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Annual IMPACT Report 2014: A report by the IMPACT Data Collection and Analysis Team, Part 1

IMPACT Management Team

IMPACT Assessment Team

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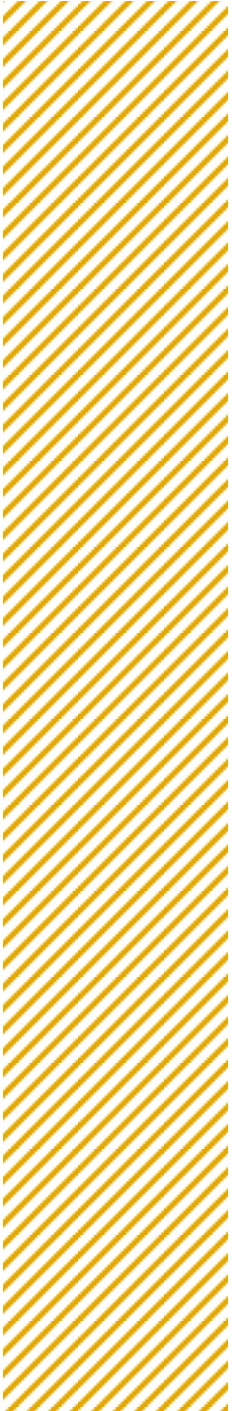
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IMPACT
ANNUAL REPORT
2014



PURDUE
UNIVERSITY



IMPACT

OVERVIEW OF THE PROGRAM

Instruction Matters: Purdue Academic Course Transformation (IMPACT) was launched by the Provost's Office in December 2010. IMPACT aims to create a more student-centered environment by engaging students in their own learning in order to improve student success as well as completion, retention, and graduation rates, in large enrollment, foundational classes. The IMPACT program is a large collaborative initiative on the Purdue West Lafayette campus (see **Figure 1**). It is an integrated campus-wide effort, involving multiple key partners across campus including the President's Office, Office of the Provost, Center for Instructional Excellence (CIE), Information Technologies at Purdue (ITaP), Purdue Libraries, the Discovery Learning Research Center (DLRC), and Purdue Extended Campus (PEC). In addition, the President's Office identified IMPACT as a component of the Purdue Moves initiatives, within the Transformative Education area, in the Fall 2013.

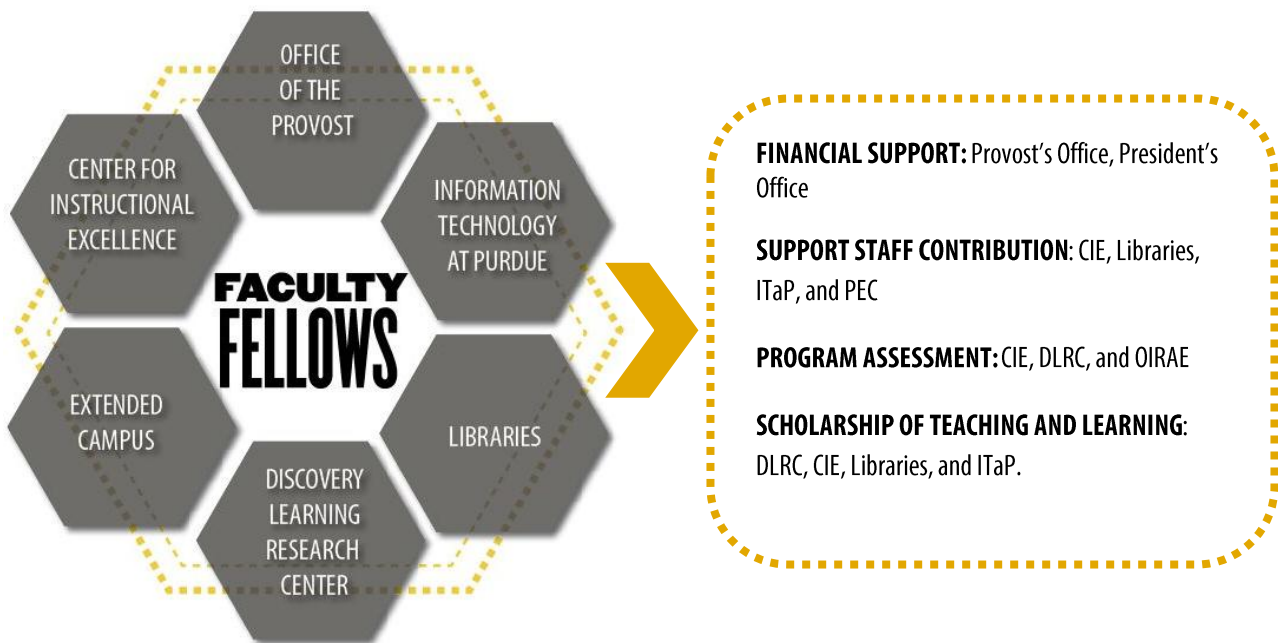


Figure 1. Collaborations among units involved in the IMPACT program

There is strong evidence that student-centered teaching leads to improvements in students' abilities to solve problems and understand concepts. Reviews of the literature and considerable research suggest that student-centered approaches, such as those utilizing collaborative learning, cooperative learning, problem-based learning, or active learning in general, enhance learning to a greater degree than purely face-to-face instruction (Prince, 2004; Weimer, 2013). As defined in Michael (2006), active learning is a "process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas".

"There is strong evidence that student-centered teaching leads to improvements in students' abilities to solve problems and understand concepts."

“Results have shown statistically significant improvement in student retention and performance ...”

IMPACT is partly modeled after the work conducted by Carol Twigg, President and CEO of the National Center for Academic Transformation (NCAT). NCAT has been engaged in course redesign since 1999, and NCAT projects have been supported by several foundations, including the Fund for the Improvement of Postsecondary Education (FIPSE) and the Bill and Melinda Gates Foundation. Outcomes of the NCAT redesigns have been very encouraging. Results have shown statistically significant improvement in student retention and performance in subsequent courses, improved student learning of core concepts, and enhanced performance on standardized exams, critical thinking skills and oral proficiency.

Although inspired by NCAT, Purdue’s approach to course redesign is more flexible, allowing faculty to make many choices regarding the tools and strategies they want to use to achieve their redesigns. While many universities are prioritizing active learning and student success, few are doing so at a broad campus-wide scale like Purdue. While approximately 110 courses at a variety of institutions have been redesigned through NCAT from 1999 through 2012, 120 foundational courses will have been transformed at Purdue by the end of spring 2014 semester across 10 of the 11 colleges.

NUMBER OF COURSES TRANSFORMED AND STUDENTS IMPACTED

The inaugural IMPACT cohort was launched in the summer of 2011. The number of courses which have been redesigned in each cohort is presented below. Course redesign programs at other institutions of higher education do not typically transcend disciplines within each institution; instead, they tend to be confined to one department, especially in STEM fields with large enrollment courses. Purdue is a leader in interdisciplinary course redesign at a research intensive university.

“Purdue is a leader in interdisciplinary course redesign at a research intensive university.”

Cohort 1

10 • Summer 2011 (10 courses)

Cohort 2

21 TOTAL } (21 courses)
 Fall 2011
 Spring 2012

Cohort 3

31 TOTAL
 Summer 2012 (6 courses)
 Fall 2012 (10 courses)
 Spring 2013 (15 courses)

Cohort 4

58 TOTAL
 Fall 2013 (25 courses)
 Spring 2014 (33 courses)

“

Currently, IMPACT's goal is to work with faculty teaching foundational courses that are part of the new core curriculum at Purdue, while maintaining a transformation rate of 60 courses per year over the next 3 years.



GOALS AND GUIDING PRINCIPLES OF THE IMPACT PROGRAM

The overarching goal of IMPACT is to achieve a greater student-centered learning environment by incorporating active and collaborative learning as well as other student-centered teaching and learning practices and technologies into large enrollment foundational courses. The creation of a student-centered learning environment will foster student engagement and student competence, as well as increased attainment of course-specific learning outcomes.

“The overarching goal of IMPACT is to achieve a greater student-centered learning environment by incorporating active and collaborative learning as well as other student-centered teaching and learning practices and technologies into large enrollment foundational courses.”

“

Specifically, the goals of the IMPACT program can be summarized as follows:

- To refocus the campus culture on student-centered pedagogy and student success.
- To increase student engagement, competence, and learning gains.
- To develop a network of faculty, knowledgeable in teaching and learning best practices and passionate about teaching through Faculty Learning Communities (FLCs).
- To base course redesign on research-based pedagogies.
- To enhance and sustain IMPACT by adding new IMPACT faculty fellows annually.
- To support faculty-led course redesign with campus-wide resources.
- To reflect, assess, and share results to benefit future courses, students, and institutional culture.

Faculty Fellows

IMPACT faculty fellows come from a variety of disciplines university-wide. Every semester, interested faculty submit their application to become part of the next IMPACT cohort. Each application is reviewed by the IMPACT management committee and cohort selection is made. For more information about past and current IMPACT faculty fellows, visit the IMPACT website (<http://www.purdue.edu/impact/>).

Faculty Learning Community (FLCs) Professional Development Curriculum

In addition to partly modeling the approach on NCAT course redesign, the FLC professional development component of IMPACT has been influenced by several research-based best practices in teaching and learning, as well as motivation theories, and innovations in teaching and learning technologies, some of which were created at Purdue (e.g., Purdue Studio applications HotSeat and Mixable). The course redesign plan recognizes that the needs of faculty and students in each course may differ. Every redesign is tailored to the needs of the faculty member, students, and the course. To accomplish the goals of the redesign, each faculty fellow accepted in the program works closely with a support team comprised of staff members in CIE, ITaP, Libraries, and PEC with expertise in pedagogy, technology, and information literacy (**Figure 1**). There is no “one-size fits all” model or formula. Therefore, the work of each support team is extremely important.

“Each redesign is tailored to the needs of the faculty member, students, and the course.”

“The IMPACT program is guided by a strong theoretical framework, which has been validated and used in several research projects for the past 40 years.”

Self-Determination Theory (SDT; Deci & Ryan, 1985; 2000)

The IMPACT program is guided by a strong theoretical framework, which has been validated and used in several research projects over the past 40 years. Self-determination theory is a motivational theory that posits the existence of three basic psychological needs, which when fulfilled, contribute to the creation of a student-centered, autonomy-supportive learning environment. The basic needs are autonomy, competence, and relatedness. **Autonomy**, in the context of SDT, does not mean independence but rather feelings of volition and choice. For example, students tend to feel autonomous when they are given choices and options about how to perform or present their work. **Competence** has been the focus of multiple higher education studies, and represents the extent to which students believe they have mastered content material or are able to perform academically (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 2000). Finally, students perceive that their need for relatedness is met when they feel

connected, intellectually and emotionally, to other students in the class, as well as to their instructor. In addition, **connectedness** to the material presented in class, also termed relevance, is important to foster perceived relatedness.

According to SDT, when basic psychological needs are met in student-centered, autonomy-supportive environments, self-determined motivation is fostered. SDT defines self-determined motivation as those forms of motivation guiding behaviors that are valued and chosen volitionally (identification). In contrast, non-self-determined motivation underlies behaviors that are coerced or pressured by others (coercion). **Figure 2** presents the forms of motivation according to their underlying level of self-determination.

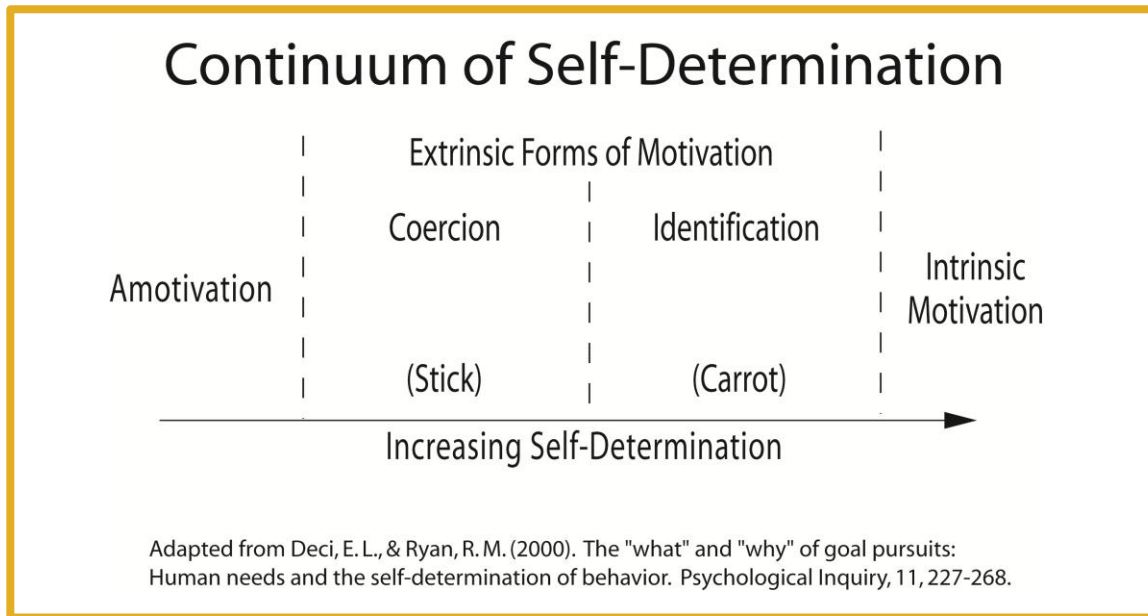


Figure 2: Forms of motivation proposed by Self-Determination Theory

“... fulfillment of basic psychological needs of autonomy, competence, and relatedness. In turn, fulfillment of basic psychological needs fosters student motivation, which then can lead to student success, learning, retention, and ultimately progress toward degree completion.”

In designing and evaluating the effectiveness of IMPACT, we examine the extent to which the transformations create a student-centered learning environment as assessed using SDT framework. As shown in **Figure 3**, we examine the motivational mechanisms (SDT principles) as moderators of the relationship between redesign models using active learning strategies and student success and outcomes. Our general moderation hypothesis is that active learning strategies are effective as long as they contribute to the creation of a student-centered (autonomy-supportive) environment by fostering the fulfillment of basic psychological needs of autonomy, competence, and relatedness. In turn, fulfillment of basic psychological needs fosters student motivation, which can then lead to student success, learning, retention, and ultimately progress toward degree completion. In this report, based on the data obtained from summer 2011 through fall 2013 cohorts, only data for

competence has been collected and therefore analyzed. Data on the full spectrum of basic needs is now being collected and will be disclosed in next year's report.

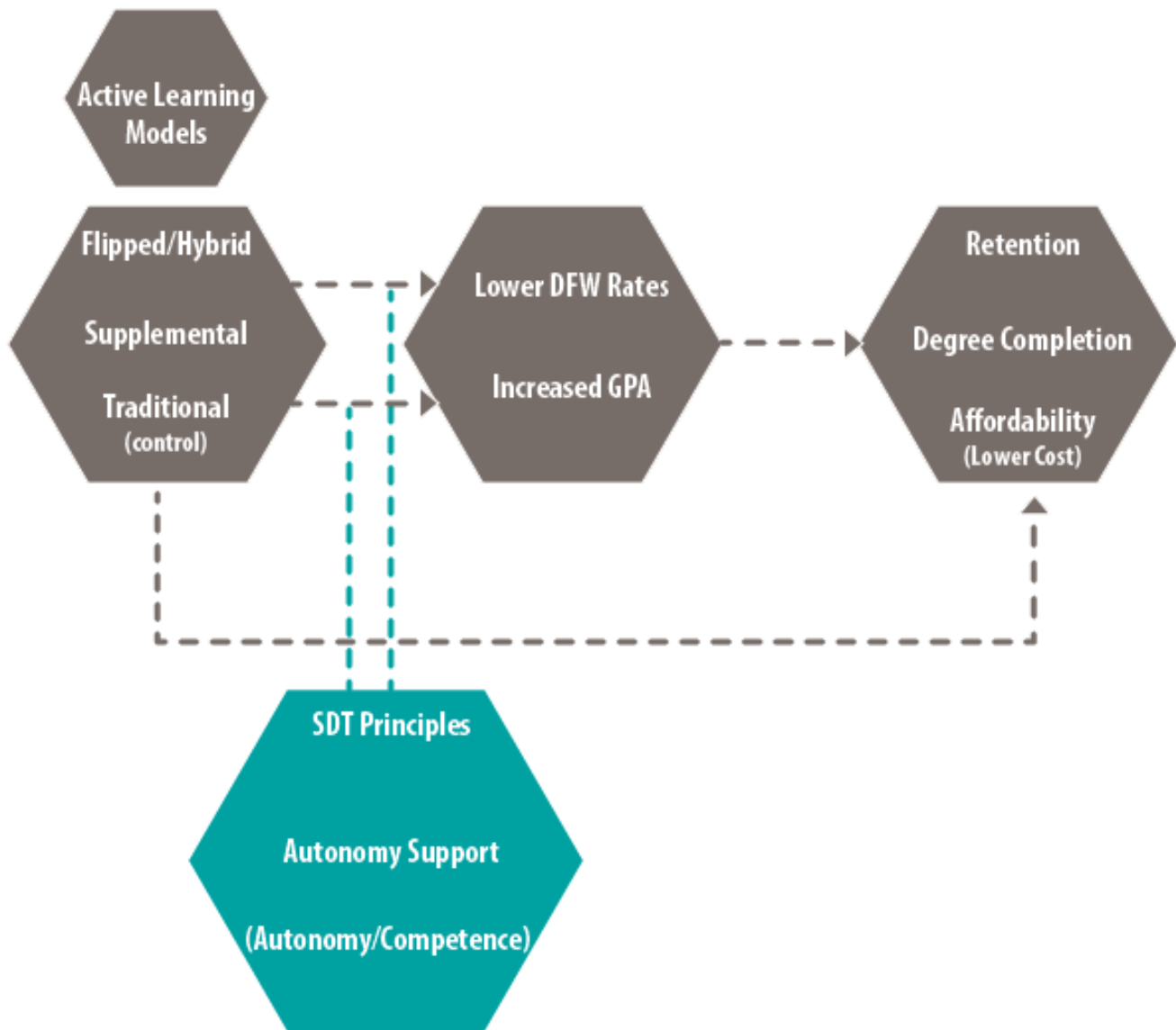


Figure 3. This graphic shows the relationship between active learning models and strategies, motivational principles, and student success variables