

Checklist for effective mentoring of students in Stat-ML

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Some personal suggestions (via accumulated wisdom) for assistant professors. The note is primarily targeted at mentoring PhD students, though some points may apply to postdocs and masters students. Your relationship with your PhD students may last for 3-6 years as a mentor, and then for decades as a collaborator and/or friend. You must help set the tone of that relationship, and hope that it blossoms into one that you both cherish.

- **The most important point.** Each student is unique, in their strengths and weaknesses, in their background knowledge and research interests, in their personalities and life experience. Thus, the mentoring must be tuned to each individual in order to be effective. The challenges each one brings will be unique, the strategies that make the relationship work will be unique, and the joy when each one graduates is also unique.
- **The goal.** Your goal must be to help the student become an *independent* researcher, with confidence, self-belief and pride in their work. I follow an inverted pyramid (or blossoming flower) strategy: hands-on advising on concrete projects early in the PhD, to more brainstorming on open-ended projects later in the PhD.
- **Power imbalance.** You must recognize the massive, unavoidable and long-lasting power imbalance. You do not know which of your words can have a permanent effect on your mentee (positive or negative), so choose your words carefully and kindly. Do not say anything to a mentee in private that you may be embarrassed by if those words were to become public. Remember that what you say and what they hear may not be identical.
- **Intertwined futures.** Your future and your students' are clearly intertwined in a positive feedback loop. Your successes will help them, and their successes will help you. Still, your opinions of them (reflected in your recommendation letters) are likely to have a somewhat larger impact on their future (reflected in their awards, jobs, etc.) than theirs are likely to have on you. Recognize that asymmetry.
- **What you are, and what you are not.** You are first and foremost an advisor and mentor; you are not a parent, and you are not a friend. The implications are in terms of boundaries. You cannot provide advice like a parent would: people in their 20s are full blown adults, and are not always keen on getting unsolicited advice from non-parents (or even from parents) on topics outside of the purview of their PhD. Of course it is wonderful to be *friendly*, but the massive asymmetry means that true friendship may only blossom post-PhD.
- **Giving professional advice.** It is certainly your responsibility to provide constructive feedback on every aspect of their PhD that could affect their future professional success. This includes feedback on writing, speaking, programming, and so on. It includes feedback on research questions that they pose: what do you like about the question (or solution), what do you dislike, what is your opinion about how important the question is for the field, etc. Such feedback must be given frankly, constructively, yet kindly. Ensure that, deep down, the feedback is coming from a place of warmth and care, and not tinged with anger or frustration.
- **Giving personal feedback.** It is possible that there are personality or character issues that are impeding the student's progress in their PhD, or are clear to pose future issues in their success (glass ceilings that they may never really learn about). It could be about how they are always late for meetings, or how frequently they interrupt others before they can complete their sentences, or how (overly) self-deprecating they may be. It could be morally justified for you to gently point one of these out to them, explaining your hesitation, and suggesting (but not insisting) that they make efforts to address it. This certainly does not mean that you go over a long list of (what you think are) personality deficiencies. This would quite likely be condescending, soul-crushing and hypocritical (because who doesn't have issues, including you and me?).
- **Private versus public.** Most feedback is best given in private. However, there are exceptions. If a student gives a talk in the group meeting, you can certainly give suggestions in front of everyone, so others can learn from that feedback too. You may tell the student that this might happen in advance, so they are prepared. Hopefully, you do this to all students, so that it becomes a norm and is taken constructively by default.
- **Let it go.** Sometimes, despite your best efforts, a student may simply never listen to your advice or feedback. Typically, it is best to just let it go; it is your duty to provide advice, and their prerogative to consider your advice and choose whether to take it or not. You can take a horse to the water but cannot force it to drink.
- **Move on.** Sometimes, for research reasons or personality mismatch, either a student or advisor may choose to end the advising relationship. This must be done in a friendly manner, allowing them time to find other options, and without bad blood. If that happens many times, perhaps you must seek mentorship or advice.