**Introduction**

The national crisis of high D/W/F rates in gateway biology courses requires us to better understand the deleterious factors associated with this problem. Strategies to overcome these factors will require collaboration at all academic levels. To test this approach, our current research project analyzed the role of **student engagement** as a critical step toward student success.

**Design and Approach**

A cross-disciplinary group of faculty, the director of university writing programs, and a doctoral student from educational psychology formed the collaboration. Drawing on salient elements from student engagement research literature, we posited that class size and writing would have significant impact on student success.

To this end, we split a group of 100 students assigned to the same instructor into 2 cohorts (n=20; n=80) to investigate the following:

- The role of **class size** as a factor associated with student engagement.
- The impact of **writing-to-learn activities** in gateway biology classes.
- The value of instructor awareness of pedagogy and **transparency in teaching** -- with emphasis on incorporating study skills, metacognition, and the learning process as part of standard instruction.
- The use of **classroom observations** for student engagement in all classes.
- The power of **assessment** to trigger an iterative process that led to a multi-year project.

**Summary of Findings**

![Diagram showing the impact of class size and writing on student engagement and success.

**Recommendations**

- Draw on expertise from different disciplines to experimentally explore, design, and test possible solutions to problems experienced by students in gateway courses.
- Maintain effective channels of communication
  - to keep all collaborators motivated and accountable and to keep projects moving forward.
  - to schedule class visits
  - to facilitate instructor reflection and adjustments in pedagogy, including exam and essay question design.
- Build a campus culture that encourages the Scholarship of Teaching and Learning.
- Use peer-reviewed research publication record to leverage campus discussion and changes.

**References**