

Seeing challenges as Stepping Stones in graduate education

by Henry Sintim

Students

As I prepared for graduate school, I interviewed a number of faculty and other professionals about their own graduate school experience. I noticed a commonly recurring phrase: "It was both challenging and interesting." Having recently completed my master's degree at the University of Wyoming, I now understand why almost all the interviewees felt the same way. Graduate education can be very challenging. To be successful, an individual needs to have the right mindset, discipline, endurance, and aptitude for scholarship. In this article, I list a few things that can be initially frustrating as a graduate student and how it can be an advantage when approached with the right attitude.

Academic standards for graduate education in the U.S. are high. In most institutions, one is required to take courses and conduct rigorous research for both master's and Ph.D. programs. In addition, the grading scale is tough; and for those of us on a graduate assistantship, we are expected to maintain a minimum of 3.0 cumulative GPA (80% on average). In most countries, 80% is equivalent to a GPA of 4.0. This can be overwhelming, especially during the first semester as an international student in the U.S.

However, international students should remember that prospective advisers and graduate schools review student application packages

and determine whether they have the prerequisites for the program of study before admitting them. That alone, should convince all graduate students that they have what it takes to excel. Attending classes regularly, reading lecture materials and relevant books, keeping up with assignments, and asking questions in class or scheduling appointments with instructors when you do not understand something will greatly help. Conducting thorough literature review before initiating your thesis research, keeping constant communication with major adviser and research committee, and engaging other scientists with expertise on your research



Henry Sintim learning about hydrodistillation of essential oils to broaden his expertise.



are very important to conducting a good thesis research. Extensive literature is available through the ACSESS Digital Library (<https://dl.sciencesocieties.org>) of ASA, CSSA, and SSSA. As we strive for academic excellence during our program, it is also important to create

additional funding to support our projects. This gives us a lot of exposure and confidence. Some graduate students do encounter the challenge of conducting research in areas with limited protocols or information. More importantly, such research requires pilot studies and some trial and error, which can be time consuming. Under such situations, one needs a lot of determination and self-motivation. In my opinion, the benefits derived from conducting such research are very rewarding and worth exploring. Findings from such research are usually novel and tend to move the science forward in our various fields.

balance as indicated by Liz Gillispie in the May 2015 issue of *CSA News* magazine.¹

Another situation that can be quite difficult to handle is the change of one's major adviser. It is common to hear the following from students who changed major advisers:

"They have a different research background, so I had to rewrite my whole thesis; they have a different style of writing; they have a different approach for addressing the same problem..."

Although a change of adviser can be frustrating, it has its own merits when one looks at it from another perspective. An individual can gain the experience of understanding different personalities and work styles, which is usually a quality employers look for when hiring. Another potential benefit of a major adviser transfer is the opportunity to broaden your research expertise, especially when the advisers have different research backgrounds. Personally, I took advantage of it when my initial major adviser transferred to another institution. I gained experience in medicinal plant propagation and hydrodistillation of essential oils. I was actively engaged in other research projects besides my thesis, and I published three peer review journal manuscripts with the help of my new adviser. In addition, I kept in constant communication with my former adviser who provided me with additional guidance throughout my research. Although his transfer was initially difficult for me to handle, and I even considered transferring with him, it turned out well when I endured.

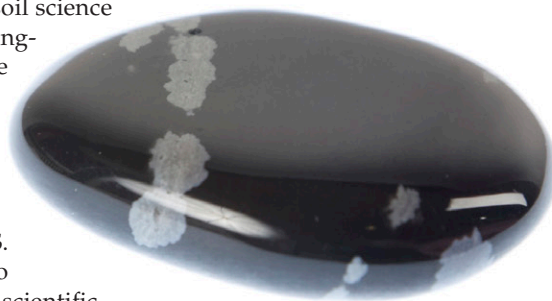
A primary goal during research is the need to develop innovative ideas to address new research questions. As graduate students, we should take up the challenge and design research experiments that will address current issues in our fields. Sometimes, such areas tend to be outside one's running budget. If that happens, we can seize the opportunity, and together with our major professors, write grant proposals to secure



My M.S. research was focused on cropping systems management in semi-arid environments, but I have enrolled in a Ph.D. program in soil science at Washington State University. My Ph.D. research

is completely different from my M.S. program, and I have to learn new disciplines, scientific approaches, and methods, which is very challenging, but I see this as an opportunity to broaden my expertise and maximize my potential.

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¹ See <https://dl.sciencesocieties.org/publications/csa/articles/60/5/36>



Sintim and colleague, Maninder Chahal, installing soil sensors and lysimeters for his Ph.D. research on use of biodegradable mulches and impacts on soil quality.