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Advice to students: Take risks and build courage

Follow your interests; ask questions; do it your way

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This is part of a series called Focal Point, in which we ask a range of Harvard faculty members to answer the same question.

Focal Point
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QUESTION: If you were to write a letter to your students, what would you want them to know?

I mainly teach students in the physical sciences, but I have some advice to share with those who are studying subjects centered more broadly around problem-solving.

First and foremost, remember that there are many ways to be extraordinary. It's easy to fall into the trap of thinking that ability in a particular discipline lies along a single axis, and that any two people in that discipline can be lined up and compared. But getting stuck in this mindset discourages cooperation and leads to a sense of competition, a feeling that we have to demonstrate that we're better or more capable than those around us, and a constant fear of not measuring up. Just as importantly, this attitude is contrary to the history of scholarship in many disciplines.

That history makes clear that major contributions come from people working together and bringing very different configurations of talents and skills to the table. Some are fast calculators. Others soak up knowledge and become walking libraries. Some are doggedly persistent, sticking to a problem for months or years until they make progress on it. Others have fantastic powers of focus and concentration. Some are inspirational leaders or collaborators. Others are brilliant explainers, capable of building intellectual bridges that make it possible for newcomers to join the effort and for experts to reach new vistas. Some are highly creative, able to set forth in directions that nobody else can see. Others are methodical and logical, catching mistakes that others make and identifying loopholes in calcified wisdom. Some are slow but deep thinkers, turning ideas over and over again in their heads until they discover new connections or unlock old mysteries.

Most are just plain lucky — they find themselves in the right place at the right time with the right set of skills to learn what they need to know and contribute appropriately when their field is ripe for a breakthrough or discovery.

If you love what you're learning, if you find it beautiful and captivating, don't worry about whether you're going to be extraordinary at it — or what kind of extraordinary you might be. Embrace the risk of pursuing what interests you anyway. And, above all, never leave behind something you love doing just because you're afraid you might not be great at it someday.

Another piece of advice is that the best way to learn a subject is to ask naive questions. Don't just ask about a complicated step in a calculation or point out a mistake in a lecture. Ask what words and definitions mean. Ask whether there are alternative ways to think about concepts. Ask for clarification of vague arguments. Ask whether there are easier ways to do things. Ask why things are the way they are. If you're just plain confused, say so, and ask for further explanation.

If you have these kinds of questions, it's highly likely that your classmates are also thinking about them, so you'll be doing everyone a favor by going out on a limb and asking. If you don't feel comfortable asking questions in class, ask during office hours, or by email. If you're afraid of looking silly or simple-minded, confront that fear head-on by asking anyway. Confronting our fears is how we build courage — it's how we grow.

Growth also requires not being too attached to a fixed idea of what your career has to look like. Some of us enter school with a strong sense of who we want to be, and what sort of path we have ahead of ourselves. It can be comforting to have a well-defined sense of purpose, but it can also lead us away from directions that might be much more fulfilling.

Make sure to give yourself real opportunities to explore other disciplines. Be ambitious in trying things out, but be willing to pull back if you've taken on too much.

If you find beauty where you didn't expect it, if you find yourself drawn toward surprising directions, don't be afraid to follow those threads. Give yourself permission to move off of your previously defined trajectory. You'll get far more satisfaction out of focusing on what you genuinely love to do than on whom you feel like you're supposed to be. And you'll find that being even slightly closer to resonance in your choice of field can make an enormous difference in your enjoyment and productivity.

Finally, be sure not to race through the basics of your subject. Even if you feel like you've seen it all before, it's likely that your understanding will be far more nuanced the second or third time around. You can build up a tremendous amount of intuition by taking the time to think carefully about the foundations of your subject, making logical connections, and formulating the fundamental conceptual ingredients in an arrangement that feels more sensible to you, on your own terms.

At the same time, keep in mind that balance is important, so don't prioritize fortifying the foundations of your understanding over getting messy. Don't worry about having to understand every single detail if it means circling around a problem endlessly. Jump in and start trying things. Uncovering new ideas inevitably requires wandering around in the dark to some degree, and the earlier you get used to it, the less scary it will seem.

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