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Roads to Success: Humanizing Research, Normalizing Failure

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I have had many different music mentors over the course of my 12 years of study. Some mentors were kind, others didn't believe in the value of praise, but all of them passed down stories of failed performances. Every musician has forgotten their piece on stage, every musician has failed to perform up to their own high standards, and every musician has shared their story with peers and students, worn it as a badge of honor, a rite of passage.

You may be asking yourself, how does this relate to a science writing contest? Well, in my experience, music and science have one main thing in common, you have to undergo a series of failures before you can achieve success. As a science student first entering college I didn’t realize this kinship between the two disciplines because I was never exposed to the difficulties that every scientist experiences. The trials and tribulations of science that should be celebrated, often lay hidden behind accolades and publishable findings. This is what I set out to change.

Studies have shown that fear of failure is one of the main factors that keeps students from pursuing a STEM field after they graduate from high school. My goal for this project was to impact high school students by humanizing the research process and normalizing failure.

I interviewed science professionals here at Iowa and shared their stories in the form of a narrative series. I then reached out to high school students by hosting an online science writing contest where students constructed essays about the barriers to success that a
particular scientist has faced (either by researching a historical scientist, or by engaging with a STEM professional within their community).

I set out to find STEM professional willing to share their experiences with me, and was fortunate to have many individuals (from the Department of Chemistry, the University of Iowa Hospitals and Clinics, and the Carver College of Medicine) take the time to meet with me and tell me about their journeys. Each story was unique, and I found that I could relate to every single one. It was encouraging to see where they started vs. where they are now, and hear that like everyone else, their success didn't occur overnight. (View quotes from each narrative at the end of this document. To read the full pieces click on the website link: www.uiowa.edu/sciencewritingcontest/articles)

In the midst of face-to-face interviews and narrative writing (complete with a writing advisor from the UIowa Writing Center), I was also designing a website that would host both the narratives and the writing contest. After a few weeks I was ready to launch the website and began letting high schools know about the new contest. I personally reached out to high schools in the area, and my contest was sent out to a larger web of high schools through the College of Education here at the University.
After releasing the site out into the world I sat, watched, and waited. I checked Google analytics daily to see if the site was receiving traffic, and breathed a sigh of relief with every new session. See the map here that shows the site’s reach:
At the completion of the contest I received 30 entries, had 2,500+ page views, and was viewed by users in 114 cities across 18 states, and 12 countries. (To see one of the submitted essays, click on the supplementary document included.)

My hope for the future of this project, is that the contest continues to run in the years to come. With the infrastructure already in place, I hope that efforts can be made to reach a wider audience. As time goes on, the contest could host a different set of prompts, and could also expand to include submissions from middle school students as well.

Through this project I have gained practical skills such as web design, and have learned more about the nature of the scientific process and the common misconceptions surrounding science. Contest participants expressed sentiments of surprise and awe as they learned about the early beginnings of the scientists they thought they knew. Like myself, they didn't realize that there are many different roads to success.

**Quotes from submitted narratives:**

1. “I've always learned differently from others. Things that came effortlessly to me took me years to achieve competency. But eventually I found what worked for me. I learn best by doing, reading, and observing: three skills that are crucial elements of my scientific process”

2. “At times you want to feel like you’re in a world where gender doesn’t matter, so I don’t talk about it super commonly, but it’s hard. Despite the difficulties, I still believe that you can have it all. In the spirit of solving problems you should want the field to be open to an entire population of people who are passionate about their work.”

3. Over the course of a year Joel repeated the same experiment an estimated 20 times. Although he tried to troubleshoot independently, he ended up
defending an honors thesis composed of entirely negative results. “Without a second exposure to lab life, with a mentor that was invested in my success I wouldn’t be the researcher I am today. In fact, I wouldn’t be a researcher at all.”

4. “I worked for about 3 years on a project that ended up not being publishable. During that there were others in the program that ended up dropping out because their experiments just weren’t working. For me, I think you just have to maintain a long view of things. Eventually your luck will turn and something will work, you just have to be patient.”