

base on teaching and learning at the baccalaureate and postgraduate levels. TIGER's current goal is preparing the next generation of STEM faculty through our collaboration with the National CIRTL Network. Faculty, staff, and students work together to promote the development of a well-prepared national faculty in the STEM (science, technology, engineering, and mathematics) disciplines.

Participation in TIGER workshops counts toward the Graduate Teacher Certificate, the Professional Development Certificate for Preparing Future Faculty, and the Professional Development Certificate for Business, Government, Industry, and the Arts. For more information on GTP certificates go to: <http://www.colorado.edu/gtp/training/certification.htm>.

Resources on CIRTL are available at www.cirtl.net and at www.cirtlcafe.net. The GTP also has materials on the CIRTL pillars available for viewing in the office.

Graduate Student Commentary

“It’s very time consuming to do research on teaching! [The workshops had] great insights on teaching, specifically what kids are about and what really motivates them.”

“The portion of the workshop that discussed not being blinded by unexpected research was great.”

“This workshop got me thinking about what is ahead. It had some good tips.”

“I did not know much about the proposal process. This workshop was very informative.”

Associate Vice Chancellor for Research and
Dean of the
Graduate School



The Graduate Teacher Program's
Collaboration with
The CIRTL Network

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The Graduate Teacher Program provides teacher preparation and professional development opportunities for graduate students on the Boulder campus and also hosts the CIRTL/TIGER project and activities.

The National CIRTL Network

The National CIRTL Network, based at the University of Wisconsin at Madison, was created with a \$5 million grant in collaboration with Michigan State University and the University of Pennsylvania to prepare graduate students for careers as STEM faculty. The University of Colorado at Boulder, Howard University, Texas A&M University, and Vanderbilt University joined the Network in 2006. See the website at <http://www.cirtl.net/> for further information.

In 2008, Laura Border, Director of the Graduate Teacher Program and Patricia Rankin, Professor of Physics and Associate Vice Chancellor for Diversity became Co-PIs on a new (2008-11) CIRTL project funded by the National Science Foundation. CU Boulder's portion of the new \$5 million grant is approximately \$400,000.

Collaborators include Michael Klymkowsky, MCDB, and Noah Finkelstein, Physics. Professor Klymkowsky offers a course on science teaching on-line across the CIRTL network. Students from CU-Boulder may register for the on-line CIRTL Network courses (see www.cirtlcafe.net). Professor Finkelstein works with other campuses in the CIRTL Network to develop teaching and learning activities to prepare future STEM high school teachers.

The CIRTL Pillars

The CIRTL Network is committed to implementing and advancing effective teaching practices for diverse student audiences. The pillars of the National CIRTL Network—Teaching as Research, Learning Communities, and Learning-through-Diversity—underlie all Network activities. The pillars are described in more detail below.

Teaching-as-Research

Assessing the effectiveness of teaching methods in the undergraduate classroom can be difficult. Teaching-as-Research (TAR) helps instructors design and implement deliberate, systematic, and reflective tools to help assess the effectiveness of their teaching efforts and their students' learning in their classrooms. Instructors utilize critical thinking and research skills to evaluate student

needs. This enhances the learning experience of both the students and instructors. Seven steps make up the Teaching-as-Research process:

- learning foundational knowledge
- creating objectives for student learning
- developing a hypothesis for teaching practices that might achieve the learning objectives
- developing and implementing teaching practices within an experimental design
- defining measures of success
- collecting and analyzing data
- reflecting, evaluating, and reworking for the next version of the design

Learning Communities

Faculty and graduate students can create learning communities in their courses and in their departments. Learning communities provide a forum for the discussion and dissemination of information on a shared topic of interest. Learning communities may focus on specific course materials, or be open to a more general discussion that helps to guide the teaching and learning process. Within a learning community, individuals take responsibility for the shared learning, discovery, and the generation of knowledge that results in achieving learning goals. Four core ideas are central to the learning community:

- shared discovery and learning
- functional connections among learners
- connections to other knowledge and life experiences
- an inclusive learning environment

Learning-through-Diversity

Diversity in the classroom includes, but is not limited to: preferred learning styles, race, ethnicity and culture, gender, sexual orientation, disabilities, religion, age, and socioeconomic backgrounds. It is important to recognize and utilize the diverse experiences and backgrounds of students to enrich the learning process. This requires an intentional and deliberate effort to promote equal success for all learners. The CIRTL Network has developed four specific aims to promote Learning-through-Diversity:

- know the diverse backgrounds of your students and the subsequent implications for learning

- identify curricular, teaching, and assessment practices that promote learning for all
- draw upon the diversity of your students to enhance and enrich the learning of all
- recognize existing inequities, and promote an equitable, inclusive and respectful climate for learning

CIRTL Exchange Program

The CIRTL Network Exchange Program is a two to three day visit to a host campus within the Network. This program is designed to give applicants the opportunity to give a Teaching-as-Research colloquium and interact with disciplinary colleagues at the CIRTL Network institution. Participants also have the opportunity to practice professional skills before entering the jobmarket. If you are interested in being a CIRTL Exchange fellow, please view the requirements at <http://www.cirtlcafe.net/networkexchange/toapply/> and, also contact the director of the Graduate Teacher Program.

STEM Education Scholars

Each Summer, CIRTL offers an opportunity for non-tenured faculty members, postdoctoral associates, and academic-track Ph.D. students to strengthen their preparation as college teachers in science, technology, engineering and mathematics (STEM). Participants will have the opportunity to meet nationally-recognized experts in STEM teaching and learning, and to practice techniques for engaging students in active learning; apply their research skills to improving their own teaching; develop a lasting learning community with other new STEM faculty across the CIRTL network; teach with awareness of diversity in the areas of learning style, culture, age, gender, and academic and personal background; and develop confidence in creating effective learning environments for students and faculty. Participants must pay their own conference costs. See application at www.cirtlcafe.net.

TIGER

The Teaching Institute for Graduate Education Research (TIGER) at the University of Colorado at Boulder was formed in 2006 by the Graduate Teacher Program (GTP) to address the importance of building a solid research