NPTEL+
Anyone Anywhere Anytime

EdTech Society

Guiding Postgraduate Research Students

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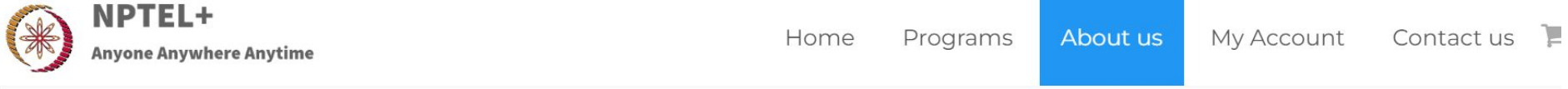
&
President, EdTech Society

Session 1

Introduction

About NPTEL+

elearn.nptel.ac.in



NPTEL is launching the new portal NPTEL+ to expand the variety of offerings and courses for learner upskilling. 3 types of training programs are proposed currently:

1. NPTEL courses in self paced mode

(NPTEL) is now offering self-paced courses where learners may progress through the course and complete assignments at their own pace. Once a learner joins these courses, they may watch video lectures, and complete assignments as per their convenience. Learners may also choose to write a remote proctored online exam from the comfort of their homes and earn a certificate.

2. Short term training programs from the IITs/IISc

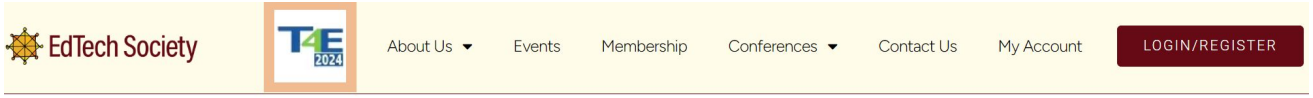
Short term training programs which might involve fully live lectures coupled with hands-on training or a blended mode of learning (recorded videos+live lectures) are planned to be offered. These would primarily be by the faculty of various IITs, IISc, etc and would be on fixed dates with fixed timings for the sessions.

3. Other programs

These programs include courses from institutes/organizations that are partnering with NPTEL. The contents are targeted towards specialised courses in an emerging technology or complementing the existing NPTEL courses with dedicated hands on content to equip the learners to be industry ready.

About EdTech Society

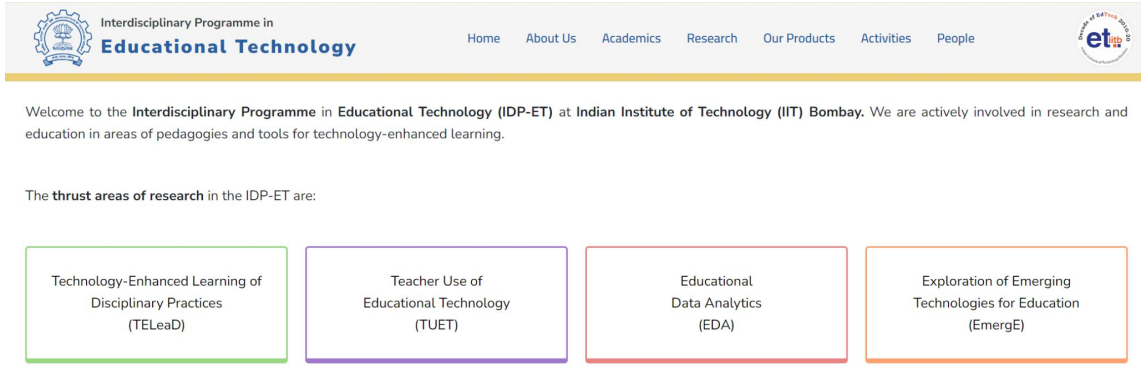
- Public forum, professional non-profit association, committed to improving instruction and learning through the use of educational technologies.
- Launched in April 2022.
- 370+ members; 2 online events per month; T4E conference per year.



etsociety.org

About Educational Technology, IIT Bombay

- Interdisciplinary Program.
- Started in 2010.
- Faculty - 6 Core faculty
  15 Associate faculty



- Programs offered:
  PhD program: ~45 research scholars, 25 alumni.
  MTech: began in 2019.
- Activities - Research; Development; Outreach.

www.et.iitb.ac.in

About me

- Faculty member at IIT Bombay since 1999.
- Guided >25 PhD students on varied topics:
  - Software architecture; Wireless network design; Mobile stack development; Multimedia dissemination.
  - Designing elearning animations ; 3D mental rotation skills.
  - Intelligent tutoring systems ; Visual analytics.
  - Teaching vernacular medium students ; Teacher training.
  - Many topics and practices in Computing Education Research.
- More information: Google - Sridhar Iyer, IIT Bombay.

Activity - Mentimeter

We will use Mentimeter for interaction in this Workshop

Scan this **QR code**

OR - open a new tab for

www.menti.com

and type code **8743 5685**

Activity - About you [3 minutes]

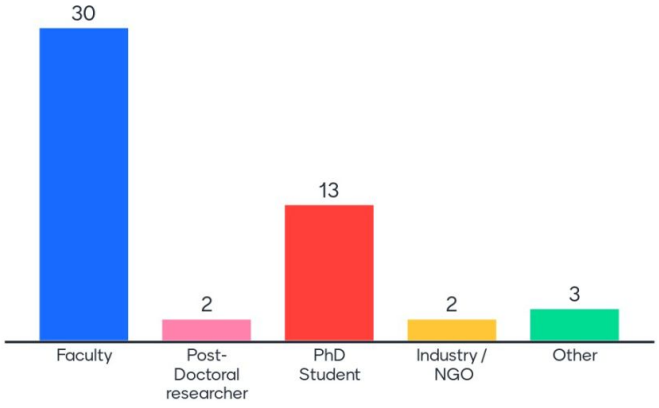
1. Are you a faculty or a student or industry/NGO?
2. Have you guided research students?
3. What are your expectations from this workshop?

Respond using Mentimeter - same codes as shown earlier.

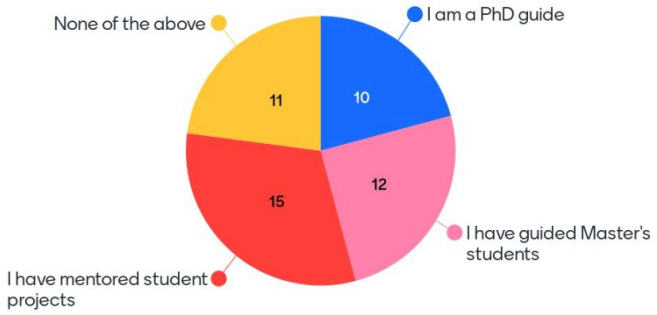
Quick recall: www.menti.com and code **8743 5685**

Activity - About you - Responses in May 2024

What role are you in?



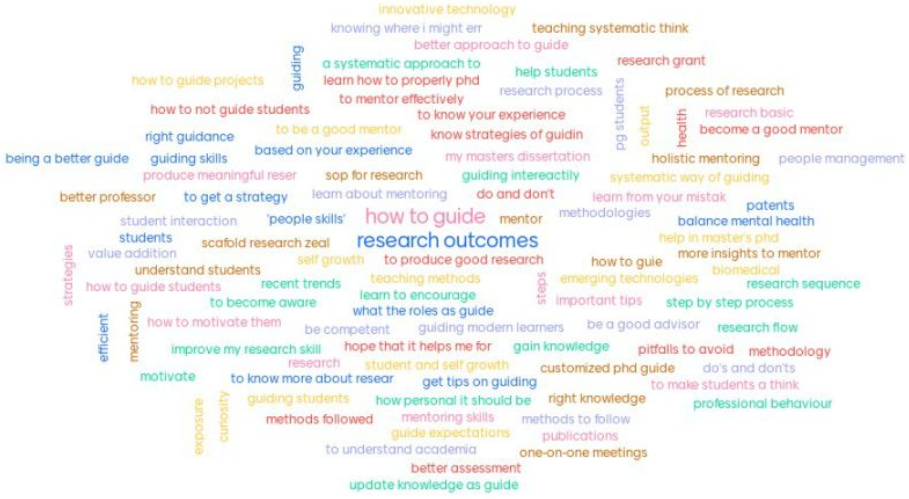
guided any research students?



Activity - About you - Responses in May 2024

What are your expectations from this workshop?

105 responses



About this Workshop

Brief description given on the registration page

Description of the Session

This workshop is targeted towards faculty who are new to the process of guiding PhD and Masters students in their research. It would also be useful for future faculty (i.e.), post-docs and senior PhD students who are inclined towards a faculty role. The workshop will begin with getting an understanding one's position on the research continuum, followed by one's goals while guiding a student. Then it will move to the various stages of the work, such as how to ensure that the student makes progress, what to do when one is stuck and closing the work with appropriate publications.

Who is the intended audience for this workshop?

- Primary audience: Faculty in the process of guiding their first few PhD students.
- Secondary audience: Post-docs and Senior PhD students who are considering a faculty role.

- If you are an early-stage PhD student or a Master's student, this workshop will make more sense after you graduate.
- If you are an experienced faculty, having graduated PhD students, you are welcome to share your perspective!

What is the scope of this workshop?

- The Workshop is not specific to a particular discipline.
- Primary scope: Sharing of some practices and experience for guiding PhD students in their research.
- Secondary scope: Some practices for guiding Master's students.

What is out of scope?

- Discussion of the research process itself:
  - It is assumed that you know how to do research, and now are ready to guide others along the path.
- Discussion of guiding practices in any specific domain:
  - This workshop is at a generalized level. For practices specific to your research area, consult a senior faculty in your domain.
- Discussion of specific students:
  - This workshop is not for resolving challenges that you may be facing with a specific student, nor a forum to lament about “students nowadays” :-)

How is this workshop useful?

You have gone through the PhD or post-doc process as a student. Now you have to look at it from the advisor/guide perspective.

This is different because:

- In addition to doing research yourself, you are now responsible for a student's growth as a researcher, thinker, person …
- It is a much larger responsibility than mentoring juniors on specific topics or guiding interns/undergraduate projects.

As you find your own way of guiding students, it might be useful for you to listen to another person's approach. Hence this workshop.

What is the structure of this workshop?

Day 1: (conceptual)

- The PhD continuum
- Guide-Student alignment
- Identifying your philosophy

- Live interaction 1
- Home Assignment 1
  - Submit your position statement

Day 2: (operational)

- The guiding process
- Some examples
- Common concerns

- Live interaction 2
- Home Assignment 2
  - Submit your plan for guiding a research student

What is the certification requirement?

1. Participate in the in-workshop activities.
2. Submit the Home Assignments.

3. Adhere to the honor code:
   - The answers you submit are your own.
   - You did not outsource the work to someone else, or Gen AI.

What are the Assignments?

There are two Assignments - one for each day of the workshop.
The assignments have open-ended reflection questions for you to answer.

- You will start answering them as part of the session activity itself.
- Google form for submission will be shared at the end of the session.

- It may be difficult to answer the questions comprehensively at one go.
- It will be unproductive if you are not honest in your answers.

Recommendation:

Start with writing the first couple of points that come to your mind.
Then revisit them later, reflect and refine, till you are satisfied.
Submit when done.

What are the expectations from you?

1) Participation in the activities; Not just listening to ‘lecture’.
2) Don’t forget your own student days!
3) During the activities you will be asked to switch roles.

Reflective Student	Research Guide
	

Disclaimers

This workshop is structured as a series of questions to ask yourself:

- I have given my own answers as one data point for you to think about.
- You may not agree with me. It is ok. This is just an example.

These answers are *my* personal philosophy and approach:

- They may not work for you or your students or your institutional constraints.
- Be aware of the alternatives and pros-cons before you decide your approach.

You may know many of these points already:

- If you find 1-2 new ones that you want to consider, our time is well spent.

One minute break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 2a

What is a PhD?

What is the definition of a PhD?

Entry from Wikipedia -

In the context of the Doctor of Philosophy … the term "philosophy" … is used in a broader sense in accordance with its original Greek meaning, which is "love of wisdom." … the term doctorate comes from the Latin docere, meaning "to teach".

Response from Gen AI -

Research-focused: student has completed a rigorous program involving extensive original research.

Broad Knowledge: While the term "philosophy" is part of the title, it doesn't necessarily refer to the specific subject of philosophy. It signifies the comprehensive knowledge and critical thinking skills developed throughout the program.

Example: My interpretation of the definition

Philosophy -

Student gets training to delve deep into the subject to -

- extend the boundary of knowledge.
- become aware of the assumptions, qualifiers and limits of generalizability.
- examine the validity of axioms / question conventional wisdom.
- …

Doctorate -

Student acquires expertise in the discipline **and** its pedagogy.

Example: What does it mean to extend boundary of knowledge?

A PhD student should be able to (eventually):

Synthesize the body of work in their area of research.

Identify the current state-of-art and a research gap of their interest.

Come up with solutions to close the gaps identified.

Establish the rigor and validity of their research using appropriate methods.

Communicate their research findings.

Example: What does it mean to become aware of assumptions?

While reading a paper, a PhD student should be able to (eventually):

Spot unstated assumptions that may be underlying the research reported.

Conjecture what might happen if the assumptions were different.

Predict some of the findings (in qualitative terms) before reading the results.

Spot inconsistencies across different sections of the research reported.

Examine claims critically.

Example: What does it mean to examine validity of axioms?

Having become familiar with a research area, a PhD student should be able to:

Identify ideas that have become accepted in the field.

Examine if they continue to hold in the light of new ideas or new perspectives.

Examples:

- Student 1 - Object-Oriented software design
- Student 2 - Reachability in a wireless network

[Disclosure: In such cases, we have had difficulty in getting papers accepted.]

Example: What does it mean to acquire expertise in pedagogy?

A PhD student should be able to (eventually):

Teach specialized courses on their expertise + basic courses in their discipline.

Use suitable teaching strategies for their topics.

Have knowledge of common student difficulties within their topics.

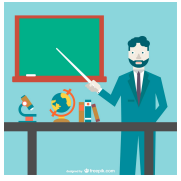
Use technology in a meaningful way to support their teaching.

Note: While NEP in fact recommends courses in teaching and pedagogy of the discipline, a number of scholars in their responses to the draft NEP advised against mandating it.
Their argument was - i) not all doctorates become teachers, many go into industry or other fields. ii) Given the time constraint of PhD, and the quality of research is the primary focus - focusing on pedagogy will inflate the "syllabus" while reducing the depth.

Activity - What is your definition of a PhD? [5 minutes]

1. Write down some points about your definition of a PhD.
2. You will need to submit your answer as part of Assignment 1.

- **[Peer Learning]**: Optional activity
  a. Anonymously, paste your definition in this class-responses document (create a new slide for your response).
  b. After the session, look at a few responses (the slides immediately above and below your own).
  c. Revise your definition of a PhD, to submit in Assignment 1.



Two minutes break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 2b

The PhD continuum

Note about the role of subject knowledge in a PhD

This workshop assumes that you are an expert in your research area.

This workshop is a "human-view" rather than a "knowledge-view" of PhD research.

Note to students: You are expected to acquire the subject knowledge in your area.

Note to guides: The role of subject knowledge is considered to be a part of (within) your research agenda.

The PhD continuum (student view of research)

Activity - Reflection Spot [2 minutes]

1. Recall your PhD student days, and interaction with your guide.
2. Think about - how much flexibility did you have during PhD?
3. Identify your PhD's position on the continuum.

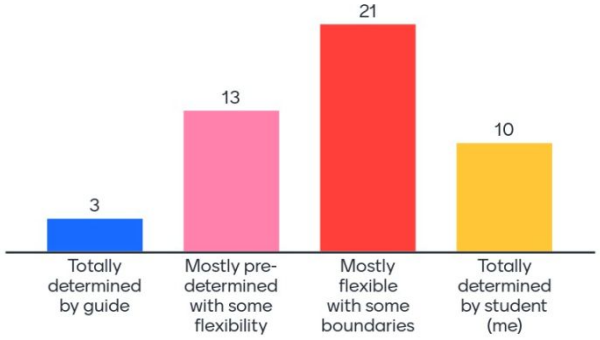
Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Activity - Reflection Spot - Responses in May 2024

Mentimeter

What was/is your PhD's position on the continuum?



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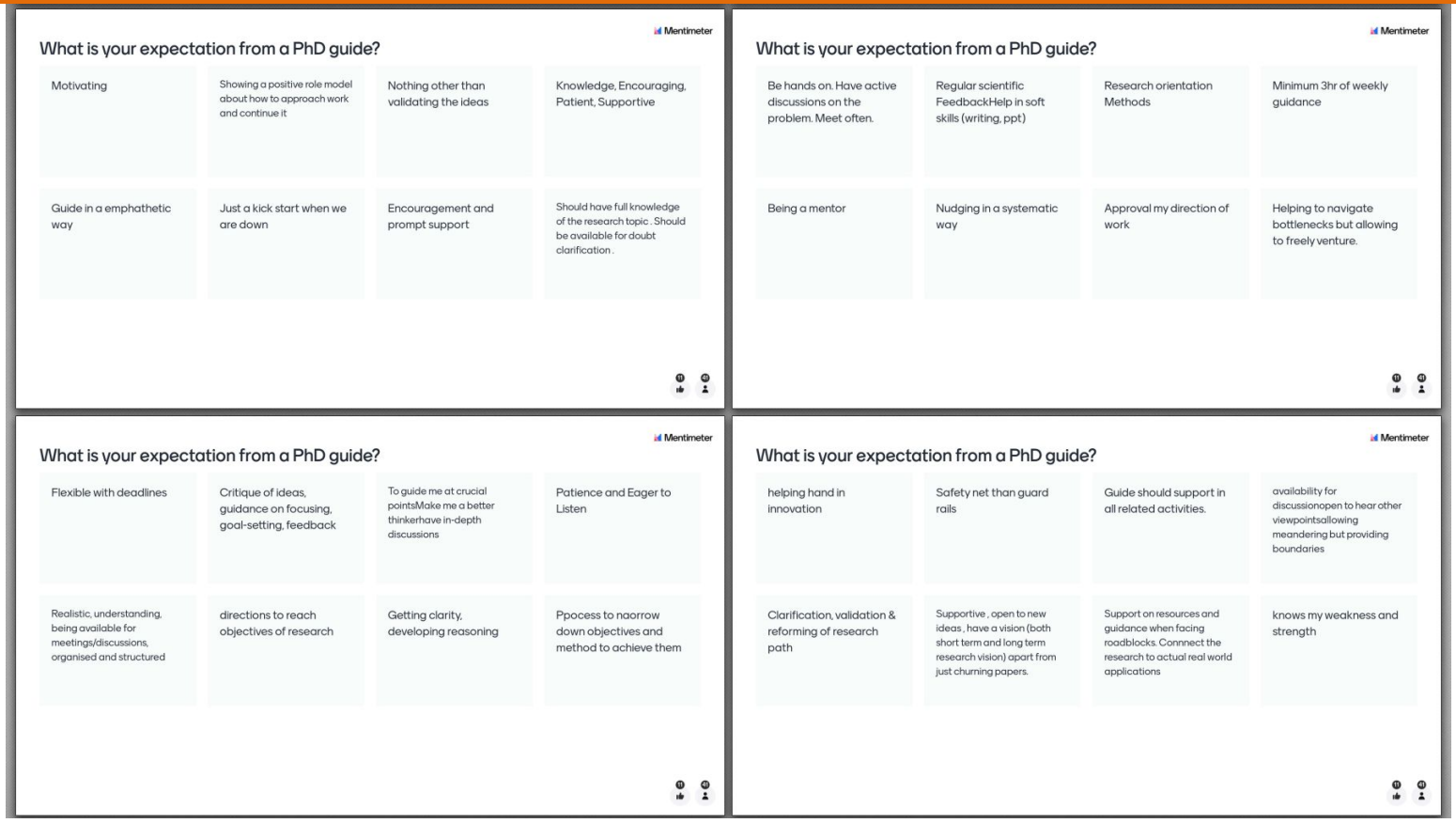
Activity - What is expected from a PhD guide? [3 minutes]

1. Recall your PhD student days.
2. Write down 1-2 key points about your expectation from a guide?

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

What is expected from a PhD guide?- Responses in May 2024



Some responses to 'what do you expect from a guide?'

Result of a prior survey (N = 15).

- freedom to explore multiple topics
- be open and flexible while deciding the research topic
- make me feel that I am in the driving seat of the Ph.D. vehicle
- provide opportunities to work on projects and give industry experience
- be aware of the students aim/career choice post Ph.D.
- being able to help the scholar engage with various failures and scaffold their emotional well-being in that growth phase
- a critical but positive and constructive research approach
- mirror which shows you your strengths and weaknesses

Reflection

Most student responses are about individual growth.

Recognition for research is a side-effect.

The view from a guide's perspective

Several criteria need to be considered

Own Goals:

(what do you want to do?
As a researcher? As a teacher?)

Student characteristics:

(what are the student's goals?
What are their strengths?
How much flexibility should
you provide?)

Institutional constraints:

(what does the institute want?
What are promotion criteria?)

Peer researchers:

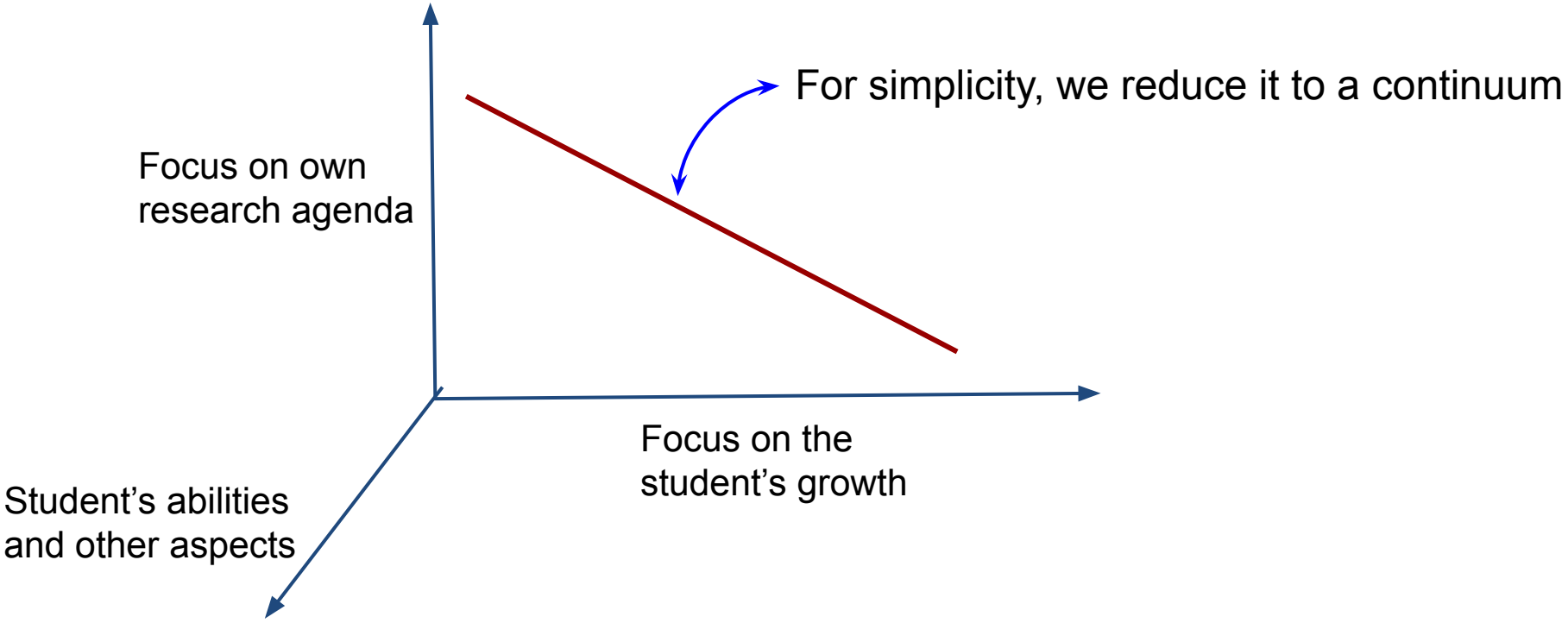
(what are others doing?
what is a current hot area?)

Implication

You may have to take different positions for different students at different times.

Multi-dimensional view (from guide's perspective)

So, the guide's position is a point in multi-dimensional space



The PhD continuum (from guide's perspective)

Primary focus is on own research agenda

Will look for a student with suitable skills

Researcher who also does teaching

No guide is likely to be at either extreme, but it is useful to look at the extremes and then move inwards

Primary focus is on student's growth

Will look for a research problem that is suitable for the student

Teacher who also does research

The PhD continuum (from guide's perspective)

Primary focus is on own research agenda

Somewhat flexible research agenda

Will significantly factor in student interest

Highly flexible research agenda

Will mostly work with ideas exciting to the student

Primary focus is on student's growth

Each point has its pros-cons. One is not "better" than another. Choose what works for you.

Example: Where am I on the continuum?

I have a highly flexible research agenda.

My primary focus is the student's learning and growth while going through the PhD process.

Analogy: Tour guide vs Expedition leader.

Example: What does it mean to have highly flexible research agenda?

In CSE, I had PhD students working on Software Architecture, Wireless Network Design and Mobile Protocol Optimization. I had some interest and prior expertise in these areas but I was not an established researcher in them. I developed my expertise along with the student.

Then I moved to EdTech. :-)

Example of “will work with ideas exciting to the student”: bilingual education, nurturing of tinkering, visual analytics, teacher training.

I accept the disadvantages of not aligning multiple student theses in the same direction.

What the pros-cons of my position on the continuum?

Pros

- A lot of learning happens, technical and non-technical. Both student and guide are generally happy with the outcome.
- Students stay motivated to work, learn many tangible and intangible skills, gain confidence in many respects, fearlessly venture into new areas, are unafraid to attempt hard problems. [Many alumni have validated these points].
- I get a kick out of seeing their growth as students and achievements as alumni.

Cons

- A strong and sustained long-term research output in one given area is unlikely. Both student and advisor pay a price for this deficiency.
- It is not efficient for metrics such as publications. Each student may use a different method, target different conferences and journals, depending on the problem.
- The student pays a price for not having a guide who is already well-known in their area of interest.

What the pros-cons of another position on the continuum?

Consider - Somewhat flexible research agenda:

Guide has a strong research agenda, with some flexibility.

Pros: Guide may already be established as a researcher in the area.
Student gets the benefit of guide's expertise and position in the community.

Cons: Student may have to fit their goals into the research agenda.
Student's choice, in terms of the research problem or direction, may reduce.

More details: Do the next activity

Activity - Where would you like to be as a PhD guide? [5 minutes]

1. Write down some points about where you would like to be on the continuum as a guide?
2. Analyze the pros-cons of your position.
3. You will need to submit your answer as part of Assignment 1.

- **[Peer Learning]**: Recommended activity
  - Anonymously, paste your response in this class-responses document.
  - After the session, look at pros-cons of a few responses.
  - Revise your answer, to submit in Assignment 1.

Five minutes break

Get up

Get a drink

Get some food

Type a question in the chat, if you have any

Session 3a

Guide-Student Alignment

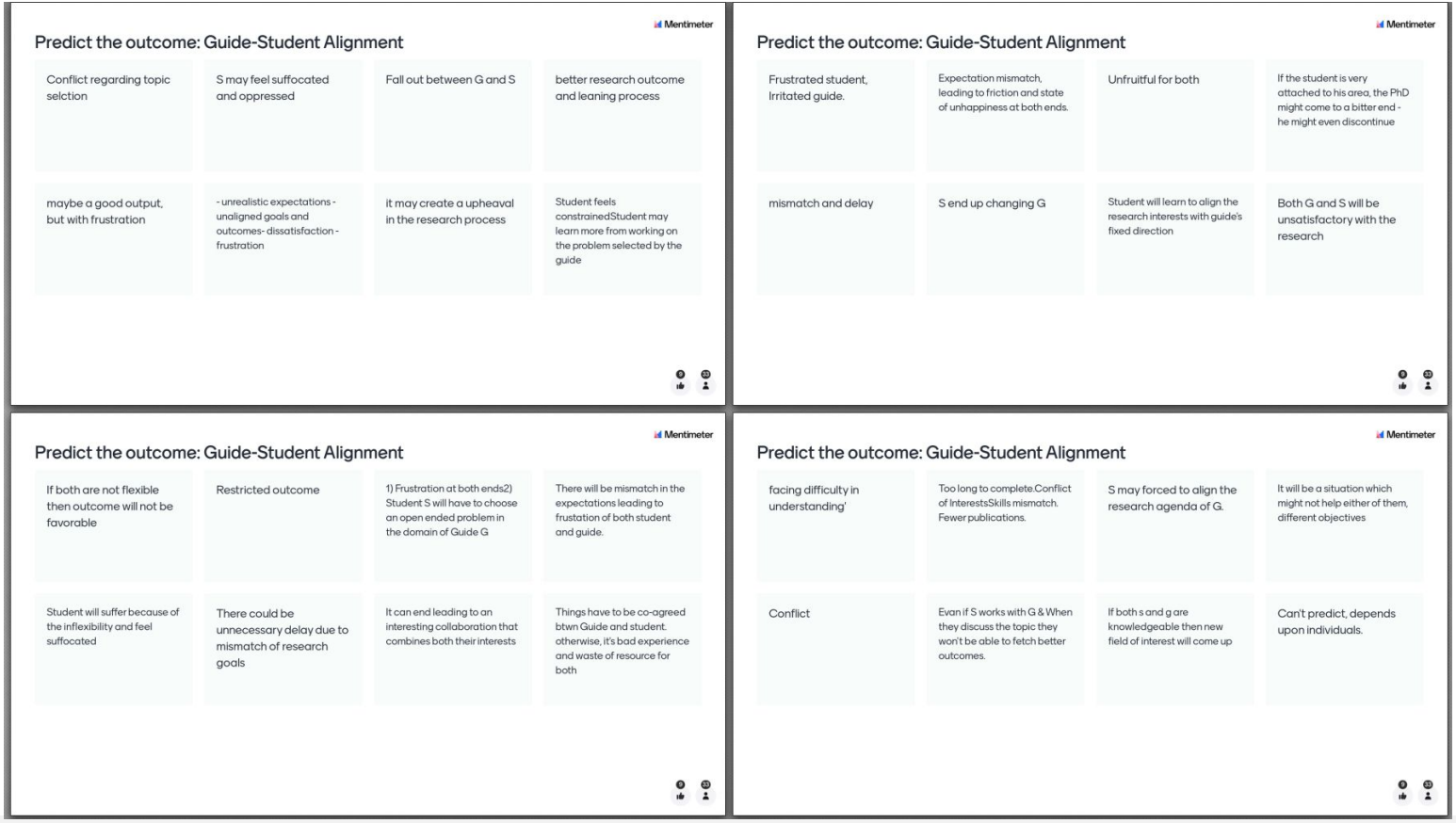
Activity - Predict the Outcome [2 minutes]

1. Recall the PhD continuum.
2. Consider guide G whose primary focus is on their own research agenda. Consider student S who wants to work on an open-ended problem of their own choice. Suppose S is paired with G for a PhD.
3. Predict one outcome of such a guide-student relationship.

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Activity - Predict the Outcome - Responses in May 2024



Recipe for success

Strong alignment between guide and student,
in terms of position on the continuum and temperament.

Success is defined in mutually acceptable terms - academic, personal, etc.

For example:

- A student with high prior knowledge, skills and motivation, joins a guide with a focused research agenda on a topic of mutual interest. The student is likely to learn a lot, do cutting-edge research and get known in the field. The guide is likely to directly benefit from the student's efforts.

- A student who wants to work on their own idea with high motivation, joins a guide with a highly flexible research agenda. The student is likely to learn a lot and become a strong independent thinker. The guide is likely to get indirect (hard-to-quantify) benefits from the student's efforts.

Recipe for failure

Misalignment between guide and student,
in terms of position on the continuum and temperament.

Imagine the guide being pulled by a magnet in a particular direction.
Imagine the student being pulled by their magnet in a different direction.

Lack of alignment is likely to lead to misery for one or both parties.

Recommendation:

To guide: Factor in the student's magnet, in any decision-making.

To student: Align with the guide's magnet, at least temporarily.

General strategy for alignment

Guide needs to do

- Determine the student's inclination towards open-ended vs well-defined research problem.
- Determine if the student has the skills to work as per their choice.
- Examine one's own ongoing research and see if there is a research problem suitable for the student.

Student needs to do

- Be aware of the guide's position on the continuum. Be aware of the pros-cons.
- Examine one's own interests and see if they align with the guide's position.
- Develop the skills required to work with the guide. Skills may be technical, such as use of some tools, or non-technical, such as working systematically.

One minute break

Rest your eyes

Move around

Drink some water

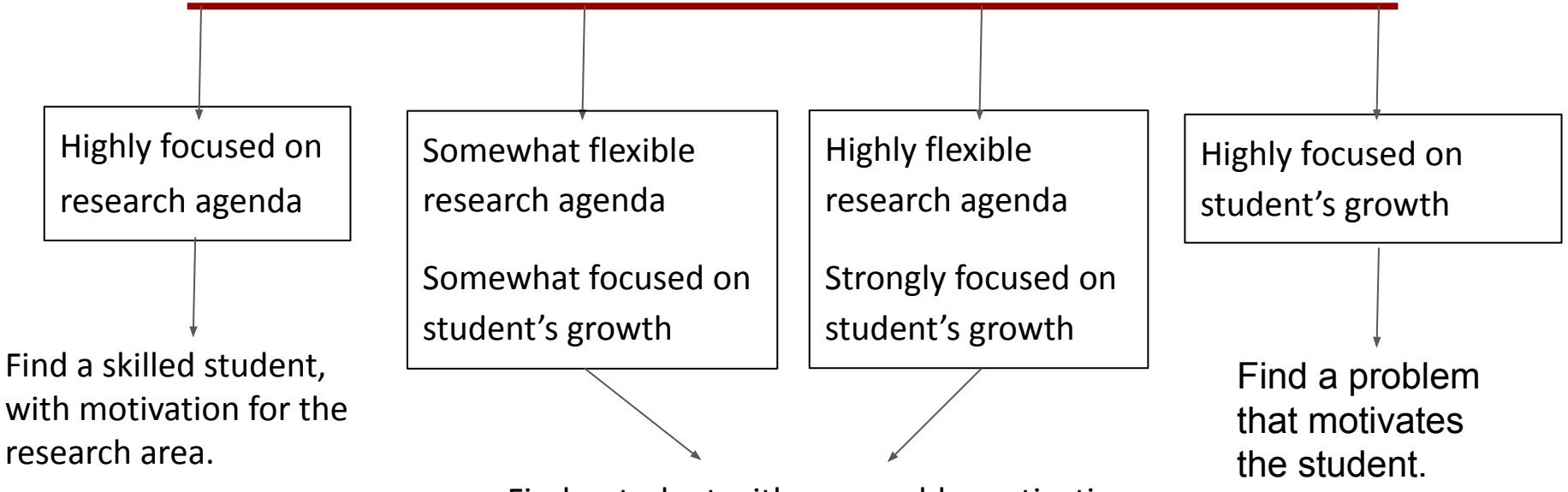
Type a question in the chat, if you have any

Session 3b

Students and Goals

What to look for in a prospective PhD student?

It depends on the guide's position on the continuum:



A matrix view of the continuum - for later reference

Focus on own research agenda	Focus on student's growth: Low	Medium	High
High	Find a skilled student suitable for doing work efficiently.	Find a skilled student with reasonable motivation for the area. Create opportunities for the student to learn.	Find a highly skilled student with high motivation for the research agenda. Find a hard problem for the student to work on.
Medium	Find a reasonably skilled student aligned with the research agenda.	Find a student with reasonable motivation. Find a problem that reasonably suits the student.	Find a student with some motivation for the research agenda. Find a suitable problem for the student to work on.
Low	X	Find a reasonably motivated student who has some match with your research interest	Find what motivates the student. Find a hard problem suitable to the student.

Example: What do I look for in a PhD student?

In addition to dept admission criteria, I look for:

- Passion to solve some educational “problem”.
- Energy to learn the skills required to approach the problem.
- Enthusiasm for multiple activities.

Why?

- I have a highly flexible research agenda.
- I enjoy working with such students.
- I also learn new topics / skills.

Examples from my students

- Passion to solve an educational problem:
  - Teaching vernacular medium students; Teacher training for Tanzania.
- Energy to learn the skills and tools:
  - Creation of animations using Blender 3D; Visual analytics.
- Enthusiasm for multiple activities:
  - Volunteering at NGOs; Writing blogs.

These are just some examples; All my students have all the three aspects above.

Activity - What would you look for in a PhD student? [5 minutes]

1. Write down some points for - what skills, abilities, characteristics that you would look for in a potential PhD student?
2. Examine if these are aligned with your position on the continuum.
3. You will need to submit your answer as part of Assignment 1.

- **[Peer Learning]**: Recommended activity
  - Anonymously, paste your response in this class-responses document.
  - After the session, look at a few other responses.
  - Revise your answer, to submit in Assignment 1.

The ‘ideal’ student for you

It is unlikely that you will find an ‘ideal’ fit with any student.

The purpose of this activity is not to evaluate any student against your ‘ideal’.

The purpose of this activity is for you to get clarity on your expectations. Reflect on:

- Which of these are reasonable? Which of these can you let go of?
- Which of these are easy for the student in front of you? Which are challenging?
- Which of these are aligned with the student’s own goals and expectations?
- What learning experiences should you design for the student?

Goals for a PhD student

What should the student achieve in their time with you?

There may be various answers such as:

- Technical expertise and skills
- Research publications and recognition
- Improved clarity of thought
- Become a better teacher
- …

The answers depend on your respective positions on the continuum.

Example: What are my goals for a PhD student?

Student should:

- Learn to think deeply and clearly
- Be able to anticipate details and complexity
  - Even when thinking about a topic at a high level
  - Even in areas that one is not an expert in
- Pick up new skills and tools (analysis/synthesis)
- Contribute to research in the area

This translates to specific goals for each student depending on the area, topic and interests.

Example: When do I say that my goals are met?

When a student:

- No longer needs help to identify and solve research problems.
- Has picked up some new research skills and is proficient in them.
- Can write a paper independently.
- Can contribute to discussions on other students' research.

When I don't fully understand the details of the student's work anymore but I see evidence of rigor and careful thought in it.

Student is now ready to graduate!

Activity - What would be your goals for a PhD student? [5 minutes]

1. Recall your PhD student days. What were your goals for a PhD?
2. Now, write down some points for - what goals would you have for your potential PhD student?
3. Examine if these are aligned with your position on the continuum.
4. You will need to submit your answer as part of Assignment 1.

- **[Peer Learning]**: Optional activity
  - Anonymously, paste your response in this class-responses document.
  - After the session, look at a few other goals mentioned.
  - Revise your answer, to submit in Assignment 1.

One minute break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 4

Summary and Assignment

Summary so far

- Be aware of your position on the PhD continuum.
- Be aware of your student's expectations from the PhD.
- Ensure that you and student are aligned, as much as possible.
- Ensure that the student is aware of your goals for their PhD.

The PhD should be an enriching experience for both of you

Guiding Master's students

- Most of the ideas for guiding a PhD student may be applied.
- Give more emphasis on developing skills, technical and others.
- Ensure that you and student are aligned, as much as possible.

- The risk may lower because the research problem can be simpler.
- The risk may be higher because of stricter time-constraints.

Assignment 1 [approx time required = 1 hour]

You have already done the following activities:

1. What is your definition of a PhD?
2. Where on the continuum would you like to be as a PhD guide?
3. What would you look for in a PhD student?
4. What are your goals for a PhD student?

Revise and submit your answers through this form.

[Option]: You can answer the above with respect to a Master's also, if that makes more sense for your situation.

Recommendations for your reflection

Once you have chosen your position on the continuum (matrix):

- Look for evidence for the pros. Ensure that you can accept the cons.
- Go beyond standard measurable metrics, such as research publications.

While you start working with a student:

- Identify what is a good fit *and* what is not a good fit for you.
- Go beyond technical skills.

- Identify what you want as the main outcomes and what are secondary.
- Identify metrics to know that your goals for the student have been met.

Other resources

Sadly, I have not read any literature on ‘How to guide PhD students’. However, here are some recommendations from Generative AI:

Out of the books listed, the following specifically offer advice to PhD supervisors on guiding their students:

- **The Unwritten Rules of PhD Research** by Gordor book delves into the unspoken aspects of PhD life, supervisors on navigating the social and emotional faced by their students.
- **Helping Doctoral Students Write** by Barbara Kam provides specific guidance for supervisors on supp writing process, from proposal development to the

YouTube

Here are some YouTube videos that offer guidance for PhD supervisors on how to guide their students:

- How does a PhD work? The FULL guide! by Andy Stapleton: This video provides a comprehensive overview of the PhD process, offering insights for both students and supervisors.
- How to improve your writing: A guide for PhD students and academics by James Hayton PhD: This video focuses on effective writing strategies, a crucial skill for PhD students and a key area where supervisors can provide guidance.
- The basic principles every PhD student needs to know by James Hayton PhD: This video covers essential principles for PhD success, which supervisors can emphasize and support their students in developing.

What next?

Day 1: (conceptual)

- The PhD continuum
- Guide-Student alignment
- Identifying your philosophy

- Live interaction 1
- Home Assignment 1

Download slides from this link

Day 2: (operational)

- The guiding process
- Some examples
- Common concerns

- Live interaction 2
- Home Assignment 2
  - Submit your plan for guiding a research student

Activity - Feedback to instructor [1 minute]

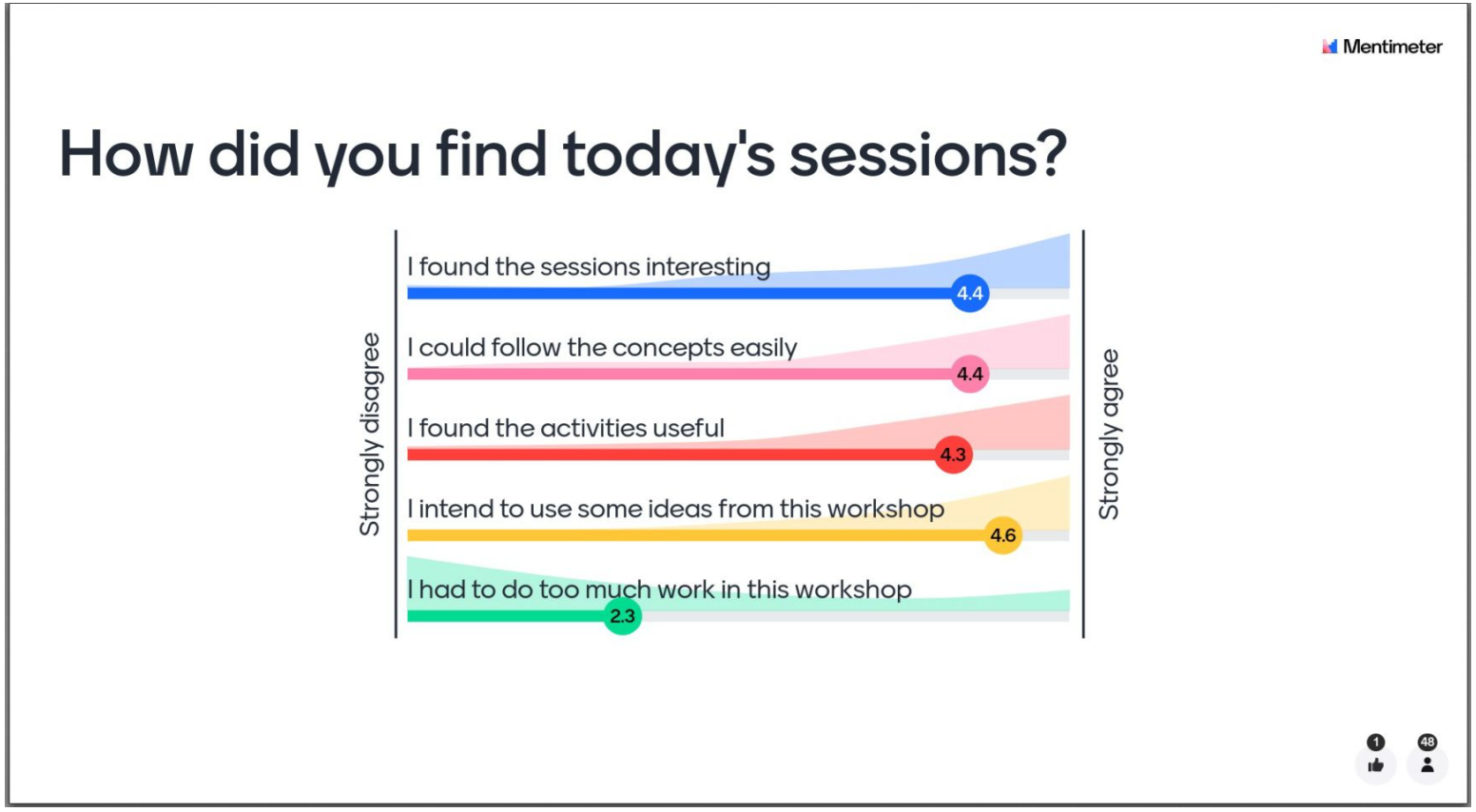
How did you find today's sessions?

Respond using Mentimeter

Scan this **QR code**

Quick recall: www.menti.com and code **8743 5685**

Feedback to instructor - Responses in May 2024



Session 5

Live Interaction (30 minutes)

Some questions from live interaction - 04 May 2024

- It seems alignment requires metacognitive discoveries from both guide and student's side. How long do you expect it to take to reach a satisfactory stage of alignment?
- What happens when the guide's position in the continuum changes or research area changes? From your path could you share some insights?
- How can we help students prepare for diverse career paths, including non-academic roles?
- How do you encourage innovation and independent thinking in students while ensuring they stay aligned with their research goals?
- What is the role of good command of fundamentals in the broader subject area for the students in completing one's PhD effectively and successfully?
- Is it good to know before hand whether PhD students want to join academics or industrial R&D, so that guide can mentor her/him based on the students' future goals?
- I find my teaching duties take up a lot of time. How do I ensure that I spend quality time for research and interaction with PhD students?

Thank you

End of Day 1 sessions

Guiding Postgraduate Research Students

Day 2 - sessions continued

Session 6

Recap and Proceed

Where have we reached in the workshop?

Day 1: (conceptual)

- What is a PhD?
- What is expected of a PhD guide?
- The PhD continuum
- Your position on the continuum
- Guide-Student alignment
- Goals for a PhD student

Download slides from this link

Day 2: (operational)

- The guiding process
- Some examples
- Common concerns

- Live interaction 2
- Home Assignment 2
  - Submit your plan for guiding a research student

Activity - Mentimeter

We will continue to use Mentimeter for interaction

Scan this **QR code**

OR - open a new tab for

www.menti.com

and type code **8743 5685**

Activity - Quick Recall [1 minute]

What were some key learnings / takeaways for you from Day 1?

You need not restrict your response to the Content (concepts discussed). Your takeaway could also be about Pedagogy (the design of activities) or Technology (the tools used).

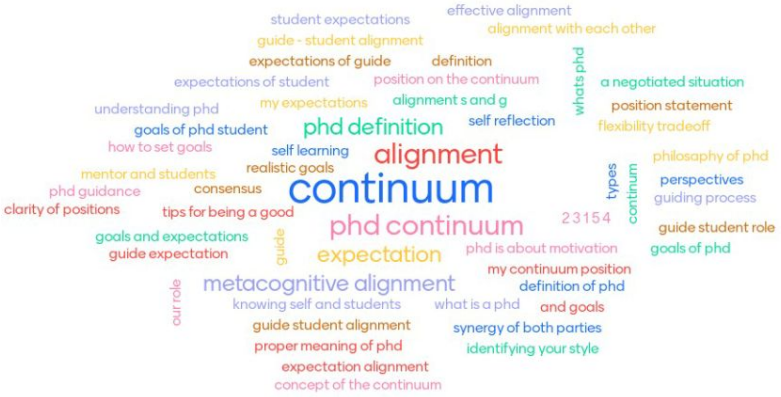
Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Activity - Quick Recall - Responses in May 2024

What were some key learnings for you from Day 1?

69 responses



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Before getting into new topics - another look back

- 90 people attended on Day 1 (out of 120 registrations).
- 60 people have submitted their Assignment 1 (as of now).
- 100 slides have been created in the class-responses deck:
  - 32 responses to ‘What is your definition of a PhD?’
  - 20 responses to ‘Where would you like to be on the continuum, as a guide?’
  - 20 responses to ‘What would you look for in a PhD student?’
  - 23 responses to ‘What are your goals for your PhD student?’
- Let us look at some responses

Some responses to 'What is a PhD?'

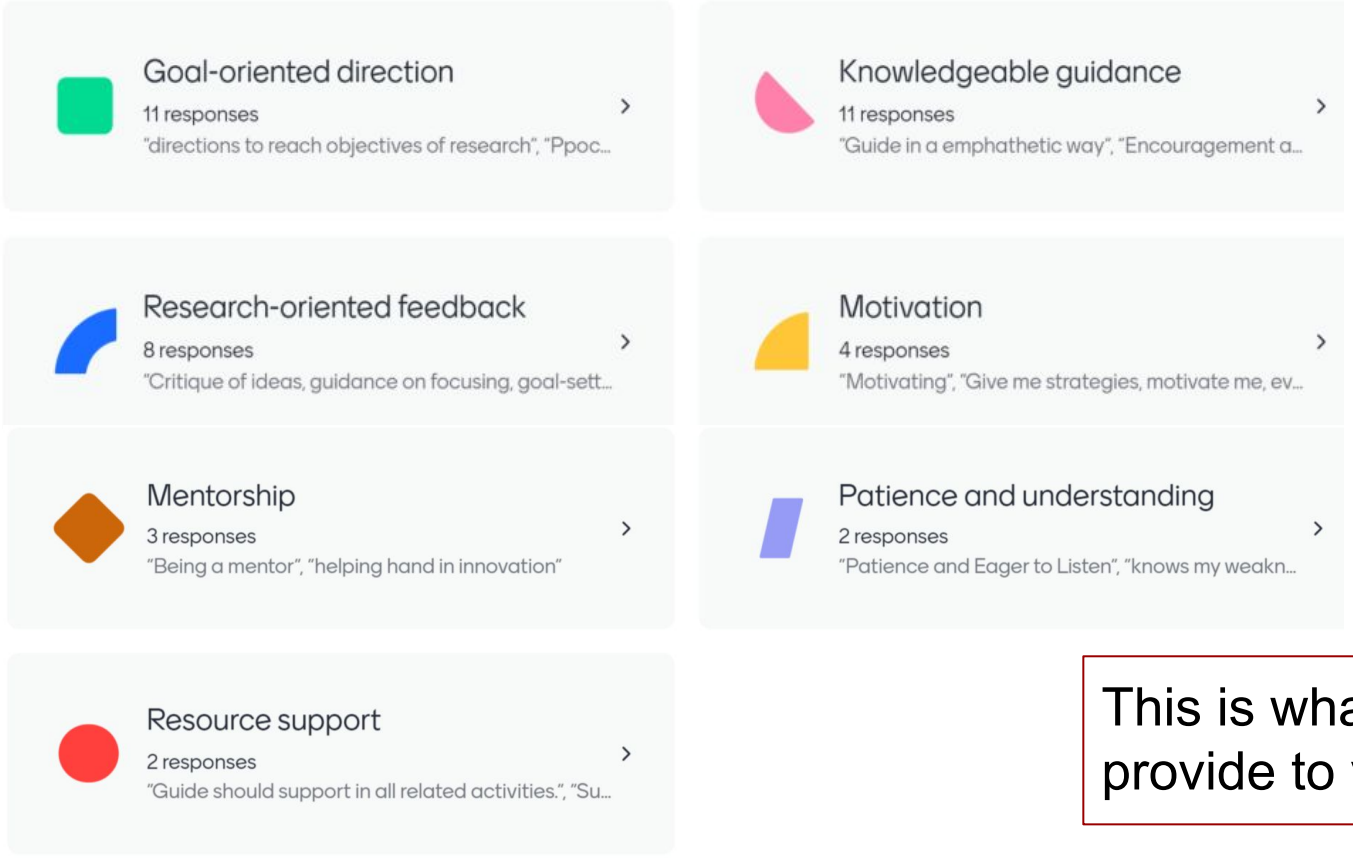
From Jack:
It's a journey of …

- Research
  - Guide and Student, together explore the unexplored path for finding a solution to some known problem(s)
- Learning
  - Guides → Learning… how to tackle and manage different types of students in terms of research aptitudes, personal attitudes, level of knowledge, way of working, etc
  - Students → Learning… how to acquire knowledge from an ocean of knowledge (guide), how to adjust with the lows and highs of life and manage deadlines, etc

From S3:

- Acquiring expertise in a specific topic (vertical, depth)
  - knowledge of the broader domain or interdisciplinary fields (horizontal, breadth)
  - Knowledge about the process of finding a solution from the problem, or a problem itself
- Transfer and applying the process to pursue other problems
- Provide sufficient evidence to the claims that your solution or method works
- Becoming a professional practitioner of the expertise acquired

Some responses to 'What is expected of a PhD guide?'



This is what you have to provide to your students!

Some responses to 'Where would you like to be on the continuum as a guide?'

From Jack:
Mostly fixed one but having little flexibility and a deeper approach
Pros:

- Can lead to a directed work. Can help complete PhD as per specific timeline
- Can develop expertise of student as well as faculty both

Cons:

- May not work with all students; Puts more pressure on students
- May need more time in deepening the research

From S3:
I would like to be on the slightly less flexible (option 2 from left) where students would have a limitation of my core expertise, but foster student's individual interest within the field

Pros:

- Ability to establish an identity for my cohort in a specific set of expertise
- Possible strong network

Cons:

- Difficult to unlearn and expand through different lenses in the field
- Getting typecast, repetitive

Some responses to ‘Where would you like to be on the continuum as a guide?’

From Anonymous:

Maybe be on the level of a slightly pre-defined research agenda but with open cases of flexibility. This will depend on factors such as if the student already has some inclination towards some research area or wants to explore within a territory that I am familiar with (and hence chosen me as a guide).

Pros

- Of Course because I will have expertise and hold of the community, I may guide the student better, help him/her progress and go deeper into research.
- Have in-depth and useful discussions more frequently, identifying and solving problems from a landscape that we both are familiar with.
- Better alignment in ideologies, research and teaching approaches.

Cons

- This may limit student’s creativity and limit possible “scientific revolutions”.
- Not sure if this is what the main philosophy of Ph.D. means.
- Feeling of chained, from a student’s perspectives. He/she may carefully trod on new avenues and may have less confidence while tackling unknown or unfamiliar problems.

Some responses to 'What would you look for in a PhD student?'

From Jack:

Previous work done and it's quality
Interests
Research Aptitude
Ability to question and analyze

From S3:

Passion for Research
Critical Thinking Skills
Analytical and Problem-Solving Skills
Effective Communication

From Anonymous:

As a Phd. supervisor, I will look at students who are

- Motivated intrinsically towards research in general
- Has shown some level of persistence and an optimistic outlook towards any problem-solving
- Have done some background research/look-up on what research I or my research group does
- Has participated in some extensions of their interests(through workshops, webinars, etc)
- Has some related experience/skills(need not be big) to my larger research community

From Anonymous:

- Having good domain knowledge.
- Flexible enough to change his/ her area of interest or approach as per the guide's instructions
- Ready to learn enthusiastically new tools/ techniques.
- Highly motivated and energetic to participate in the common area of interest that of the guide and his/her own

Some responses to ‘What are your goals for your PhD student?’

From Anonymous:

I hope my students to achieve the following at the conclusion of their PhDs:

- publish a paper alone.
- give in-depth feedback on others’ papers in the same area.
- ask a relevant and decent question in an academic talk, regardless of its topic and area.
- understand and practice a complicated and well-thought-out research process.
- teach an introductory course in linguistics/cognitive science.
- collaborate with colleagues.

From Anonymous:

Is able to think as a researcher
Is able to analyze the research papers and identify gaps
Is able to do comparative analysis of their work using various approaches.
Is able to write research papers
Is able to defend her/his work

Importance of Peer Learning

- There are many good points in the class-responses slides.
- I have just picked the first few responses that caught my attention.

- Do add your own answers, if you have not already done so.
- Do go through the responses of others.

- You may find additional points for your own position.
- You may find thought-provoking points different from your own.

Recommendation: Copy ideas that you like into the 'notes section' of your slide. :-)

One minute break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 7a

Guiding Process - Taking off

Activity - Getting started with a student [1 minute]

You have identified your research position and goals for a student.

You have also got a student aligned with your position and goals.

What next?

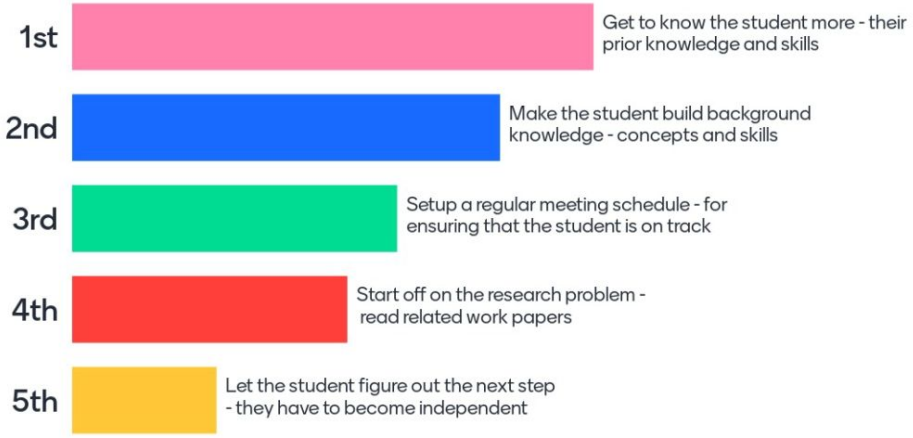
Rank the options given

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Getting started with a student - Responses in May 2024

Getting started with a PhD student



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Getting started with a PhD student

There is no single correct answer.

Try different options in the initial few weeks.

Choose whatever works for that student.

Once again, guide-student alignment is important.

The guide may have a template that has worked before.

Be aware that it may not work for the current student.

Recommendation: Let the student know **why** you are suggesting some action, not just what the student should do. Let the student participate in decision making.

Example: How do I get started with a student?

I ask a lot of seemingly irrelevant questions, such as:

- What do you like to do? What have you done that you have found interesting?
- What do you want to become? What is your background?

Why?

- It helps me to determine what drives them - what are they passionate about, what is their skill-level, what is their ambition, their motivation to reach it.
- It helps me evaluate potential thesis directions that might suit the student.

Recommendation: Get to know your students as persons, beyond entities in an academic setting. If you know what drives them, you will be able to guide them better.

Example: What do I do upon starting off with a student?

I do:

- Spend a lot of time thinking on my own about the topic.
- I have my own detailed notes on where I think the Ph.D. can go.
- I include alternate directions and branching and backtracking points.
- I consider the student's strengths/ weaknesses and factor it into the plan.

I don't:

- Wait for the student to initiate discussions.
- Rely on the student's notes to accurately reflect the discussions.
- Expect my memory to be accurate and detailed after a few months.

Side point: Why do I have my own notes?

- The exact words you use while planning an approach are important for recall.
- A student in the initial years may write in their own words, which may work.
- You don't want to listen to yourself, again and again (audio recordings).
- A summary of the audio recording using some Gen AI tool, may not work.
- You want everything in one place to backtrack the thought process.

Earlier, I used to share these plans gradually with the student as they mature.

Nowadays, I just grab the student's notebook and write in it. :-)

Recommendation: Maintain your own planning notes for a student's research work, in whatever form that works for you.

Activity - Concerns during initial stage [1 minute]

You have got started with your student.

What should be your concerns at this stage?

Rank the options given

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Concerns during initial stage - Responses in May 2024

What would be your concerns in the initial stage of your student's PhD?

10 42

Example: What are my main concerns at the initial stage?

Initial (Year 1-2):

- Are we running in the right direction? Have we found a suitable problem?
- Have we built enough background? Done due diligence to related work?
- Have we learned the necessary skills/ tools to solve the problem?
- Will the solution idea lead to something novel, substantial?

- How to provide opportunities for the student to get familiar with research?
- Has the student done some minor projects other than the proposed thesis?

Recommendation: Let the student explore their interests within the agreed scope. Don't worry too much about how explorations will fit into their thesis at this stage.

Example: Some stories

- S1 had a keen interest in Photography and visuals. There was some floundering in initial years, exploring teaching-learning of graphicacy. Finally the thesis became about building a tool for visual learning analytics of educational data.

- S2 had a keen interest in CS education. One year was spent in exploring how to teach logic, another was spent in exploring teaching research methods. Finally the thesis became on teaching-learning of software design verification.

- S3 had a keen interest in Tinkering. The initial years went into exploring design, makerspaces and related pedagogy. Finally the thesis became about nurturing tinkering in engineering design.

Point: It is ok to take some time. Any learning is useful for student, in one way or another.

Activity - What would be your plan for a PhD student? [5 minutes]

Consider an area of your research interest. Assume that you have a PhD student who is aligned with your research agenda. Consider the points discussed in this session.

- What would be your tentative plan for the student's first year?
  - Be as specific as you can. For example: Which journals will you ask the student to browse? What research groups will they look at?
- You will need to submit your answer as part of Assignment 2.

If you wish, you may share your answer in class-responses, for peer-learning.

Two minutes break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 7b

Guiding Process - Cruising

Activity - Concerns during middle stage [1 minute]

Your student is progressing along on the research towards a PhD.

What should be your concerns at this stage?

Rank the options given

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Concerns during middle stage - Responses from May 2024

What would be your concerns during the middle stage of your student's PhD?

7 36

Example: What are my main concerns in the middle stage?

Middle (Year 3-4):

- Are the details working out as anticipated / planned?
- Is there sufficient rigor / depth? Is there sufficient volume / breadth?
- Is there sufficient progress? Is the student on track?
- Can I see the finish line for the PhD, however distant?

- How to provide opportunities for the student to do useful Internships?
- Has the student got a plan for what to do after the PhD?

Recommendation: Don’t continue in exploration mode. Pick a reasonable research problem that may work for a thesis. Focus on details. Get thesis related publications.

Example: What do I do to speed up a student's progress?

I do:

- Create templates for standard tasks, such as planning a study.
- Connect them to relevant senior students or alumni.
- Encourage them to discuss with their peers.

I don't:

- Assume that the student will be able to operationalize high-level instructions.
- Insist that progress should happen as per my expectations.

Example: What do I do to keep a student on track?

I do:

- Discuss goals, milestones regularly.
- Have weekly meetings, however small the progress.
- Ask them to make ppts / write documents, however sparse.
- Focus more on what they have done right, than on the lapses.

I don't:

- Wait for the student to initiate meeting requests.
- Micro-manage with respect to timelines and deliverables.

Side point: What to do if a student is not on track?

- It is useful to assess if there are other factors at play - constraints, health, etc.
- It is not useful to judge / label the student as “bad”, or “slow”.

I often say: “It’s ok if you haven’t made much progress. Come for a meeting, let’s talk.”

Why?

Students may feel that you expect to see ‘significant progress’ in each meeting. This is a trap. They get into a spiral of ‘I will do some more work and meet next week’.

Recommendation: The more the time passes without tangible progress, the more their stress increases. You have to periodically reset this and revise the plan.

Example: Some stories

- S4 had everything going - problem defined, solution done - but would not stay on track. I started with being understanding and cajoling, and went up to showing consequences and being harsh. Nothing worked. Eventually I got S4's peers to do an 'intervention' and kept the option open for the student to resume. The thesis got done, with more time.

- S5 was working as a college teacher and unable to make regular progress as per plan, despite a sincere approach. I asked 'what is going on in other aspects of your life?' and discovered that their college load has become too much. We revised the PhD plan and made peace with delayed graduation. The thesis got done, with more time.

- S6 had a tendency to volunteer for too many secondary projects. I had to discuss PhD milestones and implications regularly, but gently. The thesis got done, on time.

Point: Acknowledge that students have their own lives, own constraints. Don't put undue pressure on them to somehow meet your timelines.

Activity - What strategies would you use with your PhD student? [5 minutes]

Your student is progressing along on the research towards a PhD. You are aware of the concerns during the middle stage of guiding a PhD.

- What would be your broad strategy during the student's third year?
  - Note: Try to anticipate specific scenarios in your research area.
- You will need to submit your answer as part of Assignment 2.

If you wish, you may share your answer in class-responses, for peer-learning.

Two minutes break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 7c

Guiding Process - Landing

Activity - Concerns during final stage [1 minute]

Your student is getting close to finishing the work required for a PhD.

What should be your concerns at this stage?

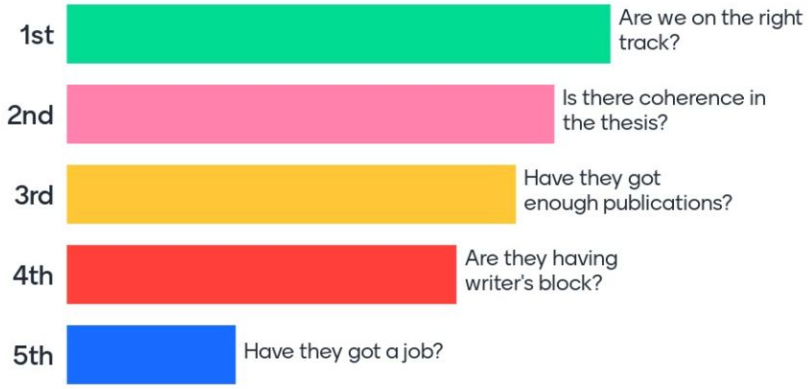
Rank the options given

Respond using Mentimeter

Quick recall: www.menti.com and code **8743 5685**

Activity - Concerns during final stage - Responses

What would be your concerns in the final stages of your student's PhD?



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Example: What are my main concerns at the final stage?

Final (Year 5+):

- Is the thesis story coherent?
- Is the writing coherent?
- Are there sufficient publications?
- What next?

Recommendation: Writing the thesis and thinking about the future is stressful. Recognize when the student is in the procrastination trap. Help them deal with it. Teach them to compartmentalize.

Example: Some stories

- S7 went towards writing a ‘magnum opus’ thesis, and had difficulty synthesizing all their work into a coherent story. I started deleting work from the thesis, till their story had a logical flow. The thesis got done. Some papers are yet to be written!

- S8 got carried away with post-PhD options. They started working on new projects. I had to keep reminding - finish your thesis first, else it will take forever. The thesis got done, with a little more time, with some compromises on the writing.

- S9 got disillusioned thinking about ‘why bother with all this?’ I had to have philosophical discussions, to bring their focus back to - finish your thesis first, other stuff can wait. The thesis got done, eventually.

Point: Students concerns and anxieties are real. Share your own strategies to maintain your perspective, manage your anxiety, and overcome difficulty. Show your human side.

Activity - How would you ensure that your student graudates? [5 minutes]

Your student is getting close to finishing the work required for a PhD. You are aware of the concerns during the final stage of guiding a PhD.

- What would be your approach during the student's fifth year?
  - Note: Anticipate various scenarios specific to your own research. For example: What were your anxieties? What were your peer's difficulties? How will you help the student cope with similar anxieties and difficulties?
- You will need to submit your answer as part of Assignment 2.

If you wish, you may share your answer in class-responses, for peer-learning.

Five minutes break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 8

Some Concerns

Question: What to do when you are stuck, as a guide?

DO:

- Talk to colleagues, get feedback/ suggestions on the plan.
- Re-evaluate whether it is ok to flounder for some time or to change the plan.

DON'T:

- Wait till the committee / reviewers raise the alarm.
- Transmit your uncertainty to the student.

Example: I have sought discussion with colleagues on what research design to use, what data to collect and how to analyze it. I have also consulted senior students and alumni who have knowledge on some specific topic necessary for a current student.

Why?

Since I work on topics exciting to the student, I may not be an expert researcher on that topic. I don't want the student pay the price for my ignorance.

Question: What about publications?

DO:

- Plan them systematically. Getting early feedback on the research is important.
- Identify suitable conferences and journals for the student to target, early enough.
- Write in a phased manner. One idea per paper, in the right order.

DON'T:

- Follow an ad hoc approach or send a paper simply because of some deadline.
- Leave publications for the last phase of the PhD.

Why?: There are many reasons, such as institutional requirements and research visibility.

My main reason: Writing brings clarity. This is part of the student's training to be a thinker.

Note: When you are not an expert in the specific area of the student' interest, identifying the right forums and writing for that audience takes time. Using a trial-and-error method, has only limited success.

Question: What about secondary projects?

DO:

- Encourage the student to work on some secondary projects, other than thesis related.
- Encourage the student to publish such work. These are evidence of breadth and research competence.
- Discuss the pros-cons of secondary projects with the student.

DON'T:

- Let the student focus too much on secondary projects.
- Attempt to include all secondary projects as part of the thesis work.

Examples:

- One secondary research project led towards a thesis direction for another student.
- Another secondary project led to a book chapter, establishing the student as expert in a new area.
- Secondary projects, such as conference organization, have intangible benefits.

Some more questions from previous participants

Q1: How do you resist telling the student what to do when they are stuck?

My ans: I use a socratic questioning style to help the student realize the way forward.

Q2: What habits from your own approach to doing a PhD do you carry into guidance?

My ans: I used to maintain detailed notes and plans during my own PhD. I carried this forward to all my students. Different students adopt it in different ways.

Q3: Should I have a co-guide?

My ans: I sometimes have co-guides, for various reasons. The points to consider are: What is their complementary expertise for the student's research? What is their commitment? What's in it for them? What's in it for you? How will the student benefit from having a co-guide?

One minute break

Rest your eyes

Move around

Drink some water

Type a question in the chat, if you have any

Session 9

Conclusion

Assignment 2 [approx time required = 1 hour]

You have already done the following activities:

1. What would be your plan for a PhD student?
2. What strategies would you use with your student?
3. How would you ensure that your student graduates?

Revise and submit your answers through this form.

[Option]: You can answer the above with respect to a Master's also, if that makes more sense for your situation.

What all have we discussed

Day 1: (conceptual)

- The PhD continuum
- Guide-Student alignment
- Identifying your philosophy

- Live interaction 1
- Home Assignment 1

Download slides: Link for Day1

Day 2: (operational)

- The guiding process
- Some examples
- Common concerns

- Live interaction 2
- Home Assignment 2

Download slides: Link for Day2

Personal stuff: Summary of beliefs that I hold

1. I am a teacher who also does research
   - I am not a researcher who also teaches

2. Guiding PhD students is a sacred responsibility
   - I must do my best to facilitate the student's growth in their intended directions

3. The delta of growth for the student matters more than the quantum of the research contribution
   - I accept the cons of my position on the continuum

Personal stuff: Summary of principles that I follow

1. Know your student	2. Student first, other work later	3. Guide proactively, spend time with student
What drives them? Where do they want to go? What are their strengths? What other strengths do they need to build in order to get where they want to go? What are their weakness that they must address?	Ph.D. students have the highest priority on my time; They can walk in anytime, to discuss any topic, for any duration. If I am busy I will give the nearest available slot.	What does this student need to learn? What the student should do? How to make it happen? How much scaffolding to provide? When to intervene? What are alternatives?
Why? - It helps me to plan learning experiences that help them towards their goal, beyond the scope of the Ph.D. topic also.	**Why?** - I am a teacher. I get satisfaction from seeing the growth of an individual student.	**Why?** - I take responsibility for the student's growth. I have to do my due diligence for it.

Personal stuff: Summary of actions that I do

1. Maintain own notes, plans, alternatives and timelines, for the thesis.
2. Talk to colleagues frequently, to get feedback on the thesis.
3. Involve the student in decision-making.
4. Have regular/weekly meetings with the student.
5. Keep going till there are a few Aha moments.
   - Aha - recognize if some idea has merit wrt novelty of - Problem? Solution? Findings?
6. Continue to think and plan till I can see the finish line.

If you are not losing sleep over your student's thesis, you are not doing your job. :-)

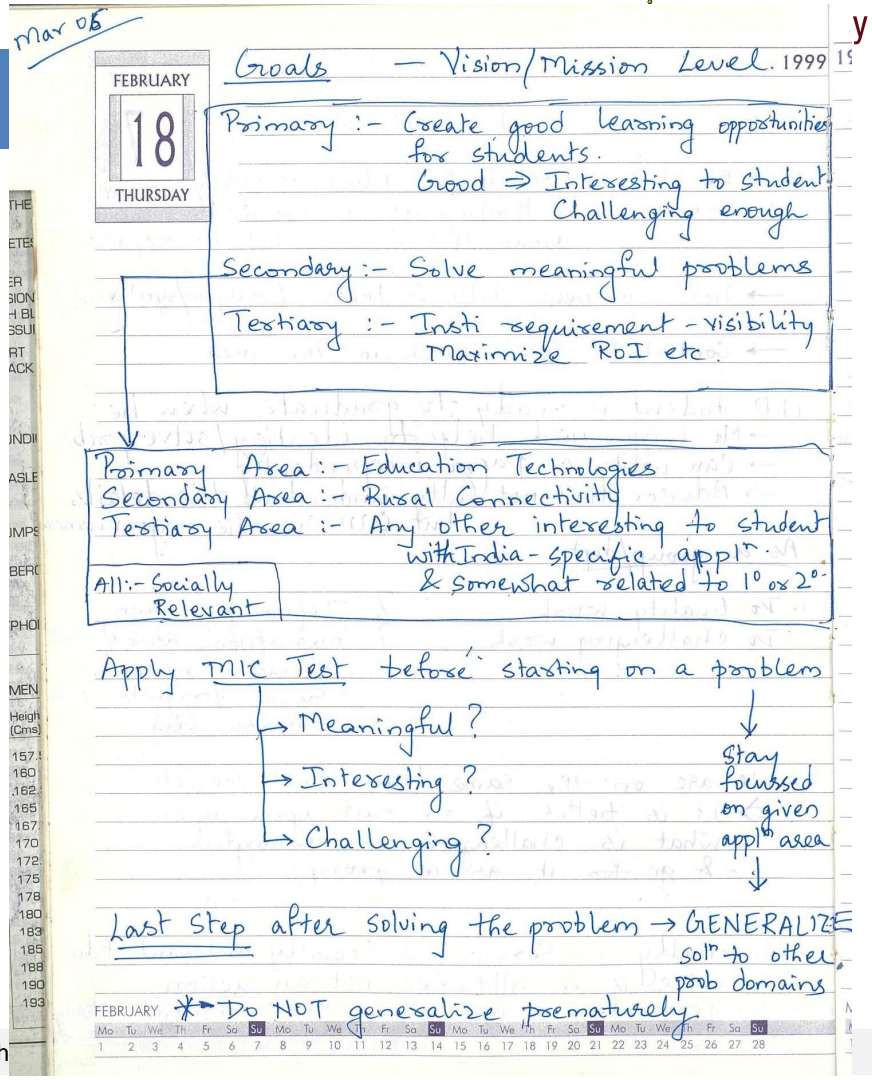
Personal stuff: My research position

This is a page from my journal, from 20 years ago.

When I joined IITB in 1999, I started research in mobile applications and wireless networking.

In 2001, IITB started a network based distance education. I chose this as the context for my networking research.

In 2005, I started moving from education as an application area of networking research to technology-enhanced-education research. At this time, I wrote the position statement shown here.



Personal stuff: Disclaimers

These answers are *my* personal philosophy and approach.

- I am not advocating that you adopt them.
- I am presenting them to you as example answers to the questions.

Other faculty (including you) may disagree with my position.

- That is fine. There are multiple approaches, each with its own pros-cons.
- Do what works for you.

I am not making any claims of novelty, effectiveness, efficiency, about my approach.

- This is what works for me.

Activity - Feedback to instructor [1 minute]

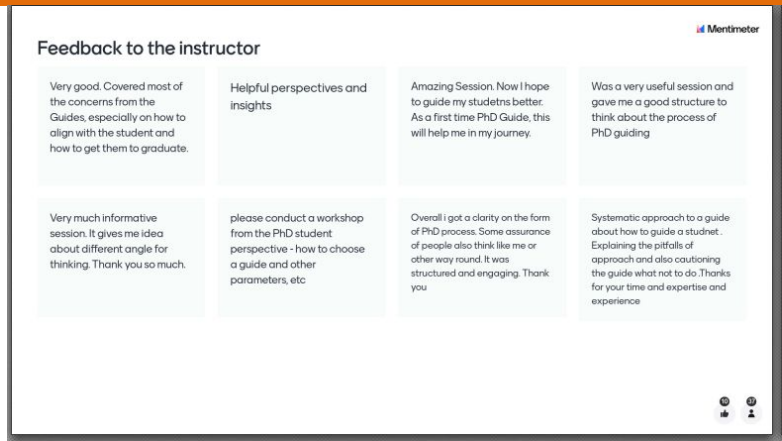
How did you find today's sessions?

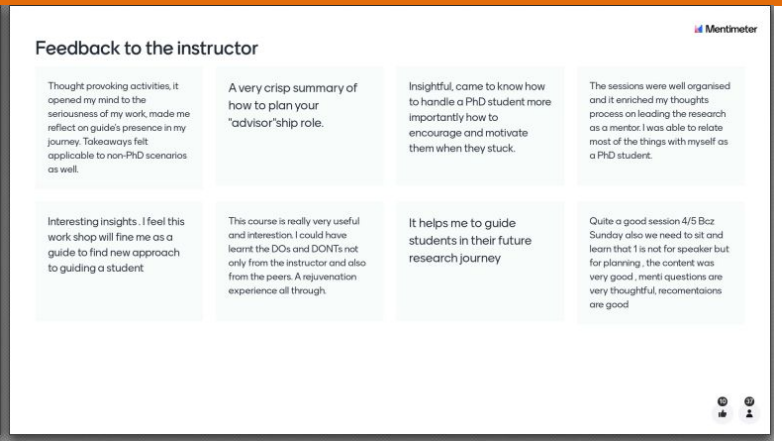
Respond using Mentimeter

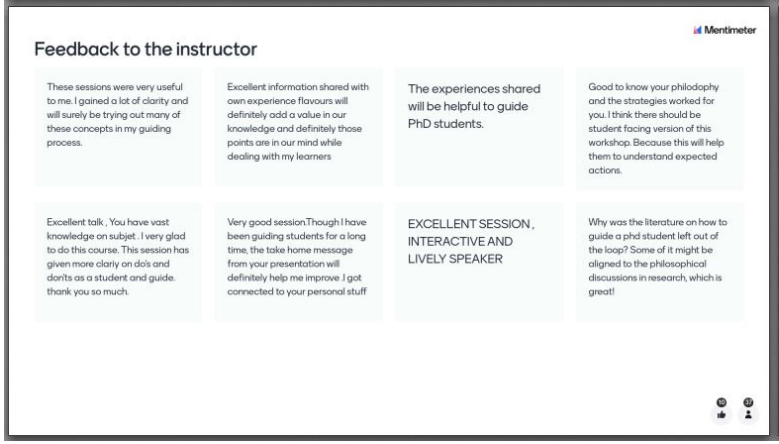
Scan this **QR code**

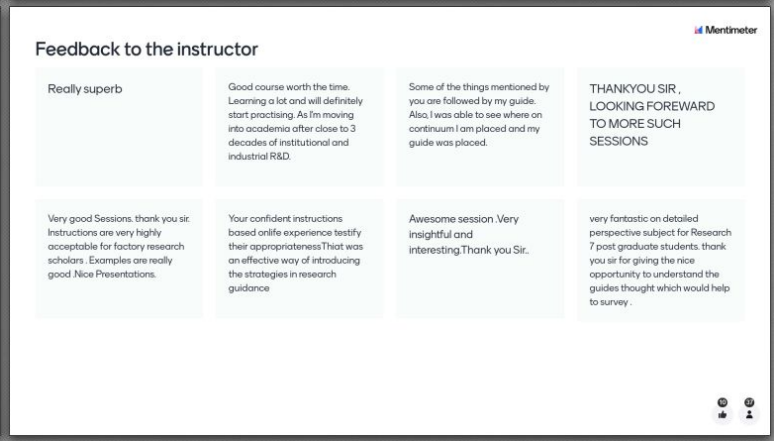
Quick recall: www.menti.com and code **8743 5685**

Feedback to instructor - Responses in May 2024









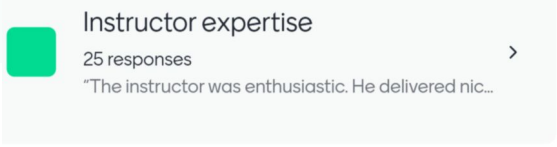
Feedback to instructor - Responses in May 2024

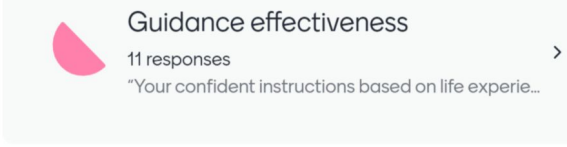
As a PhD student, I got to know how to build synergy with guide.

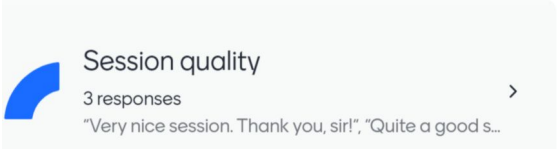
The session was very interesting and useful with lot of tips regarding how to guide a student, what to do and what not to do. Thanks for such a valuable inputs through your experience.

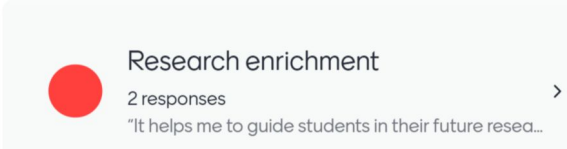
Found very effective guidance to guide the research students in future

Insightful sessions. This would surely help me plan my own strategies for guiding my students.









Session 10

Live Interaction (30 minutes)

Some questions from live interaction - 05 May 2024

- How do you scope a PhD? Is it motivated by what are the parameters to offer the PhD degree or more inclined toward the student's satisfaction, since it is flexible?
- As a guide, how do I team up M.Tech. and Ph.D. in a single research project? I feel this may accelerate Ph.D. and help Ph.D. student learn to work in team, and this also helps M.Tech. learn?
- Sometimes the PhD students finds out that the work that he is pursuing has got published from some other lab/university before she/he submits his thesis. The student goes in a panic mode. How should the guide handle such a situation?
- What is the role of Ph.D. student as a Teaching assistant? Which subject should I appoint them as a TA for their growth? Does it not make sense to give TA duty that benefits candidate's Ph.D.?
- What is your suggestion on the candidates who have started the research on a later stage after substantial work experience. How to cope with peer pressure?
- Different journals take different time for reviewing the articles. If it takes too much time to review, it would delay students progress. what could be acceptable / healthy review time by the journal?

Extra slides

Added after the workshop as notes

Some responses to 'What would be your initial plan for a PhD student?'

From QT:

Tentative Plan for 1st Year

- List background skills necessary for Quantum Technology topic research and plan to acquire skills (h/w, s/w, characterisation, etc.,)
- List all groups working on the topic and journals and conference where papers published (use various methods- PRISMA). Use tools like sciteai.
- Comprehensive landscaping on patents and papers in the field
- Make a plan- revise- document changes; Weekly meeting.

From S3:

Technical stuff

- I'd first get to know their learning background and coursework interests
- Provided that the student is inclined in CSED Research, I could share ACM SIGCSE, IEEE TCLT, APSCE SIGCSE publications or members' most cited papers
- A few base papers that shaped my research work, since my plan is to go the less flexible way

Non-technical

I will try to have off-campus engagement, as much as possible
An outing, some hobby day, food crawls, etc for getting to know the student's cultural and personal background to get to know their constraints

Allowing digressions to a certain degree, find out what academic reading they do apart from the suggested ones.. It may happen that the student would want to read something else than my recommendation or expectations. Yet to figure out what to do then.

Some responses to 'What would be your initial plan for a PhD student?'

From Anonymous:

-I would give a few starting papers which are well-written and give some initial flavor of a few different topics. The student can read the papers and present. It will also help me understand their strengths and their interests.

-Based on these presentations, I can narrow down a subtopic for the student to further read things on.

-The first year will essentially be a learning and redirecting phase where hopefully we narrow down to a problem area/set of problems to work on.

-Parallely of course, the courses taken by the student should complement this learning.

From Anonymous:

Month-1: @ Getting known the likings and passion of the student; @ Assessing the real interest and sustenance levels of the student; @ Assessing fundamentals of the student in the broader area of the research

Month-2: @ Month wise plan to brush up basics of the subject; @ Literature to go through; @ discussing and making notes of the literature; @ identifying areas unexplored; @ finding a challenging problem and start with

Month-3 to Month-12: Reading related papers

Some responses to 'What would be your strategies for middle stage?'

From Anonymous:

- During the middle stage of the Ph.D., as a supervisor my main focus would be to look at the details and the direction more critically.
- Since my expertise field is highly conceptual and interpretive, the student might get stuck on analysing and positioning their work(or getting peer acceptance at journals or conferences. During this time, we would closely look at the literature treasure built, involve frequent experts from the field and attempt to position the field and then take aim.
- Since the middle stage of Ph.D. hits like a plateau, the student may feel that they are not progressing, and each progress lap may feel longer and 'stretchier'. In this case, I would discuss with the student and reflect how far he/she has come in understanding and refining the problem from their initial years.
- Other issue that may appear during this time is that the solution or findings doesn't make sense or seem novel enough to the student/to me. In this case, again we critically look at prior work and find meaningful positions. Even if the findings may seem obvious, we shall take critical perspectives and consult other experts with our claims.
- One important thing at this stage would be to keep writing. Journals may take time, so a simultaneous submission to conference may act as useful motivation to move forward.
    - Weekly writing about the project(no matter how trivial it may seem)

Some responses to 'What would be your strategies for middle stage?'

From JJ:

1) I would ask them to analyze how much part of each objectives are complete and how much are incomplete.
2) I would ask them to make a rough outline of thesis – maybe one page content
3) I would encourage them to present their work at the inter/national conferences relevant to the field of research to boost their confidence.
4) If I find any of the objectives completed, I would ask student to write first draft of manuscript themselves.
5) For the incomplete objectives, I would setup a timeline for students to finish it within a stipulated period of time with some relaxation.
6) Since I have had good alignment and comfort with student, I would also try to celebrate small outcomes/achievements by students through lunch/dinner parties, and also ask about student's personal/family welfare.

Some responses to 'How will you ensure that the student graduates?'

From Anonymous:

- During the final stages, our main focus would be to stitch the thesis story together and filling holes where necessary.
- One concern during this time could be the 'last lap'. Where the student might have exhausted their energy and seem to not have courage to complete the final lap. During this time, I would ask them to speak their mind out and try to see why the fear exists, for example is it because of uncertainty of what after Ph.D.?
- Other concern could be that the student is overwhelmed by the fact that he/she has no journal publications yet and that their work mounts to nothing. During this time, I would encourage them to look at their small progress through maybe conference publications and reiterate how publications need not be the only criteria for validation. Have them talk with experts to build confidence on their work.
- Writing the thesis would be a major task, procrastination and other discipline problems may arise due to various factors, health, family, workspace. I would share my strategies and ask students how they would want to proceed. We would then have small milestones of writing each week so that the student is not overwhelmed and in no time, the complete writing gets done.
- Since the last stage is stressful to both the guide and the student, I would ensure we take pride and enjoy as we write the final manuscript and take each obstacle at this stage as a game and together cross the river. Most importantly, I would stay connected to the student more than ever at this stage. If working near family members may support the morales of the student, I would let them write their thesis where they wish too and I would stay connected frequently online

Some responses to 'How will you ensure that the student graduates?'

From Anonymous:
Possible approaches for PhD students in the fifth year

- To break the writer's block I can meet the students more often, like twice and three times per week. In these cases, each meeting may be shorter than a weekly meeting.
- In my own experience, I learned a lot when I co-wrote a paper with professors because we actually sat down together reviewing literature and spending lots of time on writing and revision. Perhaps I may want to write a paper with my students in a similar way.
- I will make sure the student has a reliable peer support group to lead a healthy life; depending on the situation, I may also recommend seeing a psychologist.
- I want my student to attend enough conferences to build network and get motivation from prominent scholars in the field.

Templates for guiding research

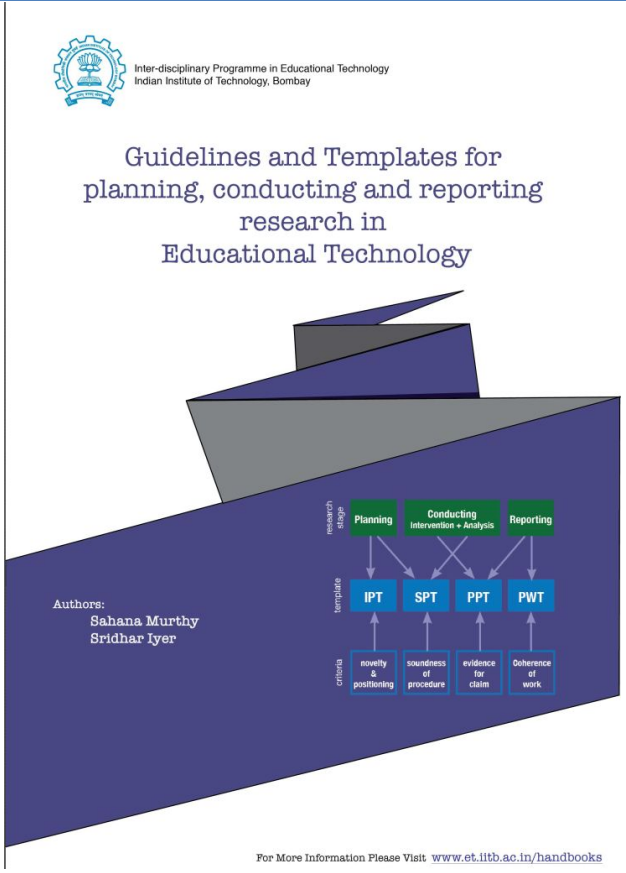
Visit - www.et.iitb.ac.in

There are 4 templates to:

- Plan a research project
- Carry out a research study
- Plan a paper
- Write a paper

Although these templates are oriented towards EdTech research, some of them may be useful in other domains also.

You may want to consider creating similar templates for your students.



Some common expectations during progress review in the initial stages

First year (purpose of work):

- Fix the domain, do lit survey, arrive at possible direction of research
- Understand literature carefully

First year (expectations during review):

- Work done in 1 year
- It is important to cover the journey also
- Problem - Approach
- Identify gap from literature and how we propose to bridge it.
- Evidence of systematic work
- Next year's plan

Key output:
Systematic Literature Review

Some common expectations during progress review in the initial stages

Second year (purpose of work):

- Validate the gaps and design some study
- Show some proof of concept pilot
- Identify methods to investigate the problem

Second year (expectations during review):

- Deeper investigation of the problem itself
- Show that the idea is interesting
- Approach taken to get to the gap
- Refinement of the Research Questions (RQs)
- Methods of investigation
- Serious thought towards study design

Key output:
Clear scope of research work

Some common expectations during progress review in the middle stages

Third year (purpose of work):

- Towards a thesis story
- Present RQs and some evidences
- Make mild claims

Third year (expectations during review):

- Towards a thesis story - coherence in RQs
- Fixed up the RQs and evidence
- Core of your work
- Some feedback from conferences is desirable
- Speaking in researcher's language
- Validity, reliability of study

Key output:
Solution design and RQ details

Some common expectations during progress review in the middle stages

Fourth year (purpose of work):

- Finalize all RQs and sub-RQs
- Many studies should be done
- Identify what is required to finish

Fourth year (expectations during review):

- Thesis story
- RQs and sub-RQs are finalized
- Some are already answered
- Claims and contributions
- Timelines
- Publications , year 2- problem scoped, year 3- solution design & research questions, year 4- RQ diagram, year 5- claims table

Key output:
Connection between RQs;
Evidence for findings

Some common expectations during progress review in the final stages

Fifth year (purpose of work):

- Demonstrate readiness to exit

Fifth year (expectations during review):

- Evidence that most of the work is done
- Timeline for submission

Key output:
Thesis claims & contributions

Key points for any thesis review

The goal is to communicate …

- What you have done
- Why you did so
- How you did so
- What is your logic for your decisions
- Why should anyone believe your results

Activity - Use Generative AI as your assistant

1. Choose your preferred generative AI platform.

2. Give various prompts and note the responses:
   a. Can you suggest some steps to guide PhD students in the initial years of their research?
   b. Can you make it specific for Indian students and a PhD supervisor who is starting out to guide PhD students?
   c. Can you make it more specific to research in <insert your area here>?
3. Read the responses and adopt whichever ones that appeal to you.

4. Repeat steps 2-3 for the middle years and final year students.

Activity - Do a SWOT analysis of your PhD guide's strategies

1. Reflect on your PhD days.
2. Identify what traits of your guide worked for you, and what didn't (in retrospect).
3. Identify which traits you want to adapt when you guide your students.

Here's a SWOT analysis of my approach, done by some of my former PhD students

Strengths

- Ability to see the big picture.
- Giving the student bits and pieces to work towards the bigger picture.
- Gives freedom and doesn't micromanage.

Weakness

- Gives too much liberty to the student.
- Not enough research collaboration.

Thank you

This presentation is available at:

Google

Sridhar Iyer, IIT Bombay

Then, Click on 'Talks'