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## **BEING BRAVE: EASIER THAN IT SOUNDS**

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When I first heard about the CLIP (Community Learning and Inclusivity Partnership) pilot program at Emmanuel College, I emailed my department chair with enthusiasm and suggested that this might be great for the development of the general chemistry program. Weeks later when I had a return email suggesting that the program had room for chemistry faculty to participate and that my name would go right into the mix, an uneasy feeling settled in. What had I gotten myself into? When the faculty involved in the Fall-2021 program eventually gathered to learn about and discuss goals and trepidations about the coming semester, I admitted to my colleagues that I was hoping that I could be brave, and quite a bit worried that I could not.

We don't talk much about inclusivity and belonging, social justice, or even ethics in chemistry and much less so in introductory general chemistry courses. I'm interested in changing that, but it also means that I have had very little practice in the actual process. What words does one use to get at difficult topics and convey emotions such as disappointment (in some history of science) and hope (for what's to come)? What happens if (when) you get it wrong and the words don't seem to do justice to the topic? I had recently completed an EdX course on the Inclusive STEM Teaching Project and had learned a lot about unintentional biases. I wondered to myself what I had probably said at some point in class that was interpreted a certain way by the students. I admitted during that course that I am typically a very confident teacher, but that I felt a bit less confident in myself following these discussions. I was assured by the EdX instructors that this uncomfortableness was probably a good thing, meaning that I was self-evaluating effectively. Well, it didn't feel good, and it didn't do a lot toward bolstering bravery.

On paper, all of this sounded scary, but in the end being brave turned out to be much easier than I anticipated due to the support of my CLIP partner, Michelle — a phenomenon other participants in partnership have described (Bryson & Furlonger, 2018; Cook-Sather, 2016; Perez, 2016; Woolmer, 2018). The goal was not to have a series of difficult conversations all semester long, but to intentionally highlight important issues of inclusivity or exclusion throughout the semester and to establish a classroom community where students could belong and learn in different ways. When I was uncertain how to proceed, it was extremely helpful to have a teammate to share ideas with and even practice delivery of key points. Having Michelle come up after class to tell me that “that went really well!” was a huge support. So, when was “being brave” not a challenge at all and what was different this year compared to past semesters?

### **Day 1 — Setting the Tone to Build a Community**

I worked hard, with Michelle's help, to make intentional decisions that would demonstrate a desire to build community with my students. For example, the syllabus included a “thank you for being here” statement at the very beginning, and instead of telling students what their responsibilities were in the course, I prepared a side-by-side layout of our shared responsibilities. When introducing myself, I was certain to include an introduction of all the instructors teaching

other sections of the course, lab instructors, and the peer tutors, presenting us as a team, not just one professor. For the first time, I explained to the class why my name is spelled differently (Aren) and how I feel about that. I asked students how to pronounce their names and asked (generally, not specifically) where they are from and what cultural assets they bring with them to the class. This was done both with a pre-class survey and with an old-fashioned notecard and pencil at the beginning of class. The response from individual students, particularly from the online survey, was in-depth and meaningful. This took a bit more practice before the first day of class than usual, but that practice, and conversation with Michelle, took away the nerves and took away the question of bravery entirely.

## Historical Perspective on Chemistry Invention

At the beginning of Chapter 2, just a week and a half into the class, came the only real test of my bravery. When we start to think about the structure of an atom, we look to the impressive experiments of Thompson, Milliken, Rutherford, and others. I asked students to look at these impressive chemists to tell me what they saw. They saw a lack of diversity immediately and they saw a group of people that did not look like the group of students sitting in the room. This gave us the opportunity to talk about why these chemists made the discoveries they did — no doubt through hard work and intelligence, but also through financial and other intangible support that would not be afforded to others at that point in history. We also balanced their genius with their mistakes — these experiments did not go well at first for many of these chemists. Finally, we took a look at chemists from history and chemists of today who deserve our respect and celebration. We also looked around the room and looked at ourselves as chemists who should be celebrated as the next great scientists. It was at this point that I promised to take time throughout the semester to spotlight a diverse group of chemists. I was nervous about taking time out of class to pose this question and have this discussion with students, when it would be easier to rush past and gloss over it. Michelle’s support gave me the courage to not back away from this and our weekly meetings gave me the chance to practice my delivery with a friendly but critical partner.

								
Boyle	Priestley	Lavoisier	Proust	Dalton	Curie	Watson	Hammond	Brady
								
Thompson	Milliken	Bacquerel	Rutherford	Curie	Ball	Jackson	Valentin	Galarreta

**Why care about history?**

- Creativity and attention to detail, given the lack of knowledge at the time
- Were they perfect geniuses? Did they work hard?
- What was their background, where did they come from, and why were they able to succeed?
- Who else should we celebrate and how can we change this story?

**Why care about history?**

- Who else should we celebrate and how can we change this story?

**More stories to come...**

## “Student” Spotlights

In this course students take a number of quizzes throughout the semester to provide regular feedback and checkpoints on their work. The quizzes are a major focus of the course. Each quiz had problems that were written from the perspective of a chemistry student. For example, “Samantha added 1.00 g of zinc chloride...” or “Ashanti was considering the electron configuration of phosphorus...” On the back of the quiz, the featured chemist was introduced in a short paragraph that included historical or career information. The students were either famous chemists, like Alice Ball, or Emmanuel College chemistry alumni or students, like Samantha Watson '15, and represented a diverse group of scientists. In a mid-semester survey designed and implemented by Michelle, students mentioned that more emphasis could be put on these chemists so that they did not become afterthoughts of the quiz. Michelle and I discussed this student feedback and I began taking one or two minutes after each quiz to explain why I chose this chemist to highlight. Students rarely had questions at this point in the discussion, but it did add more emphasis.

## Quiz Reflection

A significant and consistent emphasis was put on the learning process in this course. There's no expectation that students should just “get it” immediately in an introductory chemistry course. Hard work and an iterative process of revision can be helpful in learning and retaining information. This approach was made clear in messaging to students and was backed up with course policies. For example, students were given six attempts on each online homework question with no points lost for each attempt. This did lead to somewhat high homework grades, but reinforced to students that they could work through attempts while learning. They did not need to demonstrate mastery at the homework stage. Quizzes were the next step in the assessment plan. Mastery of the material at this stage was the goal, but not an absolute requirement. Students were encouraged to reflect on their effort and preparation after each quiz through a series of optional quiz reflection questions. Students were also encouraged to re-work their quiz to improve on what they got wrong. Completing the reflection and re-work could earn students bonus points on two quizzes throughout the semester and reinforced the idea that it is OK to struggle with some material more than others and it is OK to have an “off” week so long as the student continued the learning process. This initiative was proposed by a colleague, Dr. Nathan Lau, and I'm glad that we adopted it. While this aspect of the course did not directly involve my CLIP partner, Michelle, she was in favor of the approach and shows that being brave is even easier when the team expands beyond a pair to a department.

## Conclusion

Engagement in the CLIP program and working with Michelle's help was much easier than I initially imagined it would be. Having the support of the CLIP partner and colleagues in my department made this an enriching learning experience for me, rather than something scary and isolating. My confidence in addressing sensitive topics has certainly grown, and I see how that confidence is carrying over to my other courses. Maintaining confidence and effectiveness as a

teacher will require continued practice and effort, but through this one experience I've seen the benefits of that effort and how working with a partner makes the effort much less of a challenge.

### **Acknowledgement**

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