

Documenting the Unwritten Curriculum of Student Research

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Abstract

Graduate and undergraduate student researchers in natural language processing (NLP) often need mentoring to learn the norms of research. While methodological and technical knowledge are essential, there is also a “hidden curriculum” of experiential knowledge about topics like work strategies, common obstacles, collaboration, conferences, and scholarly writing. As a professor, I have written a set of guides that cover typically unwritten customs and procedures for academic research. I share them with advisees to help them understand research norms and to help us focus on their specific questions and interests. This paper describes these guides, which are freely accessible on the web,¹ and I provide recommendations to faculty who are interested in creating similar materials for their advisees.

1 Introduction

Academic research is at the core of many graduate degree programs, and it serves an enrichment activity for high-achieving undergraduates. Students are given graduate-level research problems are expected to produce high-quality results. Even within a supportive environment—including support from a student’s advisor, student peers, and the institution—this is challenging for a new researcher. While students likely benefit from the intellectual challenges of research (e.g., *productive struggle* in transformative learning (Murdoch et al., 2020)), basic concepts that enable the activity of research are often left unsaid by mentors. This “hidden curriculum” has been acknowledged in classroom learning (Giroux and Penna, 1979; Andarvazh et al., 2017) but it has received little attention in the realm of mentoring researchers.

I describe a set of guides that I write and maintain to help student researchers learn typically unwritten customs and procedures in academic re-

search. They are part of my advising strategy, as I ask new advisees to discuss them with me after reading them, and to review them at key times during their development as researchers. This approach is similar to a flipped classroom (Akçayır and Akçayır, 2018), but in a one-on-one context. The guides also share the goal of approachability previously explored by Nakai and Guo (2023), who proposed peer-written guides; while I wrote these guides as a professor, I use my perspective as a tool to illustrate how professors’ and students’ roles differ in research. These guides are also resources that my advisees consult on demand when I am not immediately available. My motivations for providing them include helping students meet expectations, the importance of advising efficiently and fairly, and a desire to focus one-on-one time on topics that matter most to individual advisees. These guides are publicly available on the web, and anecdotally they have received strong positive feedback from the research community.

In the remainder of this paper I describe the guides, explain how I use them, and provide recommendations for other faculty who wish to create similar resources.

2 The Guides

The guides I describe here are a subset of those on my academic advice page (URL in footnote). Some of the information in these guides is specific to academic norms at research universities in the United States, a limitation explicitly acknowledged when applicable. However, most of the content applies to an international audience of student researchers in computing in general and in NLP specifically.

The *Guide for Joining My Lab* describes how students can get involved in research, with separate information for prospective Ph.D. students, prospective M.S. students, and prospective undergraduate researchers. Most of its contents are germane to a

¹<https://shomir.net/advice>

large audience, but some items are specific to my lab and advising. In Section 3 below I provide tips to other faculty who wish to create a guide like this as a recruiting tool.

The *Guide for Student Research* focuses on the activities of research in an personal, experiential sense rather than on methods or technical skills. This focus includes descriptions of common high-level tasks, things that tend to surprise students about engaging in research, what people enjoy about it, strategies for productivity, common obstacles and suggestions for overcoming them, and special guidance for undergraduate researchers and graduate students who mentor them.

The *Guide for Research Conferences* covers an arc of activity: deciding when and where to submit to a conference, assembling a manuscript, dealing with acceptance or rejection, and attending a conference. Among these topics, I observe anecdotally that conferences as events are especially obscure to new student researchers. The guide describes common items on a conference program, things to do while attending, and how oral and poster presentations differ, among other topics.

The *Guide for Scholarly Writing* describes some common conventions for writing a research manuscript. These include broad principles (e.g., make writing approachable but formal, and imagine the audience), specific practices (e.g., define jargon, maintain narrative flow), and special guidance for collaborative writing (e.g., follow advice from senior co-authors, explain what changed between revisions).

The *Guide for Citations and References* describes the principles behind citations and references for students who are unfamiliar with them or need a reminder. The guide adopts a *citation positive* tone, focusing on the value these conventions add to a writer's work. While the guide contains warnings about the consequences of plagiarism, I hypothesize a positive tone is more engaging and effective for the audience than a punitive one.

Other guides in the collection cover topics adjacent to research advising, including the expectations faculty have for interacting with students, how to cope with pressure to succeed as a high-achieving student, and the academic job market.

3 Use Cases

These guides are useful in at least four contexts:

- Research Advising: This is the default context.

Sharing these guides with advisees helps them to work productively and assimilate otherwise unspoken norms for research.

- Classroom Teaching: I assign some of these guides as readings in courses that have open-ended projects. They tend to be most relevant to graduate-level courses, but undergraduates are sometimes motivated to make substantial contributions and publish their work.
- Recruiting: Prospective research advisees often visit faculty websites. Informally, my impression is these materials encourage prospective students to pursue working with me.
- Public Service: Reactions to these guides on social media suggest their positive impact exceeds the scope of my lab, contributing to public awareness of student research.

The public availability and format of these guides (i.e., as webpages) makes them easily findable and usable for each of these audiences.

4 Recommendations

For faculty who wish to create similar materials, I recommend the following:

First, *assume minimal knowledge from your audience*. Prospective research advisees' eagerness to participate in academic research is easy to mistake for basic knowledge about how it works. For example, when a faculty member writes about advising (such as in an advising statement), they should take care to explain what *research advising* is and its importance in a student researcher's trajectory.

Also, *discard the goal of writing comprehensive guides*. It is easier to produce materials that focus on topics that are not covered by other resources, that are frequently understood, that are specific to the writer's advising, or that particularly motivate the writer. (I note that ease is important, as faculty tend to have many tasks competing for their attention.) Overreach when writing (i.e., writing beyond one's motivation or expertise) is less likely to be productive. Remember it is better to provide something specialized that will assist students with specific tasks than to provide nothing.

Finally, although it may seem challenging, *try to write for all audiences at once*. Whether a guide is targeted undergraduates, graduate students, or others, assume that a subset of each of the other groups will want to read it. This assumption motivates writing in an approachable, unassuming way. When expectations and responsibilities are in scope, this

also encourages being open about why they exist.

To further motivate creating similar materials, faculty who are expected to perform *service* duties may ask if this qualifies toward that obligation.

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References

- Gökçe Akçayır and Murat Akçayır. 2018. [The flipped classroom: A review of its advantages and challenges](#). *Computers & Education*, 126:334–345.
- Mohammad Reza Andarvazh, Leila Afshar, and Shahram Yazdani. 2017. [Hidden Curriculum: An Analytical Definition](#). *Journal of Medical Education*, 16(4). Number: 4 Publisher: Brieflands.
- Henry A. Giroux and Anthony N. Penna. 1979. [Social Education in the Classroom: The Dynamics of the Hidden Curriculum](#). *Theory & Research in Social Education*, 7(1):21–42. Publisher: Routledge _eprint: <https://doi.org/10.1080/00933104.1979.10506048>.
- Diana Murdoch, Andrea R. English, Allison Hintz, and Kersti Tyson. 2020. [Feeling Heard: Inclusive Education, Transformative Learning, and Productive Struggle](#). *Educational Theory*, 70(5):653–679. _eprint: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/edth.12449>.
- Kendall Nakai and Philip J. Guo. 2023. [Uncovering the hidden curriculum of university computing majors via undergraduate-written mentoring guides: A learner-centered design workflow](#). In *Proceedings of the 2023 ACM Conference on International Computing Education Research - Volume 1, ICER '23*, page 63–77, New York, NY, USA. Association for Computing Machinery.