

2018

Annual IMPACT report 2018: A report by the IMPACT evaluation team

IMPACT Management Team

IMPACT Evaluation Team

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The logo for IMPACT features the word "IMPACT" in a bold, sans-serif font. The letter "I" is black, while "M", "P", "A", "C", and "T" are a golden-yellow color. The background is decorated with several concentric, dashed arcs in the same golden-yellow color, creating a sense of motion or a stylized sunburst.

IMPACT

Instruction Matters: Purdue Academic Course Transformation

2018 Annual Report

EXECUTIVE SUMMARY

The IMPACT program continues to lead the way in large-scale course transformation programs in the United States. The scope of IMPACT has grown to include over 300 faculty transforming over 500 courses at Purdue. Over 70% of all undergraduate students enrolled in at least one IMPACT course in the 2017-2018 academic year. After completing the IMPACT FLC, faculty report statistically significant increases in student engagement, teaching satisfaction, and improvements in pedagogical practices. Students in highly student-centered courses report higher levels of autonomy, competence and relatedness as well as increased self-determined motivation and higher grades. Specifically twelve large, foundational courses with high DFW rates that were transformed through IMPACT have shown significant decreases in the DFW rate, decreasing time to degree by allowing more students to pass these foundational courses. Additionally, IMPACT has received national recognition through a variety of publication outlets including the *Chronicle of Higher Education* and *Change: The Magazine of Higher Learning*. This report highlights the scope, assessment and accomplishments of IMPACT to date, and considers future directions.

INTRODUCTION

The mission of IMPACT is to create student-centered teaching and learning environments by redesigning foundational courses using research-based practices. IMPACT goals emphasize:

- **Refocusing the campus culture on student-centered pedagogy and student success;**
- **Increasing student engagement, competence, and learning gains;**
- **Focusing course transformation on research-based pedagogies; and**
- **Reflecting, assessing, and sharing results to benefit future courses, students, and institutional culture.**

IMPACT, a faculty development program, uses a cohort-based model built around a strong faculty learning community (FLC). It is a partnership among the CIE, ITaP, Libraries, OIRAE, POL, and ELRC, with support from the President's and Provost's Offices. Staff and faculty from these units work in teams with IMPACT Faculty Fellows to:

- **Identify course-specific learning outcomes;**
- **Map those learning outcomes to course activities and assignments (papers, exams, homework, projects, etc.); and**
- **Select an appropriate transformation model for their particular course that takes into account content, discipline, course size, faculty preferences, and abilities.**

IMPACT faculty currently use three transformation models¹. These models and their approximate frequency of use within AY2018 are: 2.4% online only, 17.7% replacement, and 63.9% supplemental.

¹ Transformation model frequency of use is based on the number of students, from all IMPACT sections of AY2018 courses, exposed to each model. 2.9% of students in AY2018 IMPACT sections were in sections where the transformation model was not reported. The general transformation models are characterized based on these questions:

Q1. Does section have any face-to-face in-class time?

If No, the model is "Online-Only."

If Yes, go to Q2.

Q2. Does section include any decrease in face-to-face in-class time?

If Yes, the model is "Replacement."

If No, the model is "Supplemental."

Figure 1. Usage of Transformation Models among IMPACT Sections

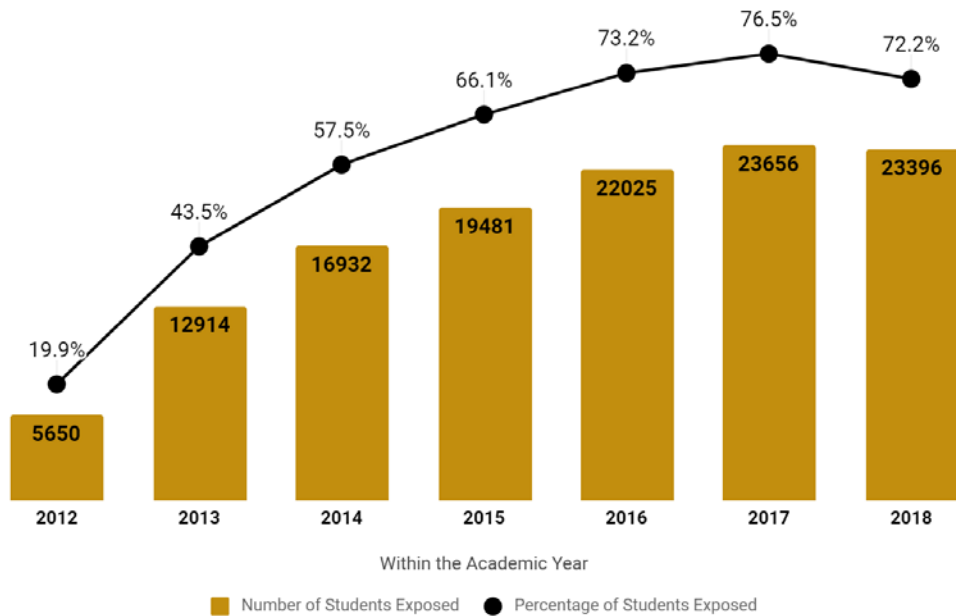


THE SCOPE OF IMPACT

By Students

IMPACT directly affects a large majority of Purdue undergraduate students, as most enroll in an IMPACT course at some point during their time at Purdue. During AY2012, the project’s first year of implementation, 20% of undergraduate students registered during AY2012 were exposed to at least one IMPACT course. Figure 2 shows the rates and counts of undergraduate students exposed to IMPACT *within* each academic year, illustrating the growth in the reach of IMPACT by both percent of undergraduate students impacted and number of courses offered over time. The drop seen in AY2018 is a consequence of losing the IMPACT status of select courses, particularly any course often taken by undergraduate students during the first year at Purdue.

Figure 2. Rate and Counts of Undergraduate Students exposed to IMPACT, within each Academic Year



From project inception in fall 2011 through summer 2018, 88.8% of undergraduate students registered for at least one undergraduate IMPACT course during these terms². This rate trends downward during fall terms,

² Proportion based (N_{IMPACT} / N_{All}) where:

- N_{All} is the count of unique undergraduate students, first enrolling at Purdue between fall 2011 and summer 2018 with at least one registration in any course numbered between 10000 and 49999.
- N_{IMPACT} is the count of unique students from within the N_{All} group, with at least one IMPACT experience for a course numbered between 10000 and 49999.

due to the influx of new students in August; however, this rate rises by the end of the academic year, showing most new students get exposed to IMPACT within their first year at Purdue.

By Faculty and Courses

Every College/School at Purdue contains at least one IMPACT FLC transformed course. IMPACT accomplishments relative to faculty and courses from the first FLC in summer 2011 through summer 2018 include:

- Offering 15 FLCs³ ;
- Averaging 21 faculty per IMPACT cohort (with a range of 11 to 34)
- Equipping 321 faculty⁴ (as shown in Figure 3) at Purdue with the knowledge, skills, and support to transform their courses to include research-based student-centered pedagogies;
- Transforming 529 unique courses⁵ (as shown in Figure 4), including:
 - 302 courses transformed by IMPACT Fellows during an IMPACT FLC, and
 - 227 additional courses transformed by IMPACT Fellows after participating in the IMPACT FLC (these are tracked as “IMPACT-Influenced” courses).
- Transforming at least one course from every college/school (as shown in Figure 5).

A historical list of IMPACT courses, Fellows, and cohorts is available on the [IMPACT website](#).

Figure 3. IMPACT Fellows⁶

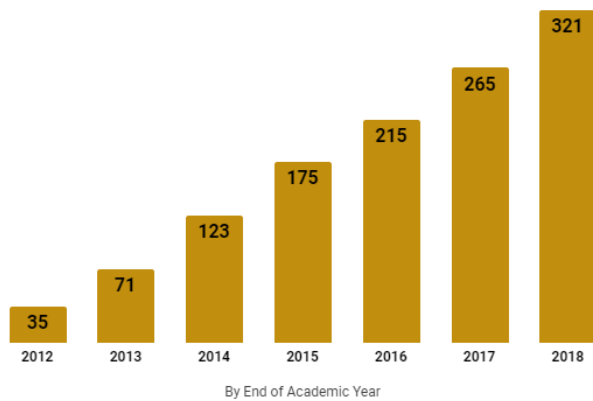
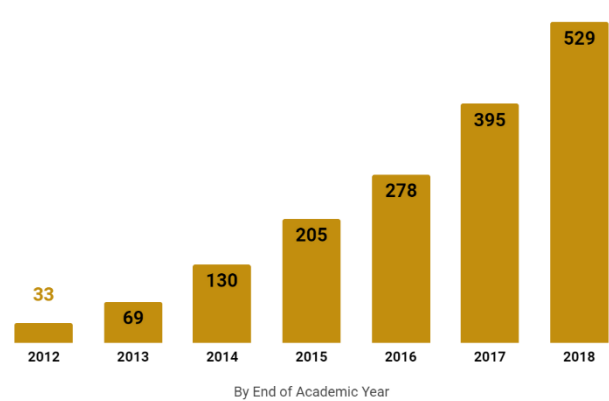


Figure 4. IMPACT Courses⁷



³ FLCs offered each fall and spring semester from summer 2011 through summer 2018, plus a few summer terms.

⁴ An FLC participant is counted only once, regardless of the number of times s/he participated in the IMPACT FLC. IMPACT Fellows participating more than once include (a) faculty transforming additional course(s), and (b) faculty wishing to “refresh” the transformation of the same course.

⁵ A course is counted only once, regardless of the number of IMPACT Fellows involved in the course transformation. A course is also counted only once if:

- The course was renamed (ex: EAS10400 is now EAPS10400, but both courses are tracked as EAPS10400 in analysis of the data.)
- Multiple courses are cross-listed. (ex: PHIL23000 and REL23000 are cross-listed, but tracked and reported as the single course “PHIL23000&REL23000.”)

In cases where one Fellow reports an IMPACT-Influenced course previously transformed by another IMPACT Fellow, the course is reported here as an IMPACT course, to avoid duplicate of counts.

⁶ Cumulative faculty fellows counted by calendar year. Each Fellow is counted only once, regardless of the number of courses they transform, or number of time they participated in the IMPACT FLC.

⁷ Cumulative course transformations counted by academic year, and includes IMPACT-Influenced courses, as reported by IMPACT Fellows. Each course is counted only once, based on the first FLC the course transformed in an IMPACT FLC, or the first time it was reported as an IMPACT-Influenced course, regardless of the number of IMPACT Fellows associated with the course.

Figure 5. Cumulative Count of IMPACT Courses by Course College⁸

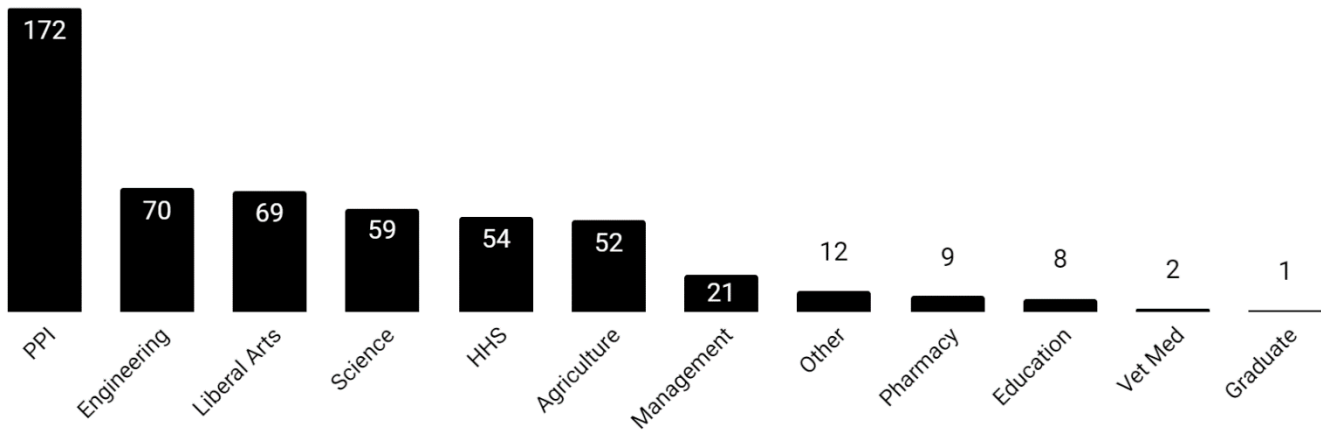


Figure 4 shows a continuously growing cumulative count of IMPACT or IMPACT-influenced courses, which is a consequence of more faculty participants in IMPACT FLC each term, plus many IMPACT Fellows reporting their IMPACT-Influenced courses. Yet the counts/rates of IMPACT courses offered may not be sustained at the same rate, due to Fellow attrition (retiring or leaving Purdue) or course attrition (Fellows stop teaching a transformed course). While course attrition is an unfortunate consequence of changes to Fellows' teaching loads or course scheduling, the count of IMPACT-Influenced courses being reported by faculty shows a cultural shift towards student-centered teaching and learning. IMPACT will need to continue to train and support new and existing faculty and address institutional barriers (as described under "Sustaining IMPACT" on page 9) in order to maintain and institutionalize this student-centered culture.

KEY FINDINGS FROM ASSESSMENT OF IMPACT

IMPACT Fellow Perceptions⁹

Faculty view IMPACT as a valuable source of professional development that positively impacts both their own teaching practice and student outcomes. Based on pre-participation and post-implementation surveys, IMPACT Fellows report significant increases¹⁰ in both student engagement and their own satisfaction with teaching after implementing their transformed course. They also report significant improvement in their pedagogical practices (including use of technology) and experiences with classroom learning spaces after implementing their IMPACT course. Figures 6-9 below illustrate these reported changes on a six point Likert scale where higher numbers indicate stronger agreement.

⁸ Counts include all courses transformed during an IMPACT FLC, and all other courses reported as IMPACT-Influenced. Each course counted only once, regardless of the number of IMPACT Fellows associated with the course. Courses classified as 'other' are not associated with an academic college, and including honors, and graduate courses.

⁹ Faculty perceptions based on data gathered, analyzed, and reported by ELRC staff in the internal report "Annual Report Briefing 2016, Cumulative Analysis." Data collection includes surveys, focus groups, and interviews with IMPACT FLC participants.

¹⁰ Statistically significant increases as $p < .05$. The percentage indicates the rate of survey participants who "Agreed" or "Strongly agreed" with the statement in the post-test survey.

Figure 6. Student Engagement Increases Reported by IMPACT Faculty

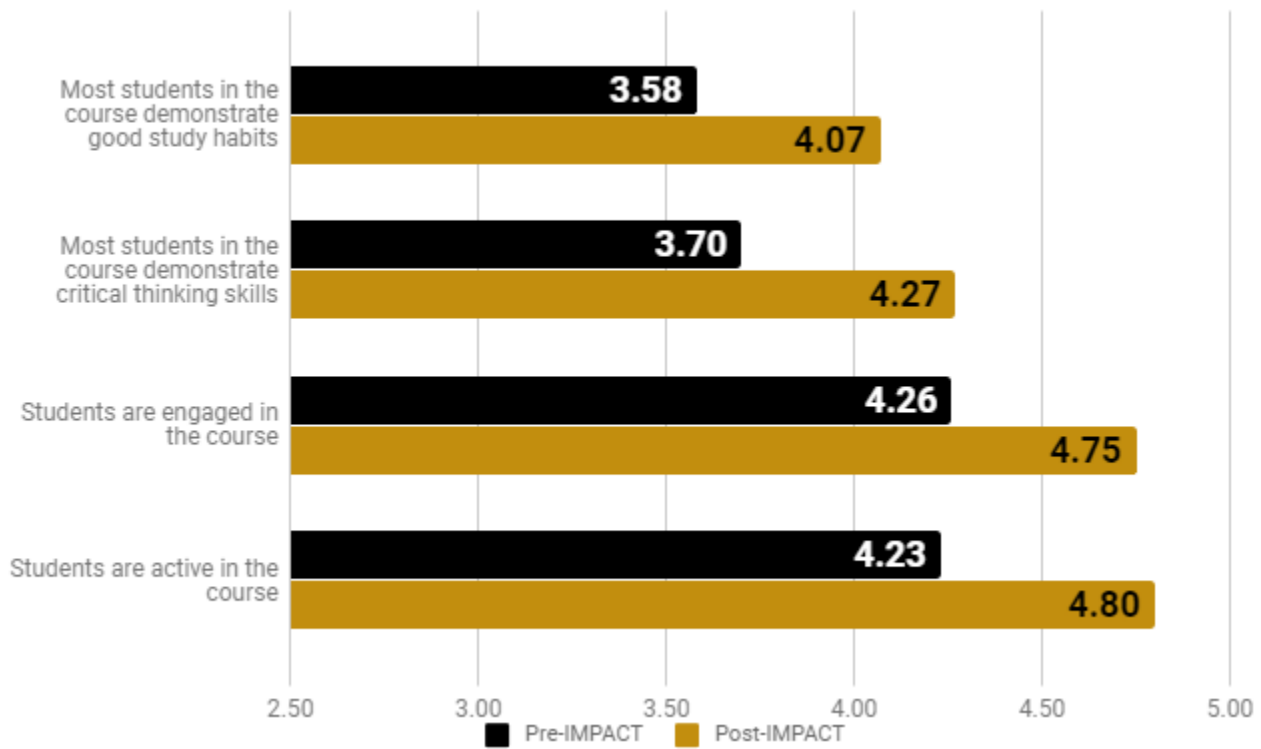


Figure 7. Teaching Satisfaction Increases Reported by IMPACT Faculty

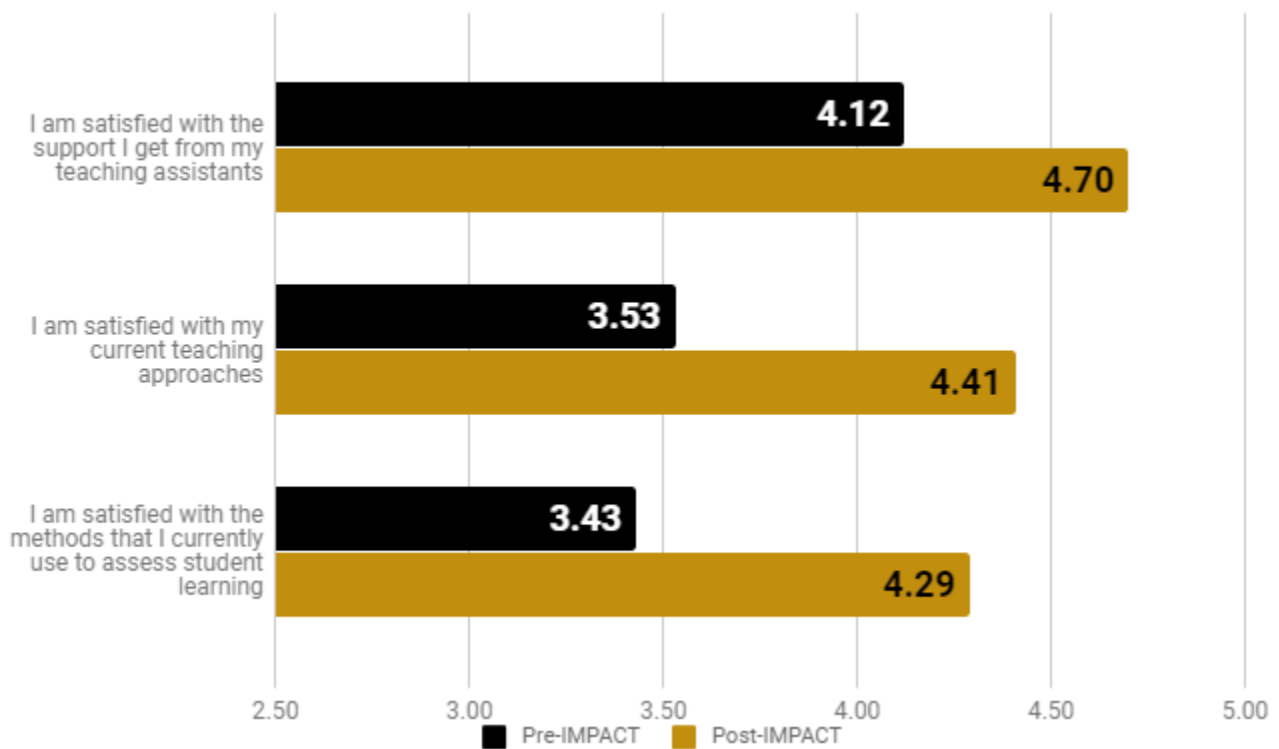


Figure 8. Pedagogical Practices Improvements Reported by IMPACT Faculty

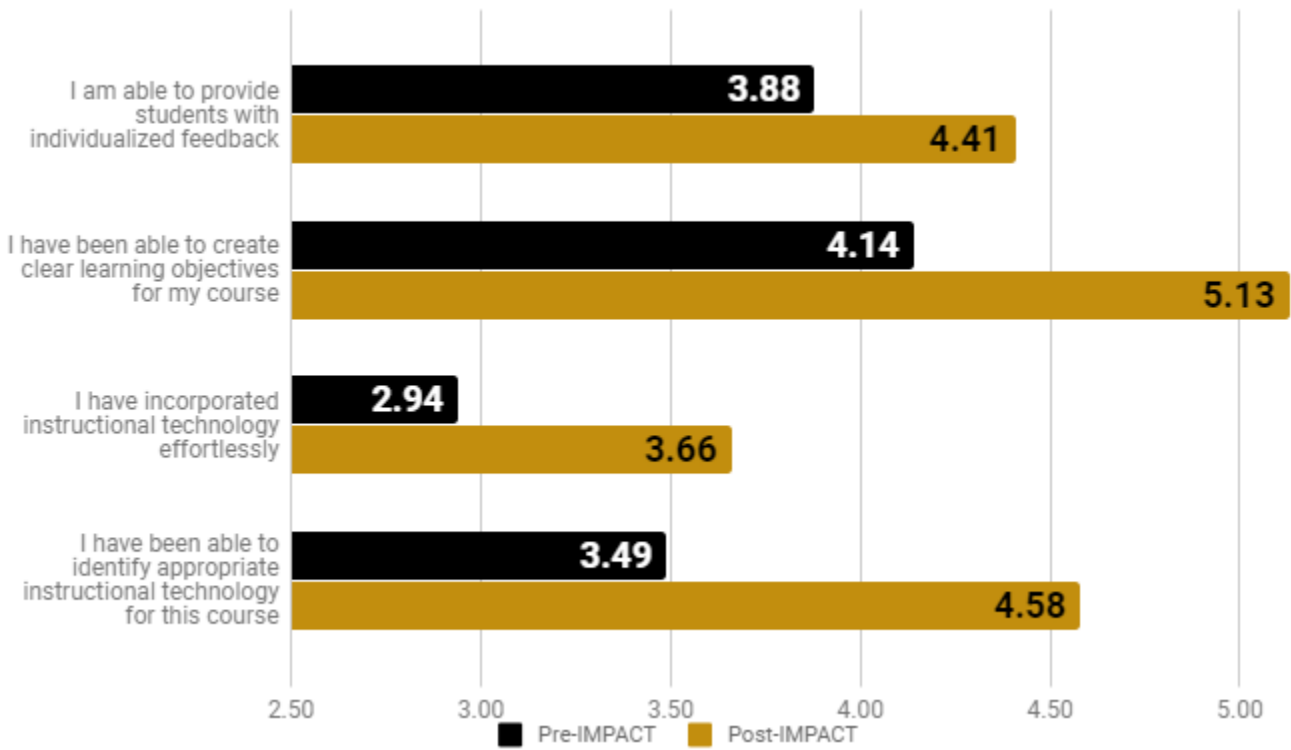
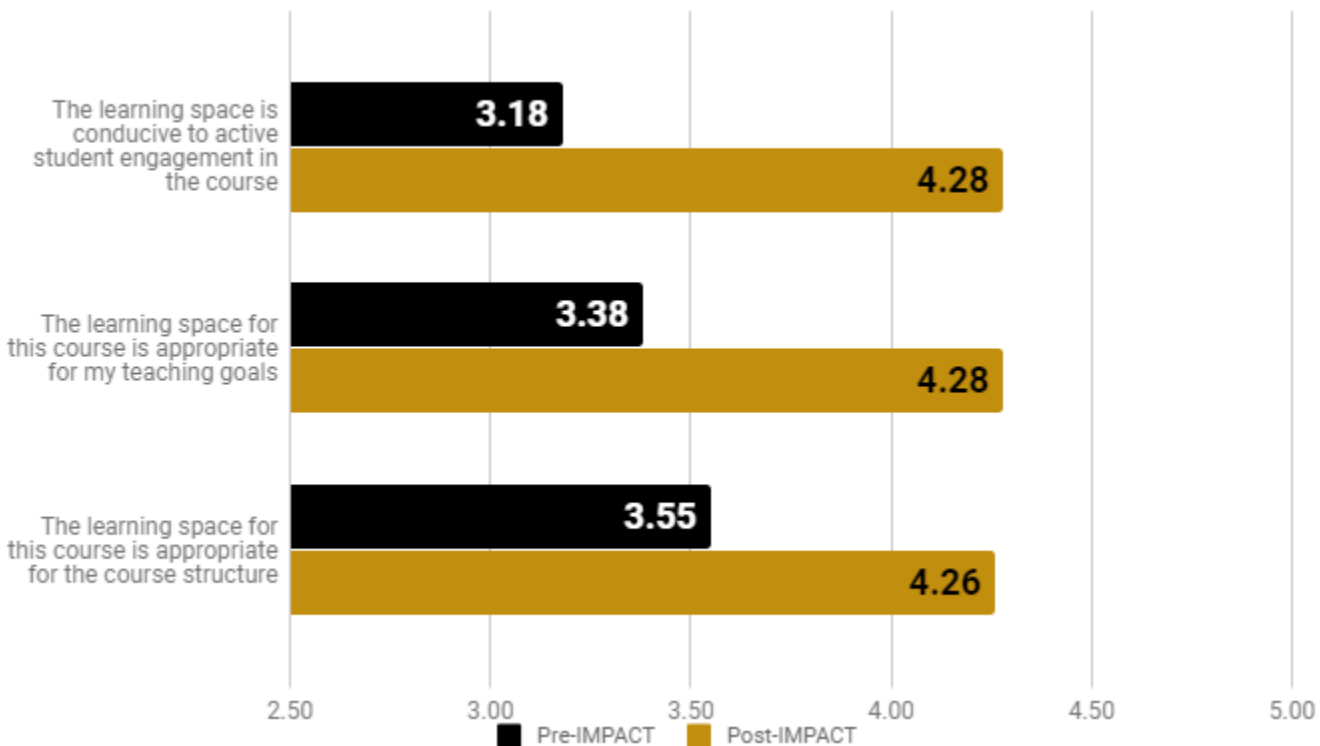


Figure 9. Learning Space Satisfaction Increases Reported by IMPACT Faculty



Student Centeredness

Faculty are successfully implementing student-centered pedagogies in their IMPACT course transformations, as evidenced by student surveys. The student centeredness ratings are based on students' perceptions of the learning climate established by the instructor in the course. As shown in Figure 10, 82.7% of all students in AY2018 who responded to the survey characterized their IMPACT courses as having highly student-centered learning environments. Students rated IMPACT sections using online only models as highly student centered slightly less frequently (75.4%) than IMPACT sections using replacement (80.6%) or supplemental (83.5%) transformation models¹⁴.

IMPACT transformation models are broad categories, not rigid definitions. There is considerable variation in the way the models are implemented across instructors and courses. Many factors, besides the transformation model, may affect students' perceived level of student-centeredness. Further inquiry will help us better understand the effect of a variety of measurable factors (such as course level, enrollment size, or learning space characteristics) on student perceptions of learning climate.

Figure 10. Student Centeredness Rating, by Student and Transformation Model, AY2018

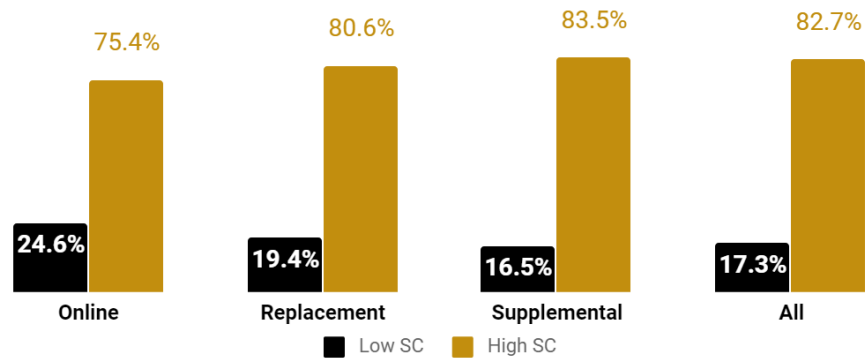


Figure 11 illustrates the relationship between a student's performance in a class and his/her perception of student centeredness, for all courses with student perceptions data collected since spring 2014. Matching individual cases from the student survey to students' performance, we see small statistically significant positive correlations (see Table 1) between students' student centeredness rating and their mean final grade value. Due to variations in grading schemas between courses (and sometimes between sections of the same course) the best uses of final grade values are within courses.

Figure 11. Mean Student Centeredness Ratings, by Final Grade Group

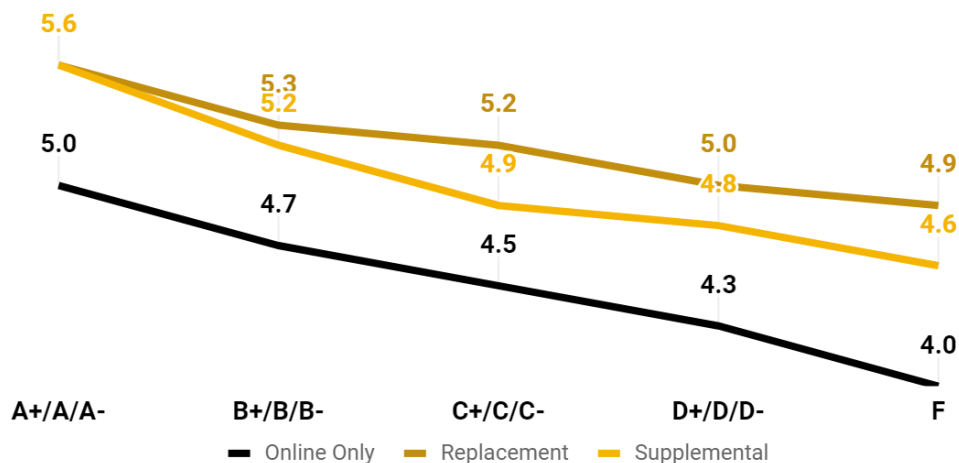


Table 1. Correlations of Final Grade Value to Student Centeredness, by Student

		IMPACT Transformation				Total
		Online Only	Replacement	Supplemental	Unknown	
<i>Mean Student Centeredness, By Final Grade</i>	Overall	4.7	5.4	5.4	5.5	5.4
	A+/A/A-	5.0	5.6	5.6	5.7	5.6
	B+/B/B-	4.7	5.3	5.2	5.5	5.2
	C+/C/C-	4.5	5.2	4.9	5.1	5.0
	D+/D/D-	4.3	5.0	4.8	4.7	4.8
	F	4.0	4.9	4.6	5.6	4.7
<i>Correlation of Final Grade Value to Student Centeredness</i>	R	0.207	0.138	0.216	0.203	0.202
	N	859	8991	30467	1026	41343
	p	<.001	<.001	<.001	<.001	<.001

Student Academic Performance

An initial goal of IMPACT was to increase student academic success and decrease time to degree by transforming traditionally difficult courses, based on the following criteria:

- High failure: the pre-IMPACT DFW rate for the course is 20% or higher,
- Large: the enrollment within the academic year exceeds 100 students, and
- Foundational: the course number is 29999 or less.

Within AY2018, 17 courses met the pre-IMPACT high failure criterion, and at least one of the other criteria. For these 17 courses:

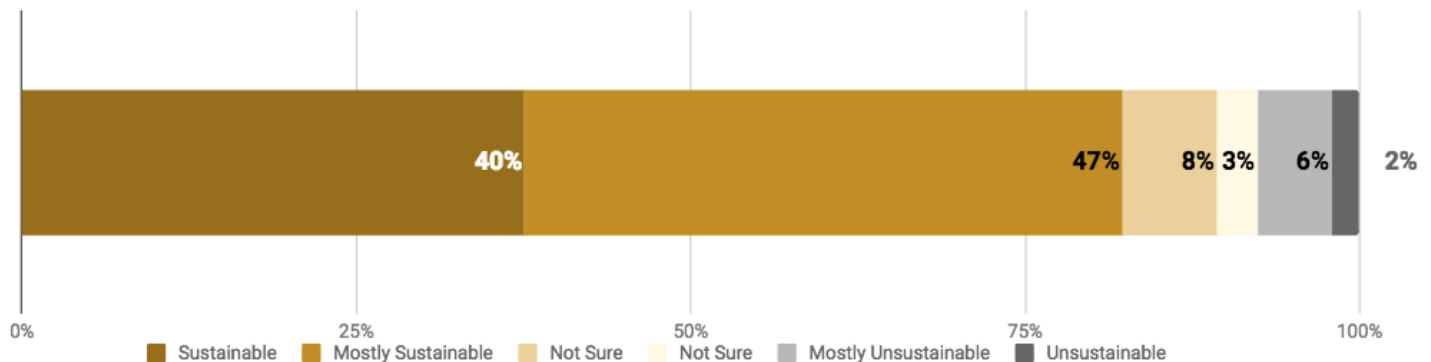
- The DFW rate was lower in IMPACT sections twelve of these courses, compared to the pre-IMPACT DFW rate.
- DFW rates decreased an average of 5.1% when compared to the pre-IMPACT DFW rate.
- This rate of change corresponds to an additional 618 students passing their course with a C- or higher in AY2018.

These data support a positive role of IMPACT in increasing student academic success and decreasing time to degree, since students will be able to move forward without the need to retake these foundational courses.

Sustaining IMPACT

Although faculty recognize the positive impacts of student-centered pedagogies on both their students and their own practice, IMPACT Fellow responses on longitudinal surveys (n=93) point to a need for further inputs and modifications at the institutional level to sustain these changes. For example, fewer than half the responding Fellows (47%) indicated they felt “completely supported” by their department and colleagues in the course transformation process.

Figure 12. Faculty Perceptions of Course Sustainability



Responses related to sustainability and transferability are more complex (see Figure 12), but likewise suggest areas for continued attention. Overall, 87% of faculty reported that their transformation was “sustainable” or “mostly sustainable.” Sustainability was defined as “changes that you feel you could maintain without exerting

a SIGNIFICANT amount of additional effort beyond what was required to transform and initially implement the course.”, Faculty did report encountering a number of challenges to sustainability. Those most often cited (along with the percentage of faculty identifying this challenge) include:

- Lack of time allocated for teaching duties (30%)
- Lack of teaching assistants (25%)
- Lack of access to appropriate learning spaces (23%)
- Negative reactions from students (23%)

External Review

Over the course of the last year, an external review of IMPACT was completed by George Kuh, the Senior Scholar and Founding Director of the National Institute for Learning Outcomes Assessment and Chancellor's Professor Emeritus at Indiana University Bloomington. The review analyzed the research and assessment completed by the IMPACT team and determined that IMPACT has been a successful initiative overall. The major findings from the external review report included the following:

1. IMPACT redesigned courses are associated with mostly positive findings as indicated by generally higher average end-of-course final grades and fewer students earning D and F grades or withdrawing from the course (DFW rate).
2. Both students and instructors report that IMPACT courses actively engage students at higher levels and are associated with other desired student behaviors.
3. The IMPACT initiative boosted the institution-wide use of empirically-derived effective learning and teaching practices as evidenced by its impressive scope and scale.

The report also indicated that IMPACT has influenced some greater culture shift at Purdue, evidenced by the number of IMPACT fellows recognized as “150 Anniversary Professors” as well as IMPACT fellows comprising greater than 50% of the faculty members inducted into the Teaching Academy in the past two years. One recommendation from the report suggested estimating the return on Purdue’s investment (ROI) in IMPACT though acknowledged the difficulty in disentangling the individual contribution of IMPACT from other campus efforts focusing on student success.

National Recognition

IMPACT continued to receive national recognition in 2018. It was named one of six innovative educational programs by the *Chronicle of Higher Education* in the special report, [2018 Innovators: 6 Programs to Change Classroom Culture](#). George Kuh was quoted in the report, citing IMPACT as a “textbook illustration of how to successfully deliver timely, substantive, high-quality professional-development experiences over an extended period of time to a particularly discerning audience.”

The IMPACT team was invited to contribute a paper outlining the achievements of the IMPACT program (to be published January 2019) in *Change: The Magazine of Higher Learning*. *Change* highlights contemporary issues, trends, and ideas of higher education. The National Institute for Learning Outcomes Assessment (NILOA) will also feature IMPACT in an invited occasional paper in early 2019. NILOA occasional papers are commissioned to examine contemporary assessment issues in higher education. Both publications concern the fundamentals of the program - student motivation and engagement, collaboration between campus units, and a student-centered approach to course redesign and faculty development.

In January 2019 an IMPACT panel, moderated by George Kuh, will present at the Association of American Colleges and Universities’ (AAC&U) annual meeting. The panel is titled “Taking Student-Centered Pedagogy to Scale: How One University Has Done It (and You Can, Too!).” In addition to numerous peer-reviewed journal articles and conference presentations, one book on IMPACT was published in 2018, titled “IMPACT learning: Librarians at the forefront of change in higher education.”¹¹ In addition, Stylus Publishing has committed to publish a book based on IMPACT’s program design and application.

¹¹ Maybee, C. (2018). *IMPACT learning: Librarians at the forefront of change in higher education*. Oxford: Chandos.

Taken together, these accomplishments highlight the programmatic, institutional, and scholarly successes of IMPACT.

SUMMARY

IMPACT is positively influencing teaching and learning at Purdue. Over 300 faculty have completed the IMPACT program, representing all colleges on campus. IMPACT faculty report improving their own teaching self-efficacy and satisfaction, as well as improved student outcomes and more favorable views of their students. Additionally, IMPACT faculty successfully make their courses more student-centered without removing the rigor for which Purdue is known. As a result, more students are successfully navigating courses, including large, foundational courses, thus decreasing student time to degree and cost. With over 70% of all undergraduates enrolling in an IMPACT course each semester, the reach and influence of IMPACT is substantial. Institutional commitments—including ongoing IMPACT training/support and the creation of new active-learning classrooms—are contributing to a culture change at Purdue that emphasizes student-centered teaching and learning.

IMPACT has achieved significant national recognition throughout the past year, including being named one of six innovative educational programs by the *Chronicle of Higher Education* and being invited to submit a paper on IMPACT for *Change: The Magazine of Higher Learning*. An external review by George Kuh confirmed the success of IMPACT, stating that **“the initiative is a textbook illustration of how to successfully deliver timely, substantive high quality professional development experiences over an extended period of time to a particularly discerning audience.”** The partnership and work represented by IMPACT drives ongoing excellence at Purdue and keeps Purdue at the forefront of transformative education nationally and globally.