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IM:PACT: Supporting Faculty Innovation in Course Redesign

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INNOVATIVE APPROACHES TO LARGE ENROLLMENT COURSES from lecture to...

Dr. Karen Chang

NUR 223

Redesigned as a hybrid course with 2 credits online and 2 credits in class, the class integrates information technology to promote active learning, problem-solving, and online collaboration. Students engage in a variety of online activities, use Adobe Connect for group presentations, and work on problem-solving during class.

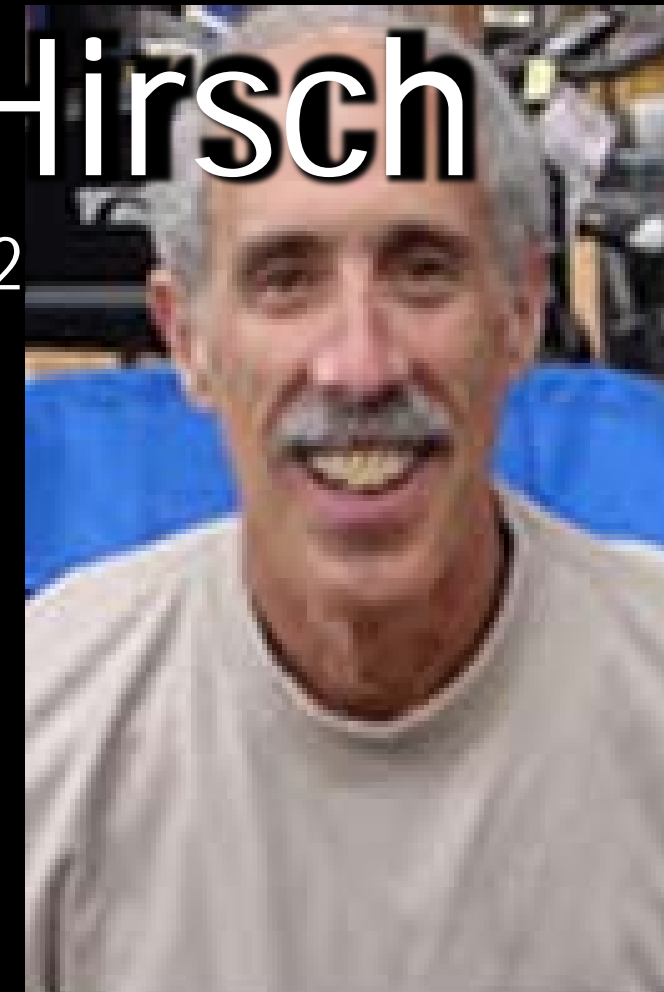


sign cohort:
rates over time
2010

Dr. Andy Hirsch

PHYS 172

Students watch pre-lecture videos that contain quiz questions with feedback to prepare them for the upcoming lecture and to allow Hirsch to employ just-in-time-teaching based on student responses to the quiz questions. In lecture, students participate with iClickers. In future semesters, Hirsch plans to increasingly move towards a "studio model" similar to SCALE-UP.



Dr. Mark French

MET 213

Traditional lectures are supplemented with videos of Prof. French working out problems related to dynamics and other phenomena. French's course culminates in a hands-on project wherein students build catapults to show the practical application of core principles learned throughout the course.



Dr. Tim Newby

EDC127

While we would expect a course on educational technology to include use of a variety of technologies, Tim is using a combination of case-based projects and technology in a unique way. He groups his students and asks the groups to develop lesson plans for a teacher in a foreign country. At various points during the project, the teacher is interviewed via Skype. The best lesson plans are forwarded to the teacher for review and possible use.



Ellen Gundlach

STAT 113

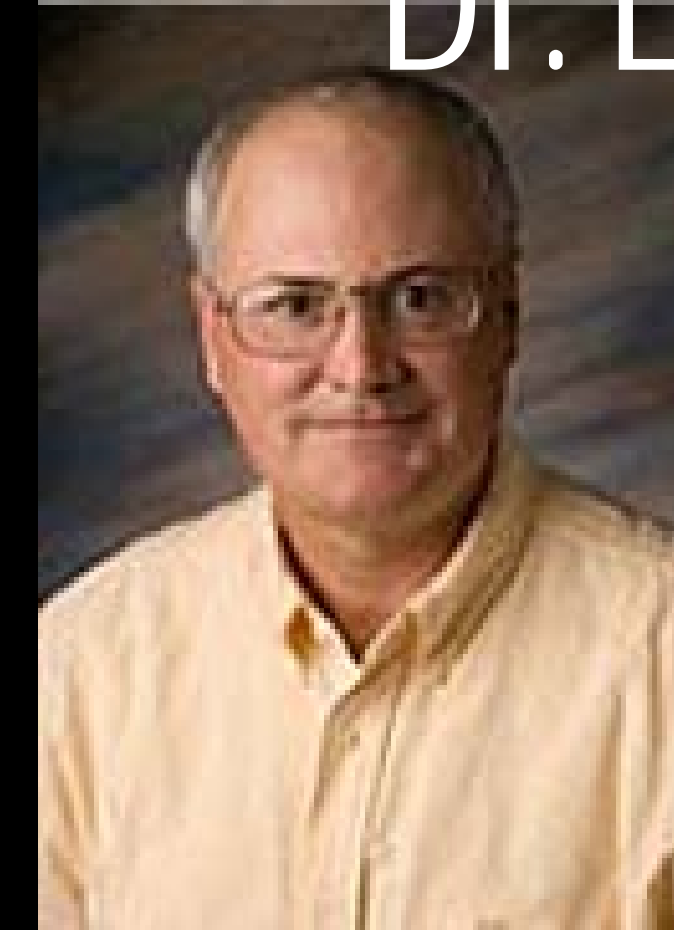
Online lectures using Adobe Presenter, online homework, Mixable discussion assignments, and proctored pencil-and-paper exams are available for students in all 3 versions of the course. The online students have the flexibility of doing everything except the exams online. The "flipped" class students do not have formal lecture or recitation classes, but they attend discussion/active learning sections once a week in a room designed for that purpose to incorporate more peer-to-peer learning and better conversations with the instructor.



Dr. Larry Nies

CE 355

Gaining a global perspective and improving student's information literacy skills are goals for this course. Students work in teams on real-world problems. Facilitated group problem solving, discussion and presentations, educational game play, research writing and reflective writing are components of the redesigned course. Students become active engaged learners and improve their ability to work and communicate within a team.



HOW DO WE ENCOURAGE INSTRUCTIONAL INNOVATION? the IMPACT project...



Keys to success:

- Provost sponsored & funded
- Interdepartmental collaboration
- Dean/Department Head approval for faculty participation
- Support individualized to faculty approach and needs
- Workshops provide significant time for faculty discussion

Approach:

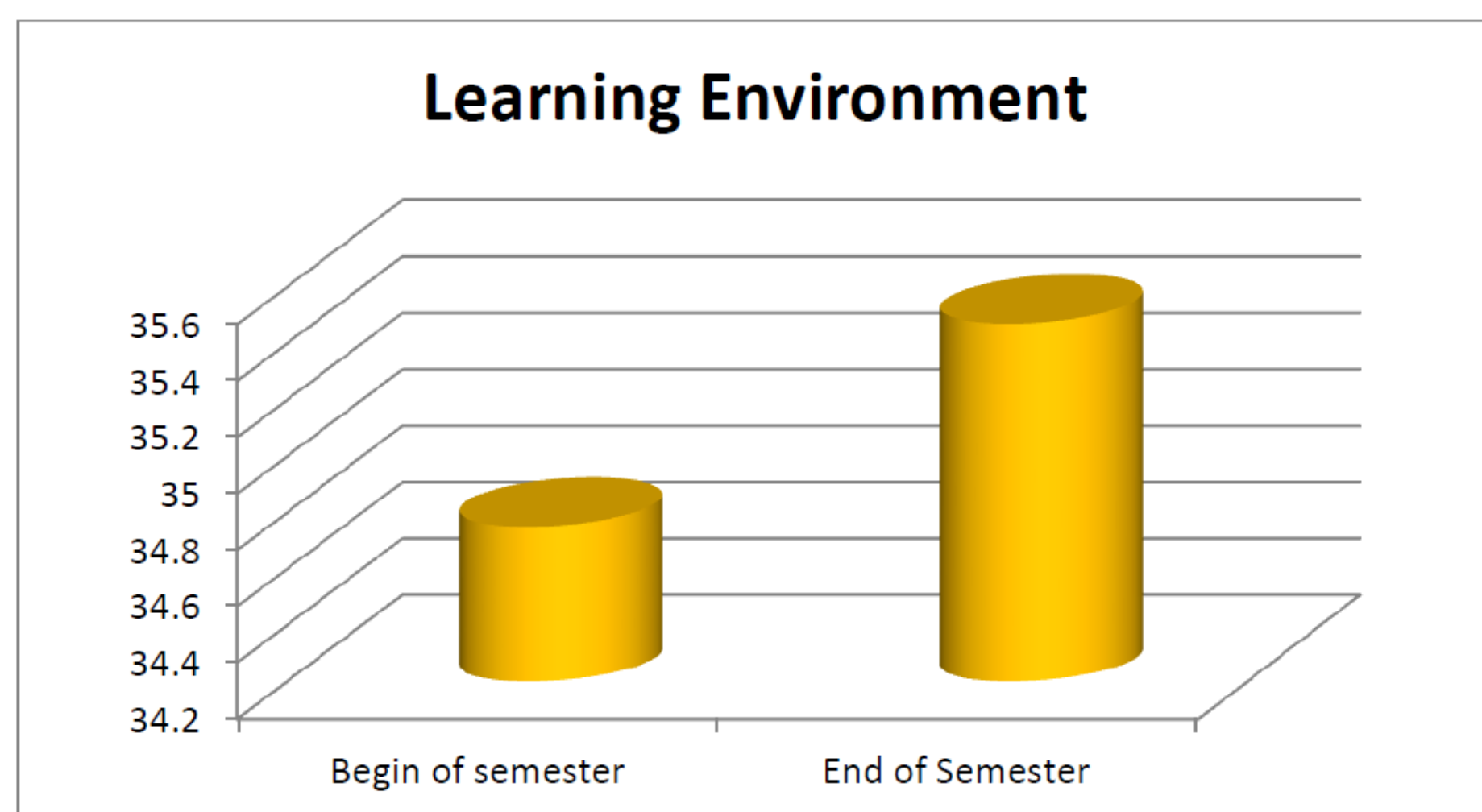
- Faculty apply & are screened based on both the impact of their course (size, level, etc.) and the faculty members' attitude toward change.
- Accepted faculty receive funding of \$10,000
- Faculty are required to attend workshops
- Workshops focus on providing instructional theory and its immediate application
- Workshops are sequenced to provide a full, well-rounded approach to course design
- Faculty have a support team comprised of Center for Instructional Excellence members, Teaching and Learning Technology Educational Technologists, and Librarians.
- Support team meetings continue for at least 1 year, based on faculty progress and need.
- Faculty are encouraged in iterative redesign
- A heavy focus on tying course outcomes first to Blooms Taxonomies then to both assessments and lesson plans
- SoTL emphasis provides faculty with indications of changes in student learning and perceptions
- Resources available to the IMPACT faculty fellows includes research-based articles on application of theories, focused tools that are targeted at solving faculty problems, answering faculty questions as opposed to a laundry list of services



DOES IT WORK?

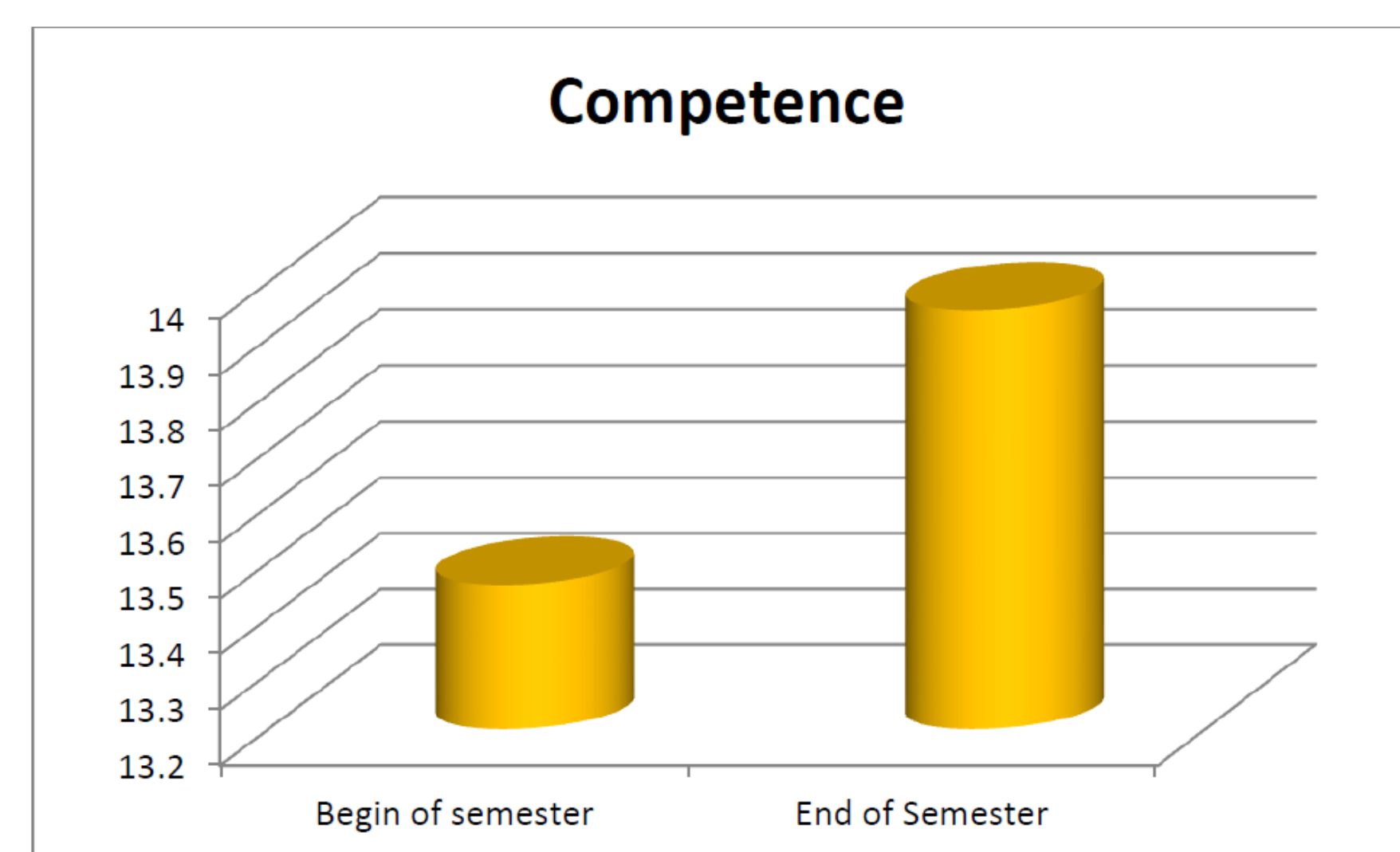
INITIAL ASSESSMENT RESULTS...

In a comparison of concurrent IMPACT and traditional sections eight of the nine 2011 redesigned courses demonstrated an increased course GPA, and seven demonstrated the highest course grades in 4 years (From IMPACT Annual Report, 2012)

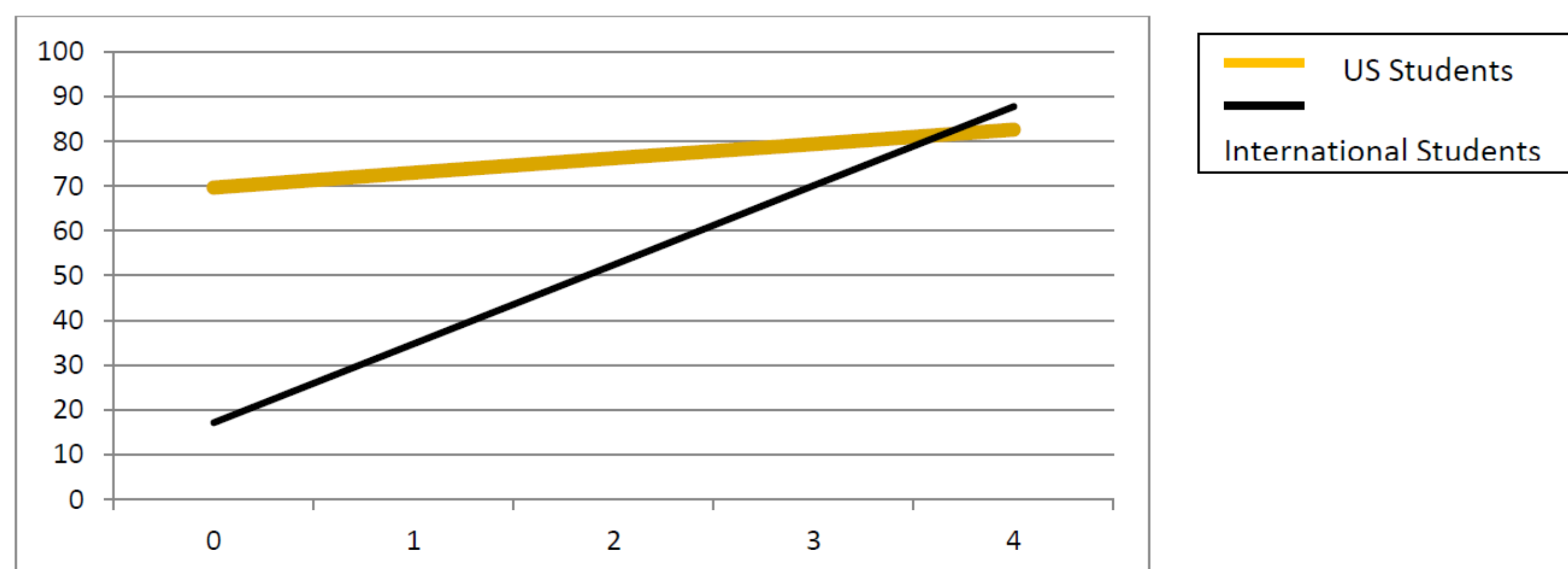


Students in courses taught in the Fall 2012 (N = 492), reported the learning environment as significantly more engaging and student centered (autonomy supportive).

In a comparison of her hybrid flipped section to her traditional section, end of semester course evaluations showed the following reactions to the technology incorporated in her redesign course: "The students liked the redesigned lectures with the funny videos and stories (only one person thought there was too much "fluff"). They liked the incorporation of iClicker questions for content and effort. They liked having the lectures available online (and in shorter chunks) as backup resources. In sum, the hybrid students were generally happy with the format" (From IMPACT Annual Report, 2012)



Students in IMPACT courses, show significant gains in competence and confidence (lowering of self-doubt) over the course of the semester.



POL 101: A large service course with a significant proportion of international students. The redesign of the course made use of active learning mini-research projects. Successful completion of the active learning mini-research projects improved performance. The size of the relationship between active learning research projects and Performance on final exam was positive and significant ($\beta = .28, p < .001$). Furthermore, this effect was qualified by a significant interaction. As seen below, the learning "payoff" from successfully completing the active learning mini-research projects was positive for all students, but even greater for international students.

In reviewing **retention rates** of courses in first redesign cohort:

- Five of the nine courses show increases in their rates over time
- Six of the nine courses show increases from fall 2010
- Five of the nine courses have shown their highest retention + graduation rates over the last four years.

FACULTY IMPACT...

In IMPACT assessment surveys faculty self-reported that their teaching and student learning at Purdue was improved by IMPACT and their implementation of one or more instructional technologies such as HotSeat, online instructions, Echo 360, clickers, Blackboard, Huddleboards, etc. (From IMPACT Annual Report, 2012)

Impact on non-participating faculty

21% of respondents who were aware of IMPACT had considered changing their teaching practices as a result of their awareness.

Impact of participation: Faculty reported that they learned about:

- The backward design process for course design,
- The SCALE-UP model for implementing active learning in the classroom,
- Educational technology available on campus, and their applications
- The importance of FLCs as platforms for sharing common experiences and gaining appreciation of one's own field.

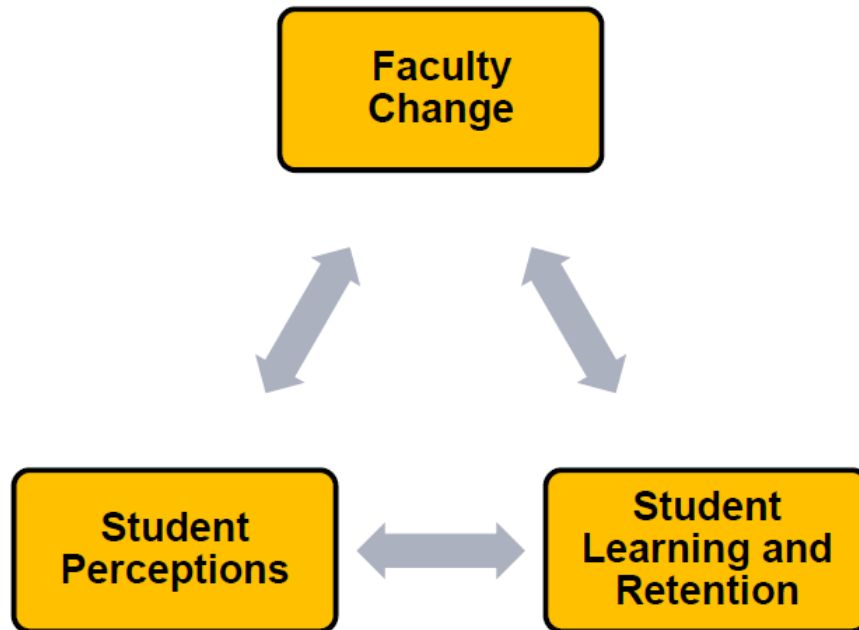
Impacts of the professional development on teaching practices:

- Adoption of new teaching strategies learned
- Enhanced knowledge of new strategies
- Continued use of previously known or previously implemented strategies

Reference: IMPACT 2012 Annual Report

Program Assessment Dimensions

The effectiveness of the IMPACT program is evaluated through a comprehensive assessment plan led by the DLRC. The IMPACT Assessment Committee is composed of faculty and staff from the DLRC, CIE, ITaP, and the Office of the Provost. The evaluation plan has been designed to answer research questions regarding the efficacy of the IMPACT program at meeting its stated objectives and the effectiveness of the program at achieving its intended outcomes. These research questions are presented below and fall into three primary groups: questions related to the success of the FLC at catalyzing change action in faculty, questions related to student perception of the course reforms, and questions related to the efficacy of IMPACT at improving student learning and retention. The progress to date of the assessment subcommittee at addressing each question is summarized in the sections that follow.



Catalyzing Change in Faculty

1. What are faculty expectations for IMPACT as a professional development program? What did faculty get out of their participation in IMPACT FLC?
2. What are faculty goals for course redesigns? What redesigns did faculty implement? What were the barriers and supports during their redesign and implementation?
3. Is the transformation achieved in IMPACT transferred to other courses taught by IMPACT faculty fellows?
4. What percentage of the courses leave IMPACT with five clearly defined learning objectives and associated assessments?
5. What is the distribution of learning objectives related to each level of Bloom's taxonomy?
6. What is the effect of IMPACT on the attitudes of administration and non IMPACT faculty with respect to teaching and learning?

Student Perceptions

1. Do students participating in IMPACT courses perceive these courses as engaging them in active learning?
2. Do students participating in IMPACT courses feel an enhanced sense of confidence and competence?
3. What is the influence of the IMPACT courses on student course evaluations?
4. What is the influence of the IMPACT courses on Student Perceptions of Learning Gains (SALG)

Student Learning and Retention

1. Does the implementation of IMPACT courses improve course grades compared to non-IMPACT versions of the same class?
2. Does student participation in IMPACT courses improve student performance in selected future courses?
3. Does participation in IMPACT courses improve student critical thinking skills?
4. Does participation in IMPACT courses improve retention to the institution after one year?
5. Does participation in IMPACT courses improve retention to the major after one year?
6. Do students involved in IMPACT have better four and six year graduation rates?
7. Do students involved in IMPACT courses perform better on faculty identified measures of learning?

Faculty Change

1) What are faculty expectations for IMPACT as a professional development program? And what are the perceived impacts of the professional development series on participants' teaching practices?

Data collection:

- Individual Interviews
- Surveys

2) What are faculty goals for course redesigns? What redesigns did faculty implement? What were the benefits and challenges encountered during their redesign and implementation?

Data collection:

- Open-ended survey (course-level, student-level, and personal goals for participation in IMPACT)
- Individual interviewed after redesign implementation
 - Changes made
 - Barriers encountered during their participation
 - Support received during participation
- Survey with supplemental focus groups for future cohorts

3) What percentage of the courses leave IMPACT with five clearly defined learning outcomes and associated assessments?

Data collection:

- Faculty identified course learning outcomes are being collected and archived.

4) What is the distribution of learning outcomes related to each level of Bloom's taxonomy?

Data collection:

- Faculty course learning outcomes are being collected and archived.

5) What is the effect of IMPACT on the attitudes of administration and non-IMPACT faculty with respect to teaching and learning?

Data collection:

- Colleagues of faculty fellows who implemented their redesigns in fall 2011 were surveyed to determine their awareness and understanding of IMPACT and their attitudes toward its goals.

Student Perceptions

1) Do students participating in IMPACT courses perceive these courses more engaging than the traditional version of the courses?

Data collection:

- A survey was constructed and administered to students enrolled in courses redesigned by faculty fellows in cohort 1.
- Where appropriate, comparison data were also collected using the same survey from students enrolled in traditional versions of the redesigned courses.
- The survey has been recently redesigned to incorporate levels of student motivation, as well as, the activity/engagement of the learning environment. This survey will be completed by students starting in Fall 2012.

2) Do students participating in IMPACT courses feel an enhanced sense of confidence and competence?

Data collection:

- Items related to confidence and competence were incorporated into the modified learning environment survey (discussed in question 1 above).
- Starting in Fall 2012 (cohort 2), students enrolled in courses redesigned by faculty fellows are being surveyed with the modified learning environment survey.

3. What is the influence of the IMPACT courses on student course evaluations?

Data collection:

- End of the semester course evaluations data is collected every semester and reported.
- Data for the two standard approved questions at Purdue University is collected and reported.

4. What is the influence of the IMPACT courses on Student Perceptions of Learning Gains (SALG)

Data collection:

- Faculty identified Learning Outcomes are included in the form of SALG on the end of the semester course evaluations data. This data is collected every semester and reported.
- The extent to which students perceive the faculty identified learning outcomes to have been attained comprises the results of this analysis.

Student Learning and Retention

1) Does the implementation of IMPACT courses improve course grades compared to non-IMPACT versions of the same class?

Data collection:

- Examine historical grade trends
- Comparison of concurrent IMPACT and traditional sections

2) Does student participation in IMPACT courses improve student performance in selected future courses?

Data collection:

- The spring 2012 grades of students who experienced one of the redesigned courses taught by cohort 1 in fall 2011 were compared with those of their peers who had not experienced an IMPACT course.

3) Does participation in IMPACT courses improve student critical thinking skills?

Data collection:

- The assessment committee is currently exploring options for appropriately, effectively, and efficiently measuring critical thinking skills.

4) Does participation in IMPACT courses improve retention to the institution after one year?

Data collection:

- The assessment committee has not yet examined one year retention rates.
- However, within year retention rates (fall to spring retention rate) was examined for cohort 1 courses taught in fall 2011.

5) Does participation in IMPACT courses improve retention to the major after one year?

Data collection:

- This goal is very difficult to assess and the Assessment Committee is currently working on a strategy to achieve this outcome.

6) Do students involved in IMPACT courses have better four and six year graduation rates?

Data collection:

- This goal is very difficult to assess and the Assessment Committee is currently working on a strategy to achieve this outcome.

7) Do students involved in IMPACT courses perform better on faculty identified measures of learning?

Data collection:

- Working with a subset of cohort 2 faculty fellows to align well defined course learning outcomes to faculty created assessment measures (see Appendix A for an example of a Learning Outcome Map).
- Working with all of cohort 3 faculty fellows (starting in the Summer 2012) to align well defined course learning outcomes to faculty-created assessment measures (see Appendix A for an example of a Learning Outcome Map).

- Completing research protocols in order to link student perceptions of the learning environment, perceptions of competence and confidence in the material learned to actual performance on identified learning outcomes.
- Completing research protocols in order to compare actual performance on identified course learning outcomes before and after the redesign or with traditional courses.