Abstract - JiTT is a proven pedagogical strategy in which faculty use the World Wide Web to make face-to-face classes more active and student centered. It enhances interactions among faculty and students, and encourages students to be fully engaged. JiTT promotes active learning and student engagement, and is often used in combination with other active learning methods. JiTT provides a window into students' attitudes and ideas about course content, study habits and other issues. This enables faculty to respond effectively to students' needs, and creates an opportunity to begin education research projects. To date, JiTT has been adopted by over 200 faculty members in over 30 fields, and has been shown to improve learning and student retention.

Index Terms – Active Learning, Web-Enhanced Classes,

CONTEXT
There is a growing consensus that active learning is an essential component of successful educational environments. This consensus is supported by research studies over a wide range of scales, subject areas, and types of institution [i], [ii], [iii]. As a result, active learning is one of the most frequently cited goals of educational reform, and it is the stated goal of many reform techniques [iv], [v], [vi]. This session will introduce participants to a particular method for promoting active learning along with others of the principles of good educational practice.

OVERVIEW
JiTT is built around "WarmUp exercises." These are web-based preparatory assignments that are due a few hours before class. The students complete these assignments at their own pace and submit them electronically. In turn, faculty adjust and organize the classroom lessons in response to the student submissions "Just-in-Time." This establishes a feedback loop between the classroom and the web assignments completed outside of the classroom. As a result our classes are student centered, and stress active learning, even in large lecture sections.

By the end of the session, participants will have discussed the underpinnings of JiTT in the education literature, and they will have experienced the atmosphere JiTT instructors establish in their classrooms. Participants will have developed several WarmUp exercises that they can use in their courses, and will have had an opportunity to discuss and critique their questions with their peers. Participants will also have discussed assessment results from existing JiTT implementations in a variety of academic disciplines.

Because we believe in practicing what we preach, this session will be highly interactive. Participants should prepare for the session by completing the pre-session exercise at http://webphysics.iupui.edu/fie_indy/warmup.html. At that site, they will answer several questions, much as our students do before class. The answers to these questions will become a part of this session. Background reading on JiTT may be helpful in answering the questions [3], [vii], [viii].

As shown in the Agenda below, this session will alternate brief presentations and discussion sessions with organized activities. The content of the last segment will focus either on assessment data from current JiTT implementations or on the development and use of scoring rubrics for WarmUp exercises.

SESSION AGENDA:
• Opening discussion and introductions: 10 min. (discussion format)
• JiTT Basics: 25 minutes (mixed presentation and discussion)
• Activity #1: 15 minutes (small group discussions with report out to group)
• JiTT Implementation: 25 minutes (mixed presentation and discussion)
• Activity #2: 25 minutes (participants write questions, which are discussed and critiqued by the group)
• Conclusion: 20 minutes (either a discussion of assessment results, or an activity on WarmUp scoring, depending on the interests of the group)
SESSION GOALS:

This session will provide a practical introduction to the Just-in-Time Teaching (JiTT) method. The goals of this session are to provide participants with:

• An introduction to the basics of the JiTT method
• An opportunity to experience a JiTT learning environment
• An opportunity to develop material for their own courses, institutions, and student populations
• An opportunity to “test” their material with peers

PRESENTERS:

Dr. Andrew D. Gavrin helped originate the JiTT method in 1996. He is Associate Professor of Physics and Associate Dean of Science at IUPUI; he has won numerous teaching awards, and has extensive experience in faculty development at both the high school and university levels. He has been PI of one NSF funded grant devoted to disseminating JiTT (DUE 998-1111, see Section II). Dr. Gavrin is a Project Kaleidoscope 21st Century Faculty member. In addition to physics education, Dr. Gavrin also conducts research in materials physics, particularly in imaging of magnetic domains.

Dr. Eileen M. Cashman is Associate Professor of Environmental Resources Engineering at Humboldt State University. Dr. Cashman is Co-PI of DUE 012-7139, a CCLI-A&I project bringing JiTT to Humboldt State. She has co-authored 3 papers on JiTT, and has hosted workshops on using JiTT with Blackboard® and teamwork activities. Dr. Cashman has implemented JiTT in one course at HSU and will be implementing JiTT in thermodynamics in Fall 2004. Dr. Cashman is a Project Kaleidoscope 21st Century Faculty member, and assisted with the planning the PKAL 2002 Summer Institute on Environmental Science and Technology. She serves in an advisory position to the JiTTDL project directed by Gregor Novak.

Dr. Elizabeth A. Eschenbach is Associate Professor and Chair of Environmental Resources Engineering at Humboldt State University. Dr. Eschenbach is a Co-PI with Dr. Cashman on DUE 012-7139. She is an active member of the Educational Research and Methods (ERM) division of the American Society for Engineering Education. She has facilitated ERM faculty development workshops around the country in the areas of diversity in the classroom, teaching with teams, cooperative learning, and outcomes assessment.

ACKNOWLEDGMENT

This work was supported by the National Science Foundation under grants DUE-9981111 and DUE-9752365 at IUPUI and DUE 012-7139 at Humboldt State University.

REFERENCES