DOI:10.1145/3097352

Peter J. Denning

The Profession of IT
The Beginner's Creed

We all need to learn to be expert beginners.

I HAVE TAUGHT operating systems for many years to undergraduate and graduate students. Operating systems are a complex technology difficult to master and it is easy for students to fall into unproductive moods while studying them. More often than I would like, my students were unable to escape their unproductive moods and wound up not learning the technology and being dissatisfied with the course.

We often encounter the same problem in our professional work. New technologies are constantly emerging and some are producing disruptive avalanches of change.[3,4] The emerging technologies are unfamiliar, complex, and difficult to master. We fall into unproductive moods and wind up missing deadlines, getting left behind other colleagues, or being swept away by an avalanche of change. Since we do not often pay attention to our moods, the obstruction to learning seems like a mysterious, unidentifiable force that compounds our frustration.[1]

In her book, Gloria Flores points out that young children tend to dwell in productive moods, for they are ever eager to learn new things.[2] By their teen years, sometimes much earlier, many have changed: they seem to frustrate easily, fear mistakes, and distrust their abilities. In these moods they get defensive and resist learning. Adults fall into the same learning-blocking moods as well. For example, adult experts are confident about their abilities, but when thrust into a situation where they need to learn something new, many quickly become uncomfortable and lose their confidence. They do not welcome the opportunity to learn something new; they want to escape. Their moods of confusion, anxiety, insecurity, embarrassment, and resignation block their professional development and advancement. They are prone to worrying about their reputation if others see them as not competent. Their long expertise left them rusty at the skills of beginners—being okay with not knowing something, allowing themselves time to learn, or asking for help. In reading Flores's account, I realized that one of a mentor's greatest contributions is to help their protégés recognize their moods and learn to shift to moods productive for learning.

These insights helped recently with a cohort of adult (age 30–35) graduate students in my operating systems class. They were enjoying the class until their first quiz. Many got worse grades they expected and fell into various bad moods including discouragement, anger, and even resentment. Inspired by Flores's insights, I decided to talk to them about their moods. I composed a poetic page that walked through all the moods a beginner is likely to experience. I called it "The Beginner's Creed," a copy of which appears here.

I asked my students, "How many of you are an expert in some area?" Every hand went up. Then I asked, "How many of you feel like a beginner in operating systems?" Every hand went up. Then I asked, "How many of you like being a beginner?" Only two hands went up. I said, "We need to have a conversation about that."

I handed out the Beginner's Creed and asked them to read it. When all were done, I read it aloud to them so that I could intonate its moods. I asked them to read it to themselves every day for a week. For the rest of the course, the students were much more relaxed about their roles as beginners and were much more engaged in the work of the course. At the end of the course, when the project teams stood up to make their final presentations to the class, one team said proudly, "We are beginners! And look at what we have accomplished!" In my concluding remarks of the course, I said, "Congratulations. You are no longer beginners. You are now advanced beginners. You are prepared to learn to be competent with operating systems." Some smiled with pride.

What is even more interesting is the Beginner's Creed resonated with concerns my students had outside of class and in other departments of the university. After reading the Creed, one student immediately asked, "May I give a copy of this to my son?" Another asked the same question regarding his boss. A senior military officer on campus showed it to one of the students who was having a particularly difficult time acclimating to his studies; the student said, "I wish you had given me this when I first arrived! I see that I have been resisting too much." The campus librarian framed a copy and hung it on the wall of the library. Flores's insight is powerful indeed and speaks to a yearning that many people have been unable to articulate.

Even though we computing professionals are the authors of disruptive technologies, we are often threatened by our own creations. Our own tools and ways of doing business can suddenly become obsolete. When a disruption comes, we need to reinvent ourselves by learning new things in new emerging domains. To be ahead of disruption, we need to antici-

pate emergences and do the learning early before it becomes a critical necessity. Our moods will be a problem if we do not learn to recognize them, especially the unproductive moods, and shift to ones that are productive for learning.

An essential part of learning is to allow ourselves to be a beginner in the new domain. That means we come to the domain knowing nothing or next to nothing about the domain. Beginner is the first stage of a progression of skill in a domain that can take us next to advanced beginner, competent, proficient, expert, and master. As we get older, we find that we are experts at some things—and we like being an expert. We like when people look up to us and ask us for guidance and wisdom. But when we come into a new domain in which we are just a beginner, we cannot expect our expertness from other domains to help us. In fact, it is likely to draw us into unproductive moods such as frustration over not learning fast enough or discouragement that we are not treated as an expert.

We all marvel at how easy it seems to be for your young children to be beginners. Perhaps that is because they are experts at nothing and do not have their minds clouded with any expectations about being an expert. They just approach the learning as an opportunity to play, adventure, and experiment. Older children often acquire self-assessments that block them from adventure and play, whereupon they may have more trouble learning.

So here is the Beginner's Creed, a one-page declaration that you can recite to yourself to help you when you find yourself in a new domain as a beginner, whether by your own choice or by circumstance. Make a copy and read it every day for a week, especially when you are a beginner. Return to it as needed. C

References

1. Denning, P. and Flores, G. Learning to learn. *Commun. ACM 59*, 12 (Dec. 2016), 32–36.
2. Flores, G. *Learning to Learn and the Navigation of Moods.* Pluralistic Networks Publishing, 2016.
3. Friedman, T. *Thank You for Being Late.* Farrar, Straus, and Giroux, 2016.
4. Kelly, K. *The Inevitable.* Viking, 2016.

Peter J. Denning (pjd@nps.edu) is Distinguished Professor of Computer Science and Director of the Cebrowski Institute for information innovation at the Naval Postgraduate School in Monterey, CA, is Editor of ACM *Ubiquity*, and is a past president of ACM.
The author's views expressed here are not necessarily those of his employer or the U.S. federal government.

The Beginner's Creed

I am a beginner.
I am entering a new game about which I know nothing.
I do not yet know how to move in this game.
I see many other people playing in this game now.
This game has gone on for many years prior to my arrival.
I am a new recruit arriving here for the first time.
I see value to me in learning to navigate in this domain.

There is much for me to learn:

- The basic terminology
- The basic rules
- The basic moves of action
- The basic strategies

While I am learning these things I may feel various negative reactions:

- Overwhelmed at how much there is to learn
- Insecure that I do not know what to do
- Inadequate that I lack the capacity to do this
- Frustrated and discouraged that my progress is so slow
- Angry that I have been given insufficient guidance
- Anxious that I will never perform up to expectations on which my career depends
- Embarrassed that everyone can see my mistakes

But these moods are part of being a beginner. It does not serve my goal and ambition to dwell in them. Instead,

- If I make a mistake, I will ask what lesson does this teach.
- If I make a discovery, I will celebrate my aha! moment.
- If I feel alone, I will remember that I have many friends ready to help.
- If I am stuck, I will ask for help from my teachers.

Over time, I will make fewer mistakes.
I will gain confidence in my abilities.
I will need less guidance from my teachers and friends.
I will gain familiarity with the game.
I will be able to have intelligent conversations with others in the game.
I will not cause breakdowns for promises that I lack the competence to keep.
I have an ambition to become competent, perhaps even proficient or expert in this game. But for now,
I am a beginner.

—By Peter J. Denning