

## KCEL Individual Mini-Grant Application

<b>Submission Date</b>	2015-01-23 08:31:45
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<b>Grant Title</b>	Implementation of Case-Study-Based Teaching in BIO101
<b>What are the basic pedagogical ideas, problems, or questions you will examine during the grant period?</b>	<p>I seek to participate in the summer workshop to receive training in case-study-based teaching method. The workshop is offered by the National Center for Case Study Teaching in Science at the University at Buffalo and will be held between June 1-5, 2015 (<a href="http://sciencecases.lib.buffalo.edu/cs/training/workshops/">http://sciencecases.lib.buffalo.edu/cs/training/workshops/</a>). I expect that my participation in this nationally-recognized workshop will provide me with necessary training and initial impetus to transform my teaching and, more importantly, students' experience in my classroom. Although I will initially focus on incorporating the acquired pedagogical technique into my teaching of BIO101: Principles of Biology, I anticipate it eventually having impacts on my other courses as well.</p> <p>In our Biology program, BIO101 is the first of the four-course core curriculum, and many students take this course during their first semester at Gustavus. Currently, my teaching of this course relies more heavily on the traditional approach, in which most of the classroom time is devoted to my "lecturing." Although I supplement my "lecturing" with pedagogical techniques that encourage students' participation, such as small-group discussions, think-pair-share, and immediate-assessment system (e.g. use of clicker-like instruments), they are not likely sufficient to communicate dynamic and exciting nature of scientific inquiry to many of those first-year students. Many studies in science education advocate for the implementation of discovery-driven, inquiry-based pedagogical methods to promote students' understanding of science as process. One of such techniques that allow students to experience the process of scientific inquiry in the lecture classroom is the case-study-based teaching. In this method, students will be provided with a specific "case" that require them to use the classroom time to investigate a problem. Effectively, the use of this method "flips" the learning experience for students so that they will engage in a small group work during the lecture period on "cases" while learning background concepts outside of the classroom. This approach will be particularly beneficial for students in BIO101, since it will prepare our majors for the rigor of subsequent courses in the Biology curriculum. Also, BIO101 has the NASP designation. Thus, the use of "cases" that are often based on contemporary problems increases the relevance of science to students and aligns with the philosophy of a NASP course within Gustavus' Liberal Arts Perspective curriculum.</p>
<b>Please describe what course(s)</b>	BIO101: Principles of Biology. Eventually, I will consider apply

**you will focus on during the mini-grant period and how you anticipate incorporating the mini-grant project into that course or those courses.**

**What work will be accomplished during the grant period? Supply a brief plan of work.**

ing this teaching method to other courses.

- Participation in the workshop by the National Center for Case Study Teaching in Science
  - o This will allow me not only to be familiar with the pedagogical technique, but also to be able to create my own “cases”.
- Creation of a “case” of my own
  - o By the end of the grant period, I will have at least one “case” submitted for peer-review.
- Making of podcasts
  - o In order to promote students’ learning of the background concepts outside of the classroom, I will learn how to make podcasts that will replace my “lecturing.”
- Actual implementation of “cases” in BIO101
  - o During Fall 2015, I plan on implementing two “cases” in my teaching of BIO101. Dr. Jon Grinnell, who extensively relies on this case-study-based teaching in his BIO101 course, implements a total of six “cases” during a semester. Thus, this plan of implementing two “cases” is a realistic effort toward more complete transition.

**How will you measure the outcomes and impact on teaching and learning of your work during this grant period? Please be specific about methodology, assessment techniques, and evaluation of student learning.**

To monitor student learning in the course, I intend to implement Knowledge Surveys (pre- and post-unit), which will evaluate students’ own perceptions of learning. Students’ mastery of the concepts specifically by their work on “cases” will be assessed based on their projects. I will also track their exam performance, thereby potentially allowing a comparison between “case” grades versus exam scores. Finally, I will deliberately ask several questions that are specifically about students’ perception of the case-study-based teaching on the end-of-the-semester course evaluation.

**Anticipated project completion date?**

Jan 4, 2016

**Upload Mini-grant budget form here.**

[Kawarasaki 2015Mini-grantBudgetFormRevised.xls](#)