

How to become a better supervisor

Rikke Plougmann argues that PhD students can only thrive if their wellbeing – and not just their scientific development – is properly supported

As an early career nanoscientist, I have so far worked in research groups in four different countries. The culture and supervision style in each group were never quite alike, but what they had in common was that PhD students often faced the same mental and emotional challenges. Sadly, research is rarely the hardest part about doing a PhD – rather, it is managing the dynamics between a supervisor and their students and wider research group. Difficult situations often – but not always – arise due to dysfunctional leadership styles and toxic work environments.

There is a scary and common misconception in physics that students work better if their supervisors and other senior group members pressure them with negative, condescending language. The students might be undermined and made to feel inferior to their peers, but – so the thinking goes – it'll spur them on. However, this leadership style drains students and makes them less engaged, worsening their performance. In contrast, PhD students who feel respected and encouraged have a higher work output, share their work more openly and progress faster.

Supervisors must take responsibility for their role as leaders and assess whether they are helping or hindering their students. Improving academia's work culture is crucial for the future of physics – and supervisors play a vital role in fostering a welcoming environment for all. Any supervisor who thinks they don't influence their research group's culture is underestimating their role as the captain of the ship.

To keep PhD students motivated and hardworking, supervisors and other group members need to encourage, guide and support one another. So, what can supervisors do – and more importantly not do – to improve the wellbeing of their students so that they can raise their own work standards and that of the research group?

Setting the standard

PhD students will be happy and productive if they are made to feel understood and respected. Supervisors need to remember that students are highly motivated researchers and – driven by that motiva-



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Influencers Supervisors play an important role in guiding PhD students and that requires good leadership. Encouragement and respect are better motivators than negative language or excessive pressure.

tion – they are working as hard as they can. Any comments that suggest otherwise can be manipulative, signal a lack of trust, and can cause the student to feel undervalued, misunderstood and demotivated.

If there is a concern that a student is not working hard enough, their supervisor should schedule a meeting to discuss the situation in an honest and respectful way. Negative comments and jokes about a particular student not working hard enough usually do more harm than good. Positively influencing their motivation, for example by encouraging students to overcome their research challenges, is the best way forward. After all, a student's output is heavily guided by their supervisor.

In my experience, the best research groups are those where people help each other to progress, stand up for each other and have a healthy dynamic. Supervisors can create this kind of environment by leading by example: being supportive and encouraging in meetings, and suggesting open collaboration. This kind of culture will not be fostered by comparing students' progress against each other, or putting down group members to others behind their backs, or rewarding those who succeeded but left a mess behind for others to clean up. The language a supervisor uses when talking to students will rub off on them so that when they talk to each other it will be done in an equally respectful (or disrespectful) way.

I also encourage supervisors to find out what their PhD students need, rather than what they think they need. The quickest way to optimize supervision style is to ask for feedback – and to listen to it. Sure, there

are sometimes good arguments for running things the way they always have been done, but it might create a huge positive change if supervision style is adapted even slightly to such feedback.

People are often more motivated by clear, well-defined tasks rather than a lack of direction. Although research is by its very nature undefined, which makes it easy to get bogged down in a particular problem, students still need input from their supervisors on the “bigger picture” progress of their project as well as reassurance about the goal that everyone is working towards.

For those who could have a future in academia, give them a fair and realistic picture of what it is like to work there. For those who hope to forge a career path in industry, teaching, finance, engineering, IT or the many other areas that physicists go into, students still need to be respected and encouraged so that they part ways on good terms. How previous group members have been treated will heavily influence the dynamics of the group.

Many physicists go into the subject because they love science and not necessarily because they wanted to be leaders of people. But the fact remains that supervisors are crucial to nurturing the next generation of scientists – and that power and responsibility must be used for good.



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