters.
 - Discuss & decide how the team should share information and who will own setting up the tools.
 - Discuss any naming schemes, including revisions, needed. Discuss any file folder structures needed.
 - Discuss time blocks (*for meetings, emails, writing, quiet work [do not disturb]*).
 - Ensure people understand how their work is needed by others (*late inputs can result in wasting others' time*).
 - Determine a time to evaluate the team's efficiency and, if necessary, to make changes.
 - Discuss if a team action tracker or calendar might be used (*and if so, how*).
 - Meet with the team, or peers, and ask them to help you with ways to mitigate your biggest time wasters (*you may be surprised that they have the same issue*) and swap information regarding your best practices. If the meeting is with collaborators, ask them what you can do to help them.



ACTIONS FOR FACULTY

- Understand how other people work, and their preference for knowing tasks, status, questions, etc. For example, do they prefer verbal, email, teams, texts, etc.
- **GOAL Setting:** Agree on a goal for the student related to group time management.

Remember that time management relates strongly to efficient communication, good project management.



REFLECTION & NEXT STEPS

- Does the team seem to be working in concert relative to time efficiency? Are there "time wasters" occurring that should be addressed?
- Remember that time management relates strongly to efficient communication, good project management.



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