WRITING THE STEM DISSERTATION PROPOSAL

Winter 2021

UCLA **Graduate Writing Center**

Outline

- Introduction
- Structure of the Proposal
- The Proposal Writing Process
  - Key components
    - Introduction
    - Literature Review
    - Research Question/Aims & Hypotheses
    - Materials and Methods
  - Other components
- Project Management
  - References
  - Time Management
  - The Committee
  - Preliminary Orals
- Resources

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Introduction: What is the proposal?

- **A dissertation proposal is…**
  - Sometimes called a "prospectus"
  - A *provisional* document
  - Subject to change depending on committee's feedback
  - Usually accompanied by an oral presentation (e.g. preliminary/qualifying orals)

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- **A dissertation proposal is not…**
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- **A dissertation proposal gives you an OPPORTUNITY to…**
  - Get work done! (Writing and research planning)
  - Show that you've become an expert on your topic
  - Obtain feedback and make your work better

Introduction: Do your research

- What are the *expectations* for what you need to include?

- What do proposals *look like* in your lab or your department?

Introduction: Do your research

- What are the *expectations* for what you need to include?
  - Talk to your labmates, advisor, and committee members

- What do proposals *look like* in your lab or your department?
  - How many pages (e.g. 15, 80, or somewhere in between?)
  - How are they structured?
  - What information do they include?
  - How many experiments/analyses are included?
  - What level of detail do they have?
  - Do they have preliminary results? Figures?

Introduction: Do your research

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- **Take a few minutes to write down expectations you are aware of, and questions that you have.**

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Structure

- Dissertation-like structure
  - Follows the general structure of a dissertation, minus the final results and discussion
  - Structure types include:
    - Traditional-simple
    - Traditional-complex
    - Compilation-based

- Grant proposal structure
  - Follows structure of grant proposal such as NRSA, NSF grant, etc.
  - (You might even submit it!)

Dissertation structure: Traditional-simple

- Similar to…
  - The beginnings of a manuscript about one large study
- Format
  - (Abstract)
  - Introduction
  - Background/Literature Review
  - (Aims/Hypotheses)
  - Materials and Methods
  - (Preliminary Results)

Dissertation structure: Traditional-complex

- Similar to…
  - A manuscript with multiple related/follow-up studies
- Format
  - Introduction
  - Literature Review
  - (Background Theory)
  - (General Methods)
  - Study 1
    - Introduction
    - Methods
    - (Preliminary Results)
  - Study 2
    - …
  - Study 3
    - …

Dissertation structure: Compilation-based

- Similar to…
  - Multiple manuscripts "stapled together"
- Format
  - Introduction
  - Literature Review
  - (General Methods)
  - Research Project 1
    - Introduction
    - Methods
    - (Preliminary Results)
  - Research Project 2
    - …
  - Research Project 3
    - …

Grant Style

- Abstract
- Introduction
- Hypotheses/Specific Aims
- Research Strategy
  - Methods
  - Analysis Plan
  - Preliminary Data

Your structure

- What structure do you think **your proposal** will take?
- What stud(ies) will you include?
  - If multiple, how do you want to fit them together?
- Consider:
  - Number of studies
    - One big project?
    - Multiple related projects?
  - Status of data collection
    - Data already collected?
    - Some data collection in progress?
    - No data collected?
  - Feasibility
    - What is *reasonable* to include with your time frame?

Contents

- Introduction
- Conceptualization
- Structure of the Proposal
- The Proposal Writing Process
  - Key components
    - Introduction
    - Literature Review
    - Research Question/Aims & Hypotheses
    - Materials and Methods
  - Other components
- Managing the Project
  - References
  - Time Management
  - The Committee
- Resources

The Proposal Writing Process

IMRAD Structure

Abstract

Intro

Literature Review

Methods

Figures, Preliminary Data

Proposal Writing Process

But you might want to *write* in a different order, depending on what you already know.

E.g. If you feel most comfortable about your methods…

Aims/Research Question

Methods

Literature Review

Intro

Abstract

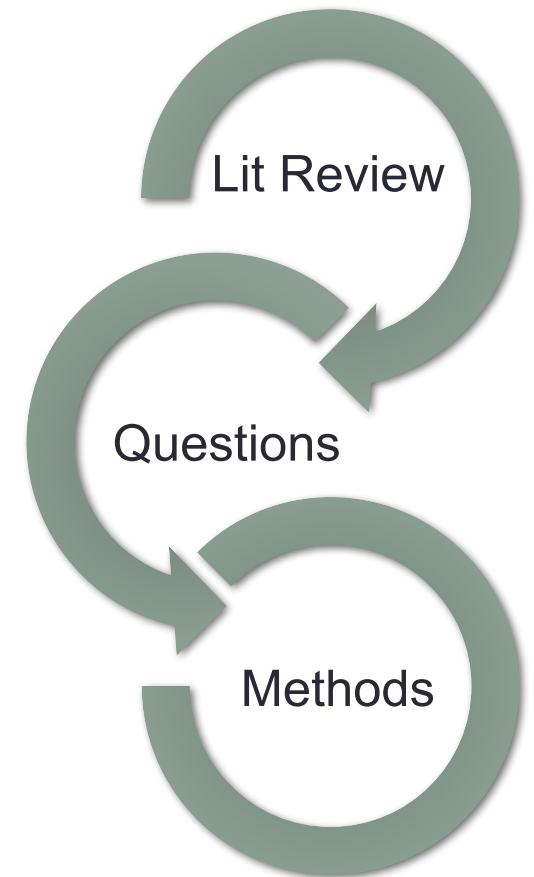# The Proposal Writing Process

Research Problem/Question(s)

- Interrelated
- Address related aspects of one overarching question

Literature

- Each body of literature is directly tied to a specific question

Methods

- Linked to the specific questions they will answer
- Justified by the demands of the question(s)

Lit Review

Questions

Methods

Research Questions/Aims Exercise

- Take 1 minute to write your topics as you are currently conceiving them and then a question that focuses the topic.

- Can you subdivide, or further articulate, one of the key concepts in your question into additional questions?

- Share your research question(s) with a partner. Can it/they be refined?

Introduction

Start broad, then narrow down

Big picture context

What's known in lit
What's unknown

Your specific
research Qs

Language that Introduces Research

- Move 1: *Establishing a Research Territory*
  - Show that the general research area is important, central, interesting, problematic, or relevant in some way
  - Introduce and review items of previous research in the area

- Move 2: *Creating a Niche*
  - Indicate a gap in the previous research, or extend previous knowledge in some way

- Move 3: *Occupying the Niche*
  - Outline purposes or state the nature of the proposed research
  - List research questions or hypotheses
  - State the value of the proposed research (significance)

Adapted from John Swales' "Creating a Research Space" (CARS) approach to introductions

Move 1 Language: Establishing Research Territory

Indicating Centrality, Importance

Recently, there has been growing interest in . . . .

The study of . . . has become an important aspect of . . . .

Many recent studies have addressed . . . .

Summarizing Previous Research

Previous studies have suggested that . . . .

Various investigations have explored the relationship

between . . . and . . . .

These findings were further supported by later studies
that showed . . . .

Examples taken or adapted from John Swales' *Aspects of Article Introductions*

Move 2 Language: Establishing the Research Gaps

Negative Openings / Quasi-negative subject

However, little information . . .

little attention . . .

little data . . .

little research . . .

However, few studies . . .

few investigations . . .

few researchers . . .

No studies/None of the prior studies have . . . .

(but be careful with negative statements)

Move 2: Establishing the Research Gaps

<u>Contrastive statements</u>

The research has tended to focus on . . ., rather than on . . .

These studies have emphasized . . ., as opposed to . . .

Although considerable researcher has been devoted to . . ., rather less attention has been paid to . . .

<u>Raise a question, hypothesis, or need</u>

However, it remains unclear whether . . .

It would thus be of interest to learn how . . .

If these results could be confirmed, they would provide strong evidence for . . .

The findings suggest that this approach might be less effective when . . .

It would seem, therefore, that further investigations are needed in order to . . .

Move 3 Language: Filling the Research Gap

<u>Indicating what the present study accomplishes</u>

Referring to the type of *text*—"This paper…"

paper, article, thesis, report, research note

Referring to type of *investigation*—"This study…"

experiment, investigation, study, survey

Referring to the text usually in present tense

Referring to the investigation can be in either tense (past as you have already performed the study or present to make it seem new or current)

Examples taken or adapted from Swales and Feak's *Academic Writing for Graduate Students*

Structure

Common Introduction Structures:

- Move 1
- Move 2
- Move 3

Or

- 1st paragraph: Moves 1, 2, 3
- Later paragraphs: Elaborations of 3 moves

Structure

Move 1
Big
Picture

Move 2
Gap in lit

Move 3
Specific
goals of this
study

State & justify your
approach/area of
interest
(Move 1, with more
details)

Innovation and adaptive thinking are hallmarks of 21st-century learning and essential for a modern workforce (National Research Council, 2012). Nonetheless, little is known about the cognitive mechanisms underlying children's development of the capacity to engage in these complex forms of reasoning. We used longitudinal data to suggest an integrated resolution to debates about the factors underlying children's acquisition of analogical thinking, one type of complex reasoning. Analogical reasoning is a core part of human innovation (Markman & Wood, 2009), creativity (Dunbar, 1997; Sternberg, 1988), and adaptive general intelligence (Cattell, 1971; Gentner, 2010). It is defined as the ability to draw relationships between disparate or dissimilar phenomena (Gentner, 1983). Thinking relationally is fundamental to analytical and inductive reasoning and may distinguish human thought from the thinking of humanity's closest animal relatives (Gentner, 2010; Penn, Holyoak, & Povinelli, 2008).

Richland & Burchinal, 2013

Transitions

Good transitions maintain the logical flow of Ideas from paragraph to paragraph and from section to section.

- Don't over-rely on headings
- Think carefully about when the reader needs definitions, information, and connections
- Lead your reader to your interpretations and conclusions
- You don't want the reader to say, "I wish I had that information earlier or I didn't make that connection."

Literature Review

Goals:

1. To demonstrate your knowledge regarding research that speaks to your particular research interests

2. To show how your research question(s) pertain to or address important questions being raised in your field; to demonstrate how your research can build on or advance current knowledge.

3. To explain how you will go about acquiring and analyzing the data you need to address your questions.

Some Organizational Options for Lit Reviews

Topical (most common)
- Breaks up lit review into a number of subfields, subject areas, or approaches and discusses each individually

Distant-to-Close
- A kind of topical organization that starts with studies of general relevance to topic and ends with studies most relevant to topic

Chronological
- Reviews studies chronologically from older to most recent

Debate
- Emphasizes opposing positions in field, especially long-term

Seminal Study
- Starts with focused engagement and analysis of 1-2 key studies relevant to your project

Methods

- Talk to your committee about the level of detail they expect
- Discuss data collection sampling, procedures, instruments, etc.
- Describe plans for data analysis (esp. quant folks)
  - Include any software, coding techniques, etc.
- Try to anticipate questions committee might have

Additional components (vary)

- Beginning
  - Summary/Abstract
  - Table of Contents

- Middle
  - General methods chapters = useful if your studies rely on same or similar methods
  - Preliminary data/results

- End
  - References
  - Projected timeline
  - Appendices/Supplementary Info

Appendices & Figures

- Appendices
  - Might include more detail about:
    - Scale items
    - Measures
    - Analytic strategy

- Figures
  - Help visualize your data collection/analysis pipeline
  - Show preliminary results
  - Are nice for your oral presentation

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Organizing your citations

- Make use of a citation manager

    - E.g. Mendeley, Zotero, EndNote
    - Download and save papers into folders.
    - Creates ready-made citations/bibliographies for you
    - Integrates with Internet browsers (e.g. Chrome) and word processors (e.g. Microsoft Word)
    - Allows you to take notes on and tag your papers with keywords
    - UCLA Library has great resources on how to use them here

Organizing your citations

- Track relevant literature findings through a spreadsheet

File Organization Tips

- Keep copies of every draft, numbered sequentially
- Consider keeping sections in separate files
- Keep a file log of the numbered drafts with a description of the edits/what changes from one draft to the next
- Keep notes from discussions with peers and faculty, all comments (record if possible)

Time Management

- The challenge: balancing research and writing
- WRITE REGULARLY- even 15 minutes a day will keep you actively thinking about and working on your project (and will remind you it's a top priority)

Setting deadlines

- *External* deadline

  = tied to something out in the real world (e.g. grant proposal, conference abstract, or invited submission)

- *Internal* deadline

  = a deadline you establish for yourself with someone who can help hold you accountable (e.g. advisor, lab, fellow researcher, or writing group)

Tracking your time

- Create a method for tracking your writing:
  - before each session, write down your writing goals
  - at the end, make notes on what you've accomplished and where you need to start tomorrow
  - refine your goal-setting

- Track your time spent on all tasks throughout the day
  - Where is your time going?
  - Does your time match with your priorities? If not, how can you restructure your time?

Goal setting and making your process work for you

Date	Time block(s) to write	Segment to work on & Goal	Daily Reward
Mon			
Tues			
Wed			
Thurs			
Fri			
Sat			
Sun			

Don't forget to plan a day off (and weekly reward activity)!

Block times to write in your calendar like a meeting or appointment

Reward yourself!

Weekly Writing Goal Example

M22

	A	B	C	D	E	F	G	H	I
4	Writing plan for the week of 3/13								
5									
6	Date	Scheduled time blocks of writing	Actual time blocks of writing	Segment to work on	Goal	Log	Location	Daily Reward	
7	Mon	All day	8-10 am; 2:30-3:00 pm	Introduction	Evaluate advisor's revisions and merge into Intro Ch file; Revise as needed	Revised introduction and started figure 1 for chapter 5	student office	coffee	
8	Tues	All day	11 am- 1 pm	Chapter 5	Organize table and graph; start figure 1	Finished table, graph, and figure 1, wrote figure legend	student office	netflix	
9	Wed	1-4pm	12:30-2:30 pm	Chapter 5	Figure 2-4, figure legends	Finished figures and legends, startes intro	student office	Out for dinner	
10				Chapter 3	Begin revisions (fig. legend and introduction)	Finished advisor's revisions, re-made fig. 3, revised and added			
11	Thurs	3-6 pm	11-1 pm; 3-5pm	Chapter 6 and 7	check in with collaborator	sent email	student office	Flowers from farmer's market	
12				Chapter 5	Figure 5	Results and methods			
13				Chapter 3	Finish revisions	Finished Wed			
14	Fri	12:30-3:30 pm	9-10 am, 11-3 pm	General	Back up files	Updated flash drive and google	student office	ice cream	
15				Chapter 5	Have Figures finished	Discussion, sent to advisor for comments			
16				Ch. 3 and Intro	send to advisor for 2nd round of comments	Sent			
17	Sat	10-12 pm		Chapter 5	Intro and start results	finished weekly goals by Friday		Drinks	
18	Sun	Day off- Final Exam Proctoring							
19	Weekly reward:	Movies							
20									
21	Writing plan for the week of 3/20								
22									
		Scheduled time blocks of	Actual time blocks of						

Time table log | **Example writing plan log** | +

Ready

Time Management

- Find out when (and where) you work best
- PROTECT YOUR TIME!
- Investigate apps and other tools to increase productivity (e.g., Tomighty, Trello, etc.) – but don't spend too much time on this!
- Divide the project into manageable pieces
- Experiment with all kinds of writing, including freewriting and outlines – messy is good!
- *Write regularly* – even 15 minutes a day of writing will keep you actively thinking about and working on your research
- Don't get bogged down in the literature

"Parking on the downhill slope"

- At end of your writing session. Help out your "future self" by noting:

    - What you did (so you don't have to remember later)
    - What you need to do next

Wikimedia Commons

Other Useful Apps/Programs*

- Google docs/Dropbox (saves revision history)
- To-do list makers (e.g. Todoist)
- Project management tools (e.g. Asana, Evernote, Trello)
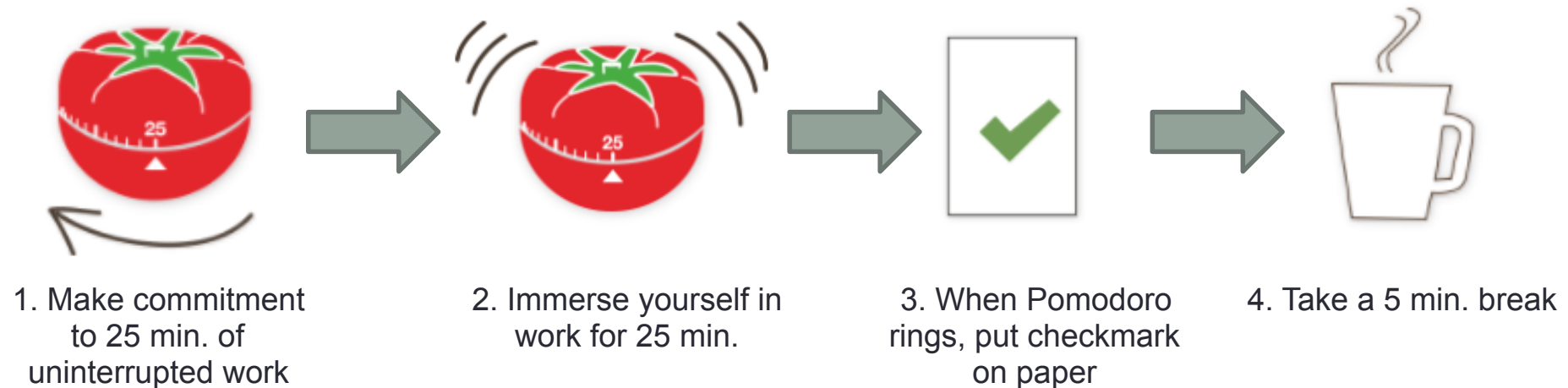- Time trackers (e.g. Toggl)

*Caveat: Find what works for you.

- For some, it can pay off (and save time) to put in the time upfront to learn a new tool.
- Others may prefer to stay "old school" and keep track of their progress in a simple notebook
- There are no rules

Internet time management

Pomodoro Technique

https://francescocirillo.com/pages/pomodoro-technique

1. Make commitment to 25 min. of uninterrupted work

2. Immerse yourself in work for 25 min.

3. When Pomodoro rings, put checkmark on paper

4. Take a 5 min. break

Every four Pomodoros, take a longer break

The Committee

- Communicate early and frequently with your committee (or at least those in your committee who are most helpful and available!)
  - Consider establishing a meeting schedule to help you stick to your progress
- Attend labs, seminars, etc. with your committee members
- Talk to students who had the same committee members about their experiences at this stage and later
- Discuss drafting and deadlines with committee members (esp. your advisor)
- Scheduling preliminary orals can get tricky…!

Preliminary Orals

- The prospectus is *often* accompanied by an oral presentation
- Vary in format and tone
  - A formal talk/presentation with slides
  - A more casual discussion with interruptions
  - May or may not include questions aimed to test your expertise
- What to include?
  - Brief background
  - Mostly a discussion of method. Make sure you can justify:
    - *Why* you are making various choices
      - E.g. Why this sample?
      - E.g. Why this methodology and not another
    - *Why* your research matters?
- Talk to your advisor…

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Resources

- Books, websites, and handouts on academic writing
  - Bolker: *Writing Your Dissertation in 15 Minutes a Day*
  - Schimel: *Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded*
  - Creswell: *Research Design*
- Make individual appointments with Graduate Writing Center consultants
- Attend workshops at the GWC
- STEM Master's Thesis/Dissertation Proposal Bootcamp (Spring Break)
- GWC Writing groups
- GWC Website (resources, links, tips)