

Cite as:

McCollum, B. (2018, December). Transforming failure from a foe into a friend. *ACCN (Canadian Chemical News)*. Originally published at <https://www.cheminst.ca>

Transforming failure from a foe into friend

Brett McCollum

The destroyer of dreams.

That's how I heard my peers describe organic chemistry, and the professor who taught it, when I was an undergraduate. I remember a student next to me during the final exam quietly sobbing. I imagine that they were pre-med, like most of the students in the class, and presumed that their dream of becoming a physician was over.

My first semester teaching organic chemistry, I was determined to learn how I could support student success in the notorious course. However, despite my best efforts to teach the content in an organized and engaging manner, I observed some of my own students crying during the final exam. I had become the destroyer of dreams.

One of my students this year, Paul, described to me his perceptions at the start of the semester.

"I had a general fear of the course," he said. "When I told my friends I was taking organic chem they all texted me 'RIP' and warned me how much I would hate my life. This course has a bad reputation as being a GPA killer."

Another student, Emily, said at the start of the semester: "I've heard so many horror stories from other students who had taken organic chemistry. I don't feel confident at all."

A third student, Tanya, shared with me how she had failed organic chemistry at a different university and it took her 10 years to try again.

"Being an overachiever all throughout high school it was a huge disappointment to me because I did not know how to overcome failure," she said. "I ended up leaving the university and moving to Toronto."

Fear of failure in learning has been linked to decreased use of cognitive strategies, such as rehearsal, organization, and critical-thinking. Fear can motivate students to replace an achievement goal (e.g. mastering course content) with an avoidance goal (e.g. avoiding situations that reveal incompetence). Furthermore, fear of failure leads to increased levels of self-handicapping and procrastination.

Matt Smith, an improvisation teacher in Seattle, encourages people to overcome mistakes by taking a "failure bow". It's a simple act similar to the bow taken by gymnasts after each performance. Raise your hands above your head, smile, announce "I failed" or use a variation of your own choice, and then take a bow. Smith describes that the failure bow changes our physiological response to failure, which in turn transforms our psychological

Cite as:

McCollum, B. (2018, December). Transforming failure from a foe into a friend. *ACCN (Canadian Chemical News)*. Originally published at <https://www.cheminst.ca>

response. We let go of the emotions of failure and allow ourselves to move back into a creative mental space.

Now when I teach organic chemistry, in the first class I introduce my students to the failure bow. I also couple it with another activity that I learned from self-styled improv coach Rebecca Stockley, <https://www.improvlady.com>. The exercise, called "1-2-3", pairs up students and alternate counting: 1, 2, 3, 1, 2, 3, Having the students in pairs ensures that as they alternate who says the next number they keep changing which number they are responsible for saying. If they hesitate, or say the wrong number, they take a failure bow. After a minute, the round is done, students find a new partner, and the game changes. With each successive round, one of the numbers is replaced with an action. First, "1" is replaced with a clap, then "2" is replaced with a snap, and finally "3" is replaced with a stomp. In the final round, students revert back to "1,2,3,...". Most participants report that returning to counting is easier after they have struggled with the more complex version.

It doesn't take much time in class to teach the failure bow and play "1-2-3", and my students readily describe how it quickly helps them embrace failure as part of learning.

Paul described how he overcame the fear his friends stimulated.

"I think back to that first night that I looked over the material and panicked," he recalls. "But I've learned how to make the most of it. All the topics covered are now tools in my tool belt."

Emily also reported learning to overcome failure.

"You taught me that it is okay to fail, as long as you get back up and try again," she explains. "The learning strategies I have picked up over the course of the semester will be something I plan to keep up not only in organic chemistry II, but in all of my courses for the remainder of both my undergraduate and graduate degrees."

Even Tanya, returning to university after a 10-year hiatus, conquered her fears.

"I remember the night before the first class, I was so nervous that I had a panic attack," she said. "That first day, we played a game all about failure. That was the moment that made me decide to continue with the course. It made me realize that failure is inevitable in life. We all fail at some point. How you handle failure is actually what determines if it is going to envelop you or be constructive."

She adds that the experience has also allowed her to be more forgiving about things beyond her control. "I cannot control how well I can understand certain concepts, but what I can control is the amount of work I put into trying to learn those concepts. Anything is achievable with the right amount of work, and failure is inevitable when you try new things.

Cite as:

McCollum, B. (2018, December). Transforming failure from a foe into a friend. *ACCN (Canadian Chemical News)*. Originally published at <https://www.cheminst.ca>

It is all about failing over and over again and finally working up to the moment where you don't fail."

My students have learned to move past their mistakes and persevere in their study of chemistry. Best of all, I no longer think of myself as the destroyer of dreams.

Brett McCollum is a professor of chemistry at Mount Royal University in Calgary, AB, and chair of Scholarship of Teaching and Learning Canada. His research focuses on effective uses of technology for chemistry education, student development of chemical language and representational competencies, and approaches to enhancing student engagement in research partnerships.