COLLEGE OF SCIENCE AND MATHEMATICS
JACKSONVILLE STATE UNIVERSITY

Improving Science Education Initiative

The Improving Science Education Initiative (ISEI) is modeled after the Science Education Initiative pioneered by Carl Wieman at the Universities of Colorado and British Columbia. In the fall of 2017, faculty and administrators in the College of Science and Mathematics read and discussed Dr. Wieman's book, *Improving How Universities Teach Science; Lessons from the Science Education Initiative*[1]. Those discussions lead to this initiative with the recognition that:

- Evidence-based teaching practices are increasingly described in the academic literature[2].
- Active learning strategies lead to better student learning than traditional lecture style teaching[3].
- Many faculty in the College of Science and Mathematics have already adopted active learning strategies and could serve as mentors to those seeking to explore and adopt new teaching methods.
- Faculty in the College of Science and Mathematics are eager to invigorate and innovate their teaching and simply need incentives and/or guidance to start the change process.
- The Faculty Commons at JSU already provides excellent professional development for teaching improvement and this initiative is intended to supplement and customize those efforts for teaching science.

To improve the teaching of science at JSU, the College will invest $10,000/year for five years to incentivize and accelerate the use of teaching innovations. Grants will be made to individual faculty or to faculty teams. Funds are available for a variety of purposes including adjunct salary for course reassignment, extra compensation to faculty, or teaching technology and/or equipment. In most instances, travel, even for pedagogical conferences, will be funded through the traditional travel funding mechanisms. This initiative is focused on undergraduate education, but innovation of graduate education may be considered as funds are available.

Successful applications will start with clear student learning objectives, reference the academic literature on planned teaching innovations, and define the assessment tools to test the effectiveness of the innovation. Proposal scope should reflect the requested funds. For example, proposals for course reassignments should likely be coupled to course wide innovations. Smaller proposals may seek to install one active learning module in a course. Proposals for mentorship teams may request compensation for the mentor and those employing the new teaching techniques.

Funds will be made available following the reporting of assessment data using the normal departmental assessment workflow and evaluation by the ISEI committee. Projects that utilize course reassignment as incentives may be concurrent with the project plans. However, faculty involved in these projects that fail to report assessment data will be required to make up the course reassignment.

Applications are considered at any time but generally are expected prior to the start of the course in which the project will take place.

Those considering an ISEI project are encouraged to consult with the dean prior to creation of an application.

The communication of teaching innovation and success is an additional goal of this initiative. Any project that results in a peer reviewed publication will be awarded $1000 to be shared by the co-authors.

References

Copies of Dr. Wieman's book are available in the dean's office. PDF files of references 2 and 3 are freely available online or may be requested by emailing Tim Lindblom at tlindblom@jsu.edu.

1. Carl Wieman. Improving How Universities Teach Science; Lessons from the Science Education Initiative. Cambridge (MA): Harvard University Press; 2017.

2. National Research Council. Reaching Students: What Research Says About Effective Instruction in Undergraduate Science and Engineering. Washington, DC: The National Academies Press; 2015. https://doi.org/10.17226/18687.

3. Scott Freeman, Sarah L. Eddy, Miles McDonough, Michelle K. Smith, Nnadozie Okoroafor, Hannah Jordt and Mary Pat Wenderoth. Active learning increases student performance in science, engineering, and mathematics. PNAS 2014; 111 (23): 8410-8415. https://doi.org/10.1073/pnas.1319030111

Application Process

1. Complete the attached application cover page.

2. Attach a project narrative, no more than 3 pages, that includes the following sections:

   Student Learning Objectives: describe the specific learning objective(s) the project targets.

   Innovation Background: a literature review of what is known about the planned teaching innovation. Projects proposing novel innovations should reference literature that supports similar active learning approaches.

   Assessment: describe the direct assessment tools to be used to analyze the effectiveness results of the teaching innovation.

3. Provide a budget for the project. State the requested funds and their purpose. (Note that budget adjustments may be made to accommodate the maximum number of projects. Project leaders will be consulted before adjusted budgets are awarded.)

4. Electronic (PDF or MS Word) or hard copy submissions are acceptable.

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Application Cover Page

Name:

Department:

Semester Proposed for Project Plans:

Total Funds Requested:

Courses Impacted:

Typical Course Enrollment:

Project Name: