IMPACT Update

Presented to the Board of Trustees Academic Affairs Committee
11/15/2012  Frank Dooley, Associate Vice Provost for Undergraduate Academic Affairs

IMPACT Goals:

- Transform large enrollment foundational courses to achieve a more student centered learning environment through active and collaborative learning, technologies and space.
- A more student centered learning environment will foster student engagement, student confidence in their own learning, and increased attainment of course specific learning outcomes and higher order thinking skills.

IMPACT Timeline:

12/10 Convened by Dale Whittaker
Sp 2011 Steering Committee develop program
Sm 2011 Work with Cohort 1 & redesign HICKS B848
Fall 2011 Teach courses, plan for assessment
Sp 2012 Work with Cohort 2, Refine program
Sm 2012 Work with IMPACT Express
Fall 2012 Teaching Cohort 3, 2 more learning spaces

IMPACT Structure:

IMPACT involves six key partners on the West Lafayette campus: the Office of the Provost, Center for Instructional Excellence (CIE), Instructional Technologies at Purdue (ITaP), Purdue Libraries, the Discovery Learning Research Center (DLRC), and Purdue Extended Campus. Each IMPACT faculty fellow is assigned a support team who work with them throughout the redesign period and over the course of redesign implementation during the following semester.

Role of the Units Involved in the Collaboration

Financial support: Provost’s Office and Purdue Extended Campus
Support teams: CIE, Libraries, and ITaP
Assessment: DLRC, CIE, ITAP, and the Provost’s Office

Figure 1. IMPACT Contributors and Roles
**IMPACT Curriculum:**

The IMPACT course redesign model typically involves answering three key questions:

1. What do you want to accomplish?
2. How do you want to approach it? and
3. What methods and activities will you use to get there?

As evident in Figure 2, each question includes multiple steps in the model.

![IMPACT Course Design Model](image)

**Figure 2 IMPACT Course Design Model**

IMPACT faculty fellows spend time considering the pre-requisites and post-requisites for their course, the delivery and content of their course, reflect upon the structure of their course, and learn about new pedagogies that encourage and foster active learning. Each faculty fellows learn about:

- Developing learning outcomes and course objectives.
- Align their learning outcomes with appropriate and authentic course assessments.
- Transformation models for course redesign.
- Research-based links between improved student learning and pedagogical approaches.
- Innovative tools and technologies that foster a student centered learning environment.
- Active learning techniques, such as team, case, or problem based learning.
- How to increase writing and information literacy.
**IMPACT Courses, by College and Enrollment:**

The IMPACT curriculum works with cohorts of faculty. The inaugural IMPACT cohort was in summer 2011 and included 10 courses (Table 1). The second IMPACT cohort was in Spring 2012, and involved 22 courses. The third IMPACT cohort is spread over three semesters: 6 courses were redesigned in Summer 2012, 10 are being redesigned in Fall 2012, and 14 more courses will be selected for redesign during Spring 2013. The transformation of 30 courses a year is the sustainable goal for IMPACT.

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<th>Fall 12</th>
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<tr>
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<td><strong>6</strong></td>
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The IMPACT program has touched every college at Purdue, except the Veterinary School. This feature is highly distinctive for course redesign program as course redesign programs typically do not cut across disciplines, but rather tends to center in one department. Purdue is a leader in interdisciplinary course redesign at a Research Intensive University.

**Models of IMPACT Course Redesigns**

IMPACT faculty, in collaboration with the Support Team, identify the most appropriate course redesign model to meet key student learning outcomes. IMPACT faculty can select from various redesign models including the following (Figure 3).

- **Supplemental Model**: The supplemental model retains the basic structure of the traditional course and supplements lectures and textbooks with technology-based, out-of-class activities. An example is visualization software in ME 274 that allows students to understand how changing variables in a relationship (speed, mass) affects stopping distance.

- **Flipped/Hybrid Model**: Instructor-created video lectures and interactive lessons are reviewed by students before class. Class time is used for working through problems and collaborative learning, typically in a redesigned class space, ideally using the Scale-Up model that facilitates small-group work. An example is PSY 120.

- **Replacement Model**: The replacement model reduces the number of in-class meetings and replaces some in-class time with out-of-class, online, interactive learning activities. The class continues to meet for lecture.

- **Fully Online Model** The fully online model eliminates all in-class meetings and moves all learning experiences online, using Web-based, multi-media resources, commercial software, automatically evaluated assessments with guided feedback and alternative staffing models.
Enrollment in IMPACT courses is steadily increasing. It is forecast to reach around 10,000 students in spring 2013 and as many as 15,000 students by Fall 2013 (Figure 4).

ITaP has developed a portfolio of technology tools to enhance learning as well as engagement in and out of the classroom. ITaP won the Campus Technology magazine annual award for top innovations in 2012 for its mobile applications. ITaP is recognized internationally as a leader for campus technology innovation.

About 44% of the IMPACT courses currently make use of one or more online lecture or video capture technology tools available to them. These include BoilerCast, Doubletake, and Blackboard lectures. Although the creation of a student centered learning environment is one of the hallmark of the IMPACT program, there are a variety of ways (high technology and low technology) to create such an engaging and collaborative learning environment. About one-third of the IMPACT courses currently make use of a Collaborative or Interactive Technology solution. These include Purdue made products such as Gradient, Mixable, and HotSeat.
IMPACT Assessment:

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 fall into three primary groups:

1. Questions related to the success of the FLC at catalyzing change action in faculty,
2. Questions related to student perception of the course reforms, and
3. Questions related to the efficacy of IMPACT at improving student learning and retention.

Findings to date:

- The IMPACT curriculum aligns well with the faculty expectations for professional development. The faculty report that IMPACT has led to the adoption of new teaching strategies and enhanced knowledge of new teaching strategies.
- On a personal and professional basis, the faculty report that IMPACT helps them achieve gratification derived from being a good teacher, enhances their teaching capabilities, helps them adopt new teaching technology, rethink pedagogy, and stresses the importance of learning objectives.
- The effect of IMPACT on the attitudes of administration and other faculty is largely positive. Around 20% of the faculty is considering IMPACT for their courses.
- A student survey comparing IMPACT and control sections showed an equivalent or increased level of engagement compared to the traditional course.
- Examining grade trends historically, 8 of the 9 redesigned courses taught in fall 2011 demonstrated an increased course GPA, with 7 of these courses having the highest course grades in 4 years.
- Comparing IMPACT and non-IMPACT sections running concurrently, the IMPACT sections all had higher course grades than the overall grade for the course.
- There has been a slight increase in the fall to spring retention and graduation rates for the majority of the cohort 1 courses.

IMPACT Final Word:

- Our support teams from CIE, ITaP, the Libraries, DLRC, and PEC have developed a collaborative culture whereby they strongly support working with faculty, sharing ideas, and experiences. Their skills and team work is our greatest advantage.
- At least 1/3 of the course redesigns are using new learning spaces on campuses, and for some faculty this is an important motivator. Adoption of IMPACT by large courses (e.g., PSY 120) can quickly exhaust the growing active learning space.
- Instructors from lab based courses like physics suggest that the lab portion of the course is the vehicle for active learning and updating lab space is as important as new active classrooms.
- A subtle change may be needed to encourage more course redesigns among teams of faculty for a particular course. E.g., we may want to dedicate fully a third of the IMPACT resources and focus on teams of faculty from a particular department instead of covering many courses from across campus. This approach may lead to more sustainable course redesigns.