CU’s Science Education Initiative (SEI) is a $5 million investment by President Benson and Chancellor DiStefano to catalyze and support significant, sustainable improvements in undergraduate science education. Founded by Nobel Laureate Carl Wieman and currently directed by Kathy Perkins, the SEI funds departments to take a four-step, scientific approach to undergraduate education:
1) Establish what students should learn;
2) Scientifically measure what students are actually learning;
3) Use instructional approaches guided by research on learning and data on student thinking and learning;
4) Disseminate and adopt what works.

SEI Supports

**Departments**
7 funded: IPHY, PHYS, APS MDCB, GEOL, CHEM, EBIOS

**Faculty**
>100 faculty use SEI-funded resources <75 faculty modified their teaching

**Students**
Changes in >50 courses Impacts >10,000 students/yr

Faculty partner with Science Teaching Fellows to Transform Courses

**Develop consensus learning goals**
- Faculty work together to articulate explicit learning goals for courses.
- Shift from topics to outcomes: “What students should be able to DO at the end of the course?”

**Develop or adapt approaches supported by research and aligned with learning goals**
These are:
- Aligned with research on learning
- Actively engage students
- Guided by knowledge on student thinking.

**Use data to support & guide faculty efforts**
Probe student thinking and learning with:
- Student Interviews
- Observations
- Surveys
- Analysis of student work
- Conceptual pre/post assessments

**Science Teaching Fellows (STFs) & Faculty**

**What should students learn?**

**What are students learning?**

**Which instructional approaches improve student learning?**

**Faculty are...**
- Communicating explicit learning goals
- Attending to motivation
- Making lecture interactive with concept tests, in-class activities, and classroom discussion
- Adding or modifying homework, labs, and recitations
- Conducting and publishing research on student learning


For more information visit: www.colorado.edu/sei

SEI is affiliated with the Center for STEM Learning (CSL) | www.colorado.edu/csl

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