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Creating Student-Centered Learning Environments and Changing Teaching Culture: Purdue University's IMPACT Program

Chantal Levesque-Bristol, Michael Flierl, Craig Zywicki, Loran Carleton Parker, Cody Connor, Daniel Guberman, David Nelson, Clarence Maybee, Emily Bonem, Jason FitzSimmons, and Erica Lott

Foreword by George D. Kuh



Occasional Paper #38

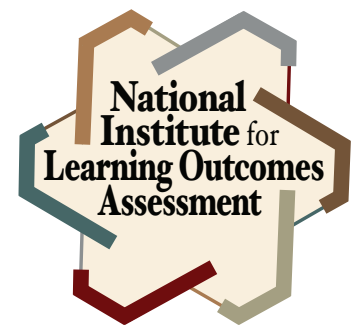
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Contents

Abstract & About the Authors	3
Foreword	5
Creating Student-Centered Learning Environments and Changing Teaching Culture: Purdue University's IMPACT Program	7
Scope of IMPACT	8
IMPACT's Beginnings	10
Theoretical Framework Guiding Faculty Development and Course Redesign . .	13
Support Team Composition - Scaling Up	14
Ensuring Autonomy in Selecting Redesign Elements	14
IMPACT as Professional Development	16
Documenting IMPACT's Effectiveness	16
Faculty Change and Professional Development	18
Institutional Change and Sustainability	19
Student Engagement	20
Student Academic Outcomes	22
Student Learning Outcomes	22
Implications for Assessment	24
Conclusion	26
References	27
Appendix A	30
Appendix B	31
About NILOA	35

NILOA Mission

The National Institute for Learning Outcomes Assessment's (NILOA) primary objective is to discover and disseminate ways that academic programs and institutions can productively use assessment data internally to inform and strengthen undergraduate education, and externally to communicate with policy makers, families and other stakeholders.



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Abstract

How does a large research university establish a culture supporting student-centered evidence-based teaching? In this paper, we describe Purdue University's "Instruction Matters: Purdue Academic Course Transformation" (IMPACT) which has involved 321 instructors and 529 courses. Of every first-time undergraduate student, who first enrolled at Purdue West Lafayette in fall 2011 to summer 2018, 95.1% of them enrolled in at least one IMPACT course in any academic period during that time. We describe the history and evolution of the program, from its roots in National Center for Academic Transformation (NCAT) models and Faculty Learning Communities to an innovative adaptation of Self-Determination Theory principles. The program aims to maximize autonomy support for instructors, as they design classes to meet their instructional goals and student needs. IMPACT uses assessment on multiple levels: What should we examine in addition to grades to document achievement of learning outcomes in individual courses? How do we measure the learning climate and student engagement in a class? Most important, how does a faculty development program focused on course redesign lead to meaningful and lasting institutional change? In telling this story including lessons learned, readers will discover ways to enhance and evaluate their own faculty development programs to effect evidence-based and teaching-centric culture changes on their own campuses.

About the Authors

Chantal Levesque-Bristol is the Executive Director of the Center for Instructional Excellence and Full Professor of Educational Studies at Purdue University. She received a Ph.D. (2000) in Social Psychology from the University of Ottawa, Canada. Her primary areas of interests are teaching and learning, motivation, educational psychology, faculty development, and institutional change. She works with faculty and conducts research on human motivation. She has worked with institutions of higher education both nationally and internationally. She is the Principal Investigator on a First in the World Grant from the Department of Education.

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Foreword

Enhancing Student Learning through Faculty Development Done Well

George D. Kuh

It is all but axiomatic that student-centered teaching approaches are a key to such desired postsecondary student outcomes as persistence, completion, and deep, meaningful student learning. Another truism is that many faculty members—especially those at large, research-oriented institutions—have little formal preparation in using engaging pedagogical practices. Herein lies an age-old dilemma with which the academy continues to struggle: What works best in helping faculty members *teach well*?

Yes, there are accounts of individual faculty who for various reasons work with staff at their campus center for instructional excellence or an entity with a similar function (Beach, Sorcinelli, Austin, & Rivard, 2016; Huber & Hutchings, 2005). Rarely do universities attempt large-scale faculty development efforts over the amount of time needed to document and guide improvement in the quality of undergraduate education. One notable exception is Purdue University’s “Instruction Matters: Purdue Academic Course Transformation” (IMPACT) initiative which is the subject of this NILOA 38th occasional paper.

IMPACT is a massive multi-year campus-wide collaborative effort aimed at improving the learning and teaching of Purdue undergraduates. At its core, it is a carefully crafted, comprehensive faculty development effort spanning every college and school on Purdue’s West Lafayette campus. Theoretically grounded, the initiative is a textbook illustration of how to deliver and evaluate substantive, demonstrably effective professional development experiences over an extended period to a particularly discerning audience (Kuh, 2018). To their credit, IMPACT personnel employed an implementation strategy that made it possible to respond in a timely manner to the inevitable challenges that emerge with an initiative this complicated and modify the work accordingly going forward.

As a result, IMPACT stands tall among efforts by large public research universities to improve undergraduate learning and teaching. In addition, Purdue faculty generally view IMPACT positively, which bodes well for spreading further the use of engaging pedagogies that deepen student learning.

It’s All (Almost Always) About the Culture

Almost every tome about high performing organizations emphasizes that the road to excellence in any endeavor begins and ends with culture. Campus culture is important to student success, effective teaching, and assessment because it exerts a powerful though largely tacit influence on behavior that is encouraged and rewarded or discouraged and sanctioned (Kuh, 2013). Since its inception, IMPACT has aimed high: its goal was to catalyze a shift in the Purdue culture by elevating the importance of high-quality undergraduate teaching and tracking its effects on student learning (Levesque-Bristol, Maybee, Carleton Parker, Zywicki, Connor, & Flierl, 2019). Culture bending is an audacious aspiration involving many features of campus life, no small number of which are beyond the direct influence of IMPACT. Still, there are signs that campus culture may indeed be shifting.

Foreword (continued)

One material indicator that Purdue values excellent teaching is to track Faculty Learning Community (FLC) Fellows' success navigating the reward system including promotion and tenure decisions and annual review ratings. According to Purdue officials, about a fifth of IMPACT participants hold the rank of full professor with fifty-four faculty members earning a promotion following their involvement in IMPACT. Another promising sign is that five of the ten faculty in Purdue's first "150 Anniversary Professorship" cohort participated in an IMPACT FLC. In addition, eleven of the twenty faculty members inducted into the university's Teaching Academy in 2017 and 2018 also were IMPACT FLC Fellows.

There are many reasons to applaud Purdue's IMPACT initiative and the lessons from it, including its systematic, multifaceted assessment efforts. Please give this paper a careful read and join me in thanking the authors for sharing their good work with the field.

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Creating Student-Centered Learning Environments and Changing Teaching Culture: Purdue University's IMPACT Program

Chantal Levesque-Bristol, Michael Flierl, Craig Zywicki, Loran Carleton Parker, Cody Connor, Daniel Guberman, David Nelson, Clarence Maybee, Emily Bonem, Jason FitzSimmons, and Erica Lott

In 2011, Arum and Roska, using data from the Collegiate Learning Assessment (CLA), reported that almost half of undergraduate students showed no significant improvement in critical thinking, complex reasoning, or writing during their first two years of college. Equally troubling, reports from employers say many graduates are not adequately prepared for the workplace (Bauer-Wolf, 2018). Bok (2006) opined, "Colleges and universities, for all the benefits they bring, accomplish far less for their students than they should" (p. 8). In a time where state funding for higher education is much lower than pre-recession levels (Mitchell, Leachman, & Masterson, 2017), one inescapable implication is universities must do more than ever before with fewer resources per student.

Efforts to improve undergraduate education should include a focus on what transpires in classrooms across the entire institution. The American Council on Education highlights the need to examine the implementation of evidence-based practices that positively impact student learning and outcomes in the classroom (Struthers, MacCormack, & Taylor, 2018). Academic leaders must pay more attention to quality teaching; how to improve it, foster it, and reward the improvement of it (Mehaffy, 2018). Faculty require support to effectively implement engaging pedagogical practices for all students and move institutions toward culture change. By partnering with stakeholders across the university and multiple units on campus, faculty developers have a crucial role to play in institutional cultural change (Kezar, 2017).

To realize the needed culture change, classroom initiatives must be engaging, relevant, and appealing to faculty and be adaptable to a broad range of disciplines in order to influence large number of students across the institution. To positively impact student engagement, motivation, learning, performance, and retention, instructors must utilize effective teaching practices that are authentic and do not simply conform to policies or allow one to "check a box" (Haras, Taylor, Sorcinelli, & von Hoene, 2017; Kuh, O'Donnell, & Schneider, 2017; Kuh, Schneider, & Association of American Colleges & Universities, 2008).

Faculty require support to effectively implement engaging pedagogical practices for all students and move institutions toward culture change. To do so, classroom initiatives must be engaging, relevant, and appealing to faculty and be adaptable to a broad range of disciplines in order to influence large number of students across the institution.

While many institutions prioritize the teaching mission and active learning, few do so at the broad campus-wide scale necessary to affect culture change utilizing a strong, sustained partnership between multiple campus units. Moreover, rarely do research-intensive universities attempt large scale efforts over an extended period to systematically improve the quality of undergraduate education, especially for faculty who receive little or no support prior to their first teaching experience. IMPACT stands out as a noteworthy exception. This paper describes this program and evolution—Purdue University’s “Instruction Matters: Purdue Academic Course Transformation” (IMPACT)—emphasizing the multiple campus unit partnership, implications for assessment professionals, and ways in which this faculty development program can be adapted and implemented by other institutions.

Scope of IMPACT

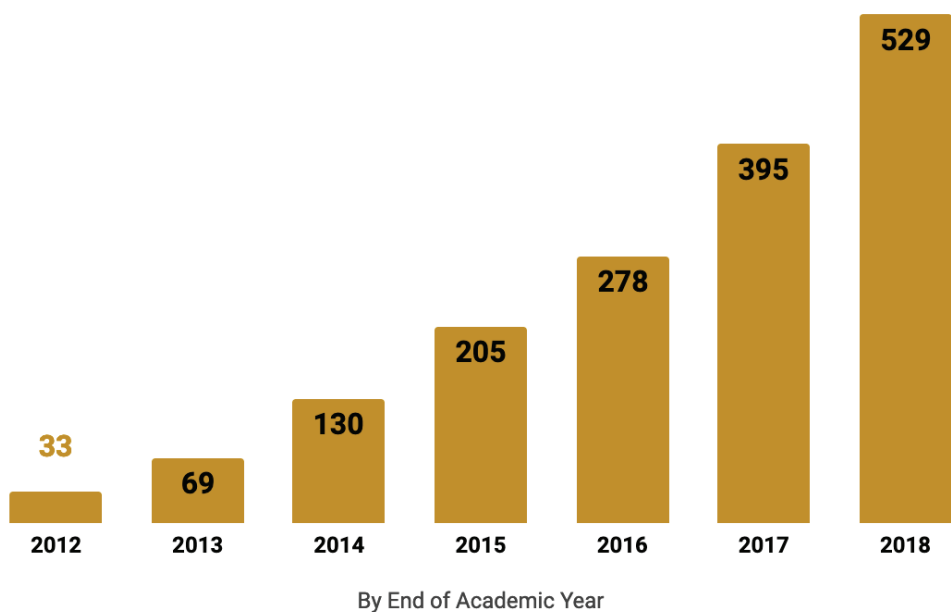
IMPACT is a cohort-based faculty development program that features a Faculty Learning Community (FLC) model to promote effective learning and teaching. A comprehensive, multi-year, campus-wide, collaborative effort, IMPACT empowers faculty to implement student-centered learning environments by incorporating active and collaborative learning as well as other student-centered teaching and learning practices and technologies into courses. The program has been demonstrably effective in improving attainment of course-specific learning outcomes and improved degree completion, persistence, and graduation rates (Kuh, 2018).

Over the past seven years, 321 faculty¹ from every academic college or school at the Purdue West Lafayette campus participated in IMPACT professional development activities. The scope of the program is described in a recent *Change* article (Levesque-Bristol, Maybee, Parker, Zywicki, Connor, & Flierl, 2019). Figures 1 and 2 on the next page show the overall growth of IMPACT, including the total number of courses transformed and a summary of students exposed to IMPACT.

IMPACT aims to:

- 1. Refocus the campus culture on student-centered pedagogy and student success;*
- 2. Increase student engagement, competence, and learning gains;*
- 3. Focus course transformation on effective research-based pedagogies;*
- 4. Reflect, assess and share IMPACT results to benefit future courses, students, and institutional culture.*

¹The number of faculty fellows who have participated in the program represents between 5-10% of faculty, depending on which faculty are included in the denominator (e.g., all faculty, only faculty teaching undergraduate classes, etc.). By initially targeting faculty who teach foundational courses, we have been able to touch as many as 95.1% of first-time undergraduate students who first enrolled at Purdue between fall 2011 and summer 2018, with a relatively small percentage of faculty.



Useful Related Resource:

Degrees that Matter: Moving Higher Education to a Learning Systems Paradigm

Figure 1. Total Number of Courses (including influenced courses) Transformed by IMPACT Fellows

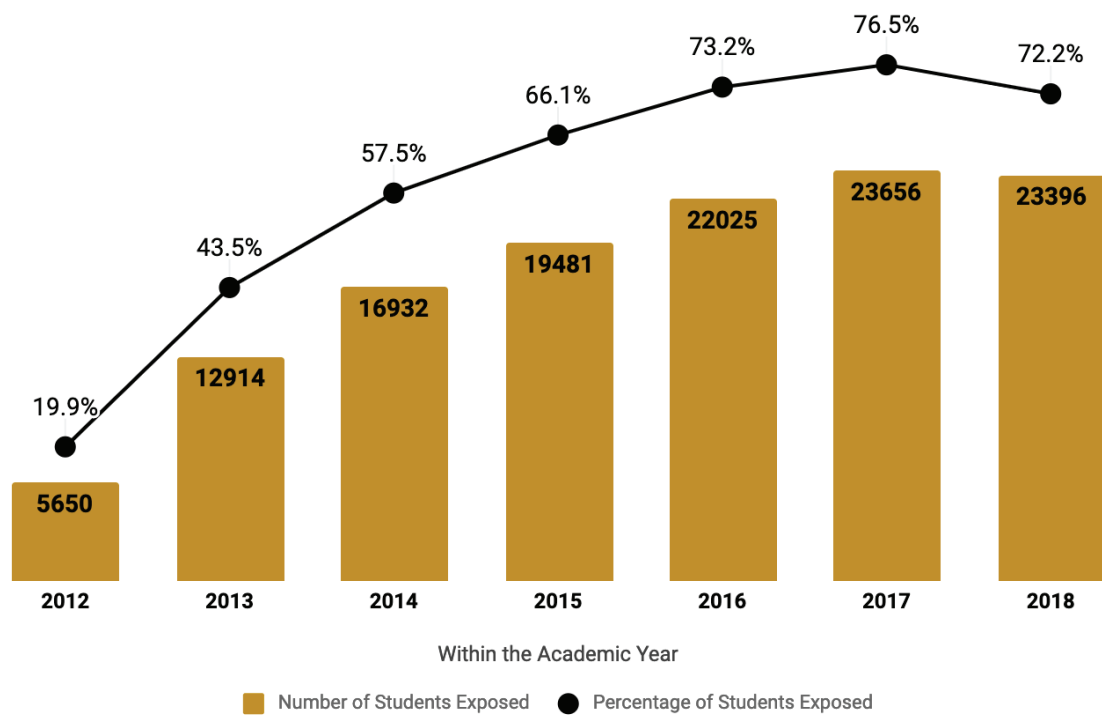


Figure 2. Count and Rate of Undergraduate Students Exposed to at least One IMPACT Course, within Academic Years

IMPACT's Beginnings

The IMPACT program launched in summer 2011 with members of the Provost's Office, university administration, and representatives of the campus partnering units from the Center for Instructional Excellence (CIE), Teaching and Learning Technologies (TLT), Institutional Research, Assessment and Effectiveness (OIRAE), and the Evaluation and Learning Research Center (ELRC) forming the IMPACT steering committee. The steering committee is responsible for general oversight and direction of the IMPACT program. The initial IMPACT course transformation program built upon the work of Carol Twigg and the National Center for Academic Transformation (NCAT). Twigg and the NCAT program synthesized disparate research on active learning to create a tightly structured program, which identified a limited number of course redesign models from which faculty could select (Twigg, 2003). NCAT targeted large, lecture-based introductory courses with a high rate of D & F grades or student withdrawals (DFW) and focused on the use of technology to achieve reduction in DFW rates and increase in student learning outcomes.

Adaptations of NCAT for IMPACT fit Purdue University characteristics and resources. For example, IMPACT emphasized technology as support for the creation of student-centered environments and encouraged faculty to incorporate technology strategically, such as online quizzes, video lectures, or interactive students' response systems to foster active learning in large courses. In addition, each redesign model included a commitment to active learning, building upon scholarship from Richard Felder and others. Felder and Brent's (2009) active learning approach emphasized critical thinking, group work and formative assessment as the desired endpoint for all faculty.

Engaging faculty in IMPACT loosely followed Milton Cox's (2004) faculty learning community model (FLC). Faculty met regularly, redesigned their courses to implement in the fall 2011 semester, and worked with support staff from CIE and TLT. Support team members followed up with IMPACT fellows during the implementation of the course transformations to gather information about the redesign.

For the second cohort, in spring 2012, library faculty and staff joined the steering committee and participated in the IMPACT FLC responding to the recognition that student-centered learning incorporates complex engagements with information (Maybee, Doan, & Flierl, 2016). The units partnering to deliver the FLC (CIE, TLT, and Libraries) constitute the IMPACT management team. This team is also responsible for the ongoing management of IMPACT and periodically updates the steering committee on progress and challenges.

Initially, the steering committee required faculty to choose a specific transformation model and identify specific technologies they planned to incorporate. The research

IMPACT emphasized technology as support for the creation of student-centered environments and encouraged faculty to incorporate technology strategically.

and scholarship on teaching and learning undergirding IMPACT's original implementation focused on three course transformation models—replacement, supplemental, and online-only—often assuming a move away from lecture and toward more active learning structures (Twigg 2003). In the replacement model, which includes the hybrid and flipped modalities, the amount of in-class time is reduced so students typically watch videos or complete interactive activities before coming to class, while the remaining in-class time is mostly used for working through problems, group work, and collaborative learning. The supplemental model retains all in-class time, but faculty change how this time is used. Faculty adopt more active and engaging learning activities, with many using technology to facilitate out-of-class activities. The online-only model moves all of the instruction and activities to an online environment.

IMPACT FLC sessions exposed participants to the redesign models, multiple active learning techniques, and technologies that could enable student-to-student interactions. This exposure occurred during a series of sessions, conducted over the entire semester, led by a series of experts. These expert presenters provided detailed lectures on multiple active learning techniques and learning technologies. In the early iterations, the effort to incorporate multiple active learning approaches resulted in far too much content for the sessions, with no central or connective theme beyond “course transformation”. In subsequent iterations, we moved to a more structured model for the FLC, relying on a handful of facilitators that coordinated and delivered a streamlined backward-design curriculum focused on student motivation and characteristics, redesign goals, student learning outcomes and evidence of learning through assessment, and becoming a reflective practitioner (Brookfield, 2017; Wiggins & McTighe, 2005).

Although not perfect, early iterations of IMPACT were ambitious and successful. It represented an authentic cross-campus effort in a research-intensive institution with a strong tradition of independence across units. The first cohort brought together 12 faculty fellows, from eight different departments representing humanities, social and physical sciences, engineering, and agriculture, who worked on 10 courses with traditionally high DFW rates. Each fellow worked with a dedicated support team of 2-3 faculty or staff members from three of the partnering units (CIE, TLT, and Libraries). Given dedicated time to reflect on course goals and desired student skills, many fellows identified misalignment between their stated outcomes and in-class assessments. For instance, an instructor may have prioritized students achieving higher order thinking skills, but only assessed lower-order thinking skills. Several fellows incorporated novel technological approaches, which provided evidence of improved student learning that led to publications and external grants for additional research. Many of these early adopters became strong advocates for the program, encouraging their peers to participate and made a strong case for

Given dedicated time to reflect on course goals and desired student skills, many fellows identified misalignment between their stated outcomes and in-class assessments.

the administration to expand the resources assigned to sustain and grow these transformation efforts for faculty development.

Due to its early success, IMPACT was featured in Purdue’s Strategic Plan, referred to as Purdue Moves (<https://www.purdue.edu/purduemoves/initiatives/education/index.php>). Incorporation into the strategic plan resulted in additional resources for instructional developers and faculty, but also the strategic expectation to “scale up” and “double the capacity” of IMPACT. In an effort to expand the program’s reach, from its initial goal of 25-30 faculty annually, to 50-60 faculty annually, the IMPACT management team had to consider changes to the goals and structure of the FLC to move toward greater clarity, consistency, and efficiency. This provided us with an opportunity to not only think about scaling the program, but challenged us to improve overall effectiveness.

Major changes occurred in 2013. First, the FLC facilitators moved much of the presentation and content to an online learning management system. With this “flipped” approach, IMPACT faculty fellows viewed short videos and read articles before the FLC sessions, allowing for focused discussion of design choices to occupy most of the actual session time.

At the same time, recruitment was broadened, helped in large part by the support of department heads and deans and endorsement of senior institutional leaders. Whereas early recruitment targeted faculty teaching courses with high DFW rates in large enrollment foundational courses, the expansion of IMPACT no longer required courses meet these criteria. New recruitment opened IMPACT to any interested full-time faculty, including clinical faculty, as well as part-time faculty with responsibility for an undergraduate course that they could teach for three iterations. This change in practice resulted in a more diverse set of courses by enrollment size, prior academic performance, and typical student enrollment, all of which helped cultivate the desired culture change of valuing teaching and learning. Figure 3 below summarizes the progression of the IMPACT program by providing a timeline since 2011. Appendix A shows the IMPACT faculty fellows by rank.

Useful Related Resource:

Hutchings, P. (2016, January). Aligning educational outcomes and practices.

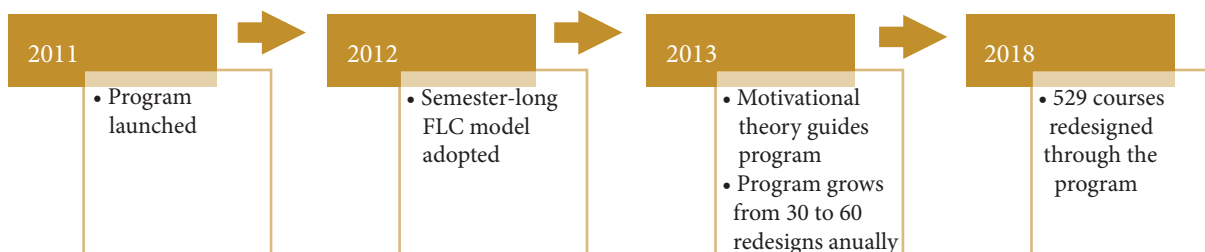
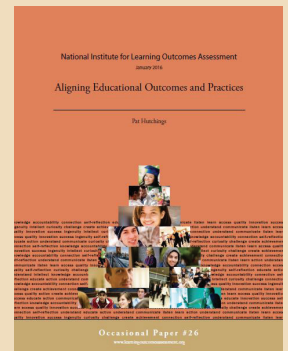


Figure 3. Timeline of the IMPACT Program

Second, although the initial iterations of the IMPACT faculty learning community had most of the hallmarks recommended in the literature: voluntary membership, regular meetings, individual projects connected to a curriculum, and focus on community building (Cox, 2004), the culture and guiding philosophy of the FLC remained inchoate. The content was influenced by both complementing and contrasting interests and practices of the units involved. The program experienced a breakthrough in fall 2013 when the facilitators incorporated the tenets of self-determination theory (SDT), a theory of motivation, into the structure of the FLC. SDT provided the theoretical framework to inform the structure and implementation of the FLC curriculum, and guide the methodology and assessment measures operationalizing student-centered learning within classroom learning environments. Appendix B provides an overview of the Faculty Learning Community.

Theoretical Framework Guiding Faculty Development and Course Redesign

Self-determination theory (SDT) is a humanistic theory of motivation, the cornerstone of which is that all individuals have three basic psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2017). Satisfying the three basic psychological needs fosters optimal psychological growth, development, well-being, and learning.

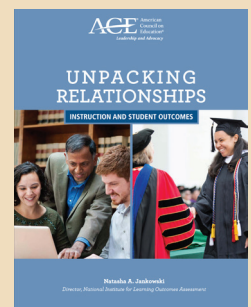
SDT holds that autonomy does not equate to independence but rather feelings of volition and choice. Autonomy represents the need to self-regulate one's experiences and actions. For example, faculty and students tend to feel autonomous when they have choices and options about how to perform or present their work. In instances where choices are not possible, providing a meaningful rationale for tasks that are necessary, but perhaps less interesting or not perceived as inherently valuable, contributes to the satisfaction of the need for autonomy. Faculty who integrate greater levels of autonomy in their courses pay attention to the students' perspective.

Competence has been the focus of multiple higher education studies, and refers to our basic need to feel effectance and mastery (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 2000). The need for competence is satisfied when opportunities to demonstrate one's skills are frequently provided in a way that allows students to receive feedback and improve their performance. Scaffolding of learning experiences tends to foster competence.

Faculty foster relatedness through promoting students' feeling of connectedness, intellectually and emotionally, with other students in the class, as well as with the instructor. The need for relatedness is met when students are provided opportunities to interact with each other and the instructor in meaningful ways. This does not mean that students must feel close to everyone in class,

Useful Related Resource:

***Jankowski, N. A. (2017).
Unpacking Relationships:
Instruction and Student
Outcomes.***



but it does mean that students need to feel they can trust the instructor to help them achieve their academic goals in a mutually beneficial partnership (Fedesco, Bonem, Wang, & Henares, 2019). In addition, connection to the material presented in class, also termed relevance, is important to foster student's perceptions of relatedness (Fedesco, Kentner, & Natt, 2017).

Focusing on SDT and the satisfaction of the three basic psychological needs as part of the IMPACT program allowed us to do the following:

1. Modify the support team composition, supporting scaling up
2. Provide autonomy in the selection of the redesign elements
3. Change the FLC emphasis and philosophy to professional development

Support Team Composition—Scaling Up

In the first few iterations of IMPACT, each fellow worked with a dedicated support team of 2-3 faculty or staff members from the three partnering units (CIE, TLT, Libraries). This model was resource intensive and not sustainable as we worked toward our goal of 50-60 courses annually. In addition, this structure generated little sense of community and was isolating, as each fellow only worked with their support team with almost no opportunity to share their experiences with other fellow instructors (Cox, 2004).

A focus on the satisfaction of the need for relatedness from SDT provided an answer. To foster a greater sense of community and relatedness, the IMPACT management team decided to increase the number of faculty working together with the support team members in a larger collaboration. In the current iteration of the IMPACT program, up to 30 staff members from CIE and TLT and faculty from the Libraries collaborate to form the support team and facilitate the FLC as part of the IMPACT program. IMPACT faculty fellows now work in teams with 2-4 other fellows and 3-4 support team members, ideally one from each unit, creating groups of 6-8 members. The groups are formed around a common teaching and learning challenge such as a large class, course topic such as aviation technology, or a stated redesign goal such as a desire to enhance student engagement. All groups meet for a 75-minute working session, for 13 weekly sessions during a semester. The groups also meet on their own as necessary.

Ensuring Autonomy in Selecting Redesign Elements

Addressing the instructors' need for autonomy, the FLC became a process of scholarly inquiry for fellows by guiding the structure of the IMPACT FLC sessions and the strategies used to help faculty's approach in working with their

The need for competence is satisfied when opportunities to demonstrate one's skills are frequently provided and in a way that allows students to receive feedback and improve their performance. Scaffolding of learning experiences tends to foster competence.

students. The fellows were able to explore a variety of redesign options in a scholarly way. It also modeled and aided in incorporating the critical thinking skills so many participants wished their students to exhibit. FLC fellows were asked to prepare for sessions by reading curated literature while considering the potential influence to their particular discipline and class. Modeling the types of student engagement that accompanied a collaborative classroom environment, this approach spurred greater participation from the faculty fellows and FLC facilitators. It also provided a renewed emphasis on student engagement and student-centered learning and a further de-prioritization of DFW rates.

To further foster autonomy, the steering committee decided to no longer push faculty towards a redesign model or specific technology; but rather encourage faculty, in collaboration with their support team, to clarify their redesign goals and desired student learning outcomes. The selection of technologies for the redesign, transitioned from being a primary goal of the redesign decision to being viewed as one tool among many to foster student engagement and support the attainment of learning outcomes when appropriate. De-emphasizing the NCAT redesign models represented a move away from more commonly accepted practices, such as helping faculty flip their class, incorporating educational technology, taking their class online, or turning it into a team-based learning or problem-based learning class.

Even though many of these evidence-based models can be successful, our surveys, interviews, and focus groups with faculty fellows suggested that enabling faculty to create student-centered and engaging learning environments mattered more than adopting a particular course structure or redesign model (Bonem, Fedesco, & Zissimopoulos, 2019). Being less prescriptive allowed fellows to define their own transformation goals while also allowing the support teams to be more flexible in fostering different redesign needs. Faculty fellows who participated in early iterations of the program reported feeling restrained and limited in their autonomy by the push for certain redesign models.

The close adherence to the NCAT redesign models discouraged some faculty fellows, who did not perceive the models as accommodating their specific disciplinary needs. It was also difficult for the steering committee to push certain redesign models across the multiple disciplines in the cohort. This is especially true for instructors who have carefully honed narratives and stories to engage students with their experiences as disciplinary experts. In these cases, faculty may perceive that we are dismissing their work on creative assignments and activities refined through years of iterative development. These perceived restrictions may be what lead Berg and Seeber (2016) to propose that “pleasure—experienced by the instructor and the students—is the most important predictor of ‘learning outcomes’” (2016, p. 34).

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IMPACT's emphasis on meeting the basic psychological needs of both instructors and students encourages faculty members to think critically and act intentionally in order to enhance student learning aligned with the intended outcomes of the course. Moreover, IMPACT's focus is on supporting instructor autonomy, precisely what many fear they must give up while participating in a course redesign effort.

IMPACT as Professional Development

The focus on SDT changed the emphasis and philosophy of the program from a course redesign program to a professional development program. Through professional development, we prepare faculty to apply teaching and learning principles in new contexts and situations. This shift also encouraged faculty to apply the skills they acquire during the FLC to other courses they are also teaching, generating transformations in courses outside the FLC and generating a large number of “influenced” courses. Thus, IMPACT fosters faculty and course *transformation* rather than course *redesign*.

Through supporting faculty fellows' basic psychological needs, the support teams engage a broad group of faculty in discussing teaching and learning, modifying their practices, and prepare faculty to transfer their knowledge and insights in new situations. These changes in faculty groups from across the institution can spark the beginning of a broader teaching and learning culture change. While this approach may seem counter-intuitive to the goals of the respective units partnering on IMPACT, creating motivating classroom environments almost always involve students engaging appropriately with information (Flierl, Bonem, Maybee, & Fundator, 2018; Maybee, 2018; Maybee & Flierl, 2017), using technology to facilitate teaching and learning (Gundlach, Maybee, & O'Shea, 2015), and creating pedagogical learning activities and learning assessments (Fedesco et al., 2017; Gundlach, Richards, Nelson, & Levesque-Bristol, 2015).

Documenting IMPACT's Effectiveness

From the onset, multiple campus units collaborated to evaluate the effectiveness and outcomes of the IMPACT program (see Figure 4 on the next page). Program evaluation focused on five areas:

1. Faculty change and professional development
2. Institutional change and sustainability
3. Student engagement in redesigned courses
4. Student academic outcomes in redesigned courses
5. Effects of faculty development on student learning outcomes

IMPACT fosters faculty and course transformation rather than course redesign.

IMPACT Assessment Overview: 2011 to Present

Instruction Matters: Purdue Academic Course Transformation (IMPACT) was launched by the Provost's Office in summer 2011. IMPACT is a large collaborative initiative on the Purdue West Lafayette Campus between the Center for Instructional Excellence (CIE), Evaluation and Learning Research Center (ELRC), Information Technology at Purdue (ITaP), Libraries, and Purdue Online.

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 of foundational courses.

Program Components Assessed	Responsible Units	Data Collected		
		Summer 2011 - Spring 2013	Spring 2013 - Spring 2015	Spring 2015 - Present
A. Professional development program / faculty change	ELRC / DLRC	Individual faculty interviews (Year 1 only) Pre-post faculty survey Focus group interviews	Pre-post faculty survey Focus group interviews	Added faculty survey on self-efficacy for learner-centered pedagogy
B. Institutional change and sustainability		Participant longitudinal survey Non-participant survey Focus group interviews	Participant longitudinal surveys	Added individual interviews with campus stakeholders and leadership
C. Effect of course redesign on student engagement ¹	CIE ELRC / DLRC ITaP	Classroom observations		
	CIE ELRC / DLRC		Student survey assessing faculty instruction Student survey assessing engaged classroom behaviors	
	CIE Libraries ITaP		Dashboard for tracking changes in course pedagogy and technology	
	OIRAE			Created streamlined process to collect Dashboard information
	CIE		Validated student surveys assessing learning climate, motivation factors	
D. Effect of course redesign on student outcomes	EMAR*	Student grades in IMPACT courses Rate of DFW in IMPACT courses Retention of students to major, college, university 4 and 6 year graduation rate		
	OIRAE			Student grades in IMPACT courses Rate of DFW in IMPACT courses Retention of students to major, college, university 4 and 6 year graduation rate
E. Effect of faculty development on student learning outcomes	CIE			Learning outcomes Student Assessment of Learning Gains (SALG)

* Enrollment Management Analysis and Reporting (Brent Drake)

1. In May 2013, IMPACT was identified as a Purdue Move, and experienced a substantial investment from the University that allowed it to increase its scope and expand its mission. Research and evaluation of the program have evolved in response to these changes. Classroom observations were replaced with validated surveys derived from self-determination theory.

In October 2014, we secured a First-in-the-World grant from the U.S. Department of Education to test the effect of IMPACT as an intervention in a selected group of STEM courses.

Figure 4. IMPACT Assessment Overview: 2011 to Present

The major units involved in the evaluation of IMPACT include the Office of Institutional Research, Assessment and Effectiveness (OIRAE), the Evaluation and Learning Research Center (ELRC) and CIE. Staff from these units facilitate monitoring and evaluation activities for IMPACT, which include comprehensive data collection, analyses, and reporting. The partner units also collaborate on research studies examining faculty development, institutional cultural change,

and student learning. Additional ongoing scholarship of teaching and learning conducted in partnership with IMPACT faculty contribute to a greater use of empirically derived effective learning and teaching practices institution wide.

Faculty Change and Professional Development

To evaluate the faculty development process, the ELRC surveys all IMPACT fellows prior to starting the program, after completing the program, and after the fellows have implemented their course transformation at least once. These surveys include measures of faculty perceptions of learning (e.g., ability to develop clear learning outcomes, self-efficacy for student-centered instruction) and practice (e.g., satisfaction with teaching and assessment methods, perceived student engagement). Additionally, the ELRC conducts focus groups with all IMPACT fellows during the final session of the FLC to discuss the benefits of participation, unanticipated outcomes, provide constructive feedback about the program, and their perceptions of the institutional climate for teaching and learning.

Data collected from the fellow surveys show faculty view IMPACT as a valuable source of professional development that positively influences both their own teaching practice and student outcomes. As shown in Figure 5, IMPACT Fellows report significant increases in student engagement and critical thinking skills. They also report significant improvement in their satisfaction with teaching, and their experiences with classroom learning spaces (IMPACT Annual Report, 2018; Levesque-Bristol et al., 2019). All these increases are statistically significant at $p < .05$. As described in an OIRAE study by one successful faculty fellow (Zywicki & Beaudoin, 2016):

Before IMPACT, I probably told stories and lectured 90% of the time... Now, maybe 50-60% is student-centered. The more I can get them to discuss with each other, and not discuss with me, the more I can get them to work and collaborate on teams. I don't do any class now without a team project. I always believed in that but I put a lot more emphasis on that and a lot more expectation on that. I would say that the biggest difference is the degree to which my activities are student-centered. I call it problem-based learning, I am using mostly scenarios that they have to evaluate.

When describing their experiences, faculty fellows report investing significant time reflecting and redesigning their course. In in-depth group interviews, faculty cite the collegiality of the FLC experience as a large support for their efforts (IMPACT Annual Report, 2018). When asked about the single most important aspect of their IMPACT experience, overwhelmingly faculty mentioned the interactions with other fellows and/or the IMPACT program

Data collected from the fellow surveys show faculty view IMPACT as a valuable source of professional development that positively influences both their own teaching practice and student outcomes.

facilitators (Zywicki & Beaudoin, 2016). They also indicate that opportunities to dialog and interact with supportive peers and colleagues about teaching, share knowledge, obtain new ideas, hear about successes or challenges are valuable aspects of the IMPACT program (IMPACT Annual Report, 2018). Faculty also highlighted the importance of freedom and flexibility to transform their courses based on what they thought was best.

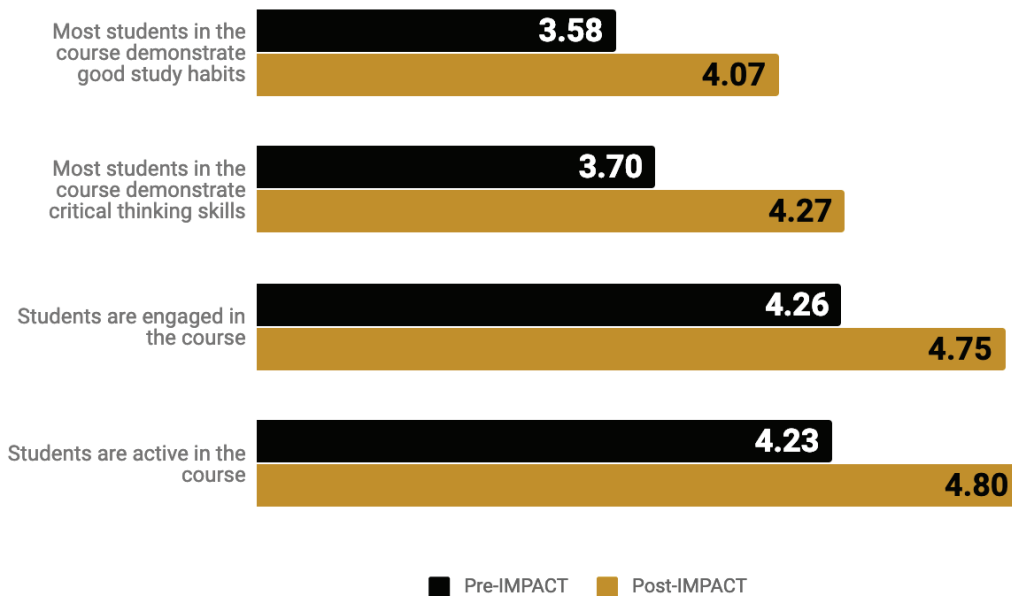


Figure 5. IMPACT Fellows' Pre-/Post-Implementation Perceptions of their Course

Institutional Change and Sustainability

Institutional change and sustainability is the most challenging area to assess and document. Although difficult to capture, we used a number of metrics as indicators of culture change including faculty efficacy, faculty career progression and recognition, departmental incentives and policies, investment in institutional infrastructure, and the development of an IMPACT network.

IMPACT as a professional development program can stimulate faculty to change or redesign courses they teach after participating in the FLC; we refer to these as “influenced courses.” These influenced, redesigned courses represent faculty confidence and efficacy in applying the principles of IMPACT to other courses they teach, and a direct result of our focus on professional development as opposed to course redesign. Entire colleges, departments, units, and schools have made participation in IMPACT a metric of teaching development and effectiveness.

This large-scale departmental involvement indicates buy-in by both faculty and administrators. Overall, about 17% of faculty fellows have been promoted since going through IMPACT. In addition, many faculty include participation

IMPACT as a professional development program can stimulate faculty to change or redesign courses they teach after participating in the FLC.

in IMPACT in their application for teaching awards, including the Murphy Award, which is the most prestigious teaching award at Purdue University, as well as external grant competitions.

The administrative leadership of Purdue used the success of IMPACT as the impetus for designing and building the Wilmeth Active Learning Center (WALC)—26 active learning classrooms in eight different layouts—at the center of the campus which opened fall 2017. When the WALC was coming online, all three units (CIE, TLT, and Libraries) identified the need for training and support of instruction in the new learning spaces. The units developed appropriate programs, tools and services to support instructors together. The influence of IMPACT on institutional culture can also be seen in that all active learning classrooms are referred to by instructors as “IMPACT classrooms.”

In addition, it stimulated conversations with other institutions regionally, nationally, and internationally in Europe and South America, creating a network of institutions interested in the IMPACT model for professional development and course transformation. In engaging in conversations with other institutions nationally and internationally, the most important factors for successful applications emerged to be the collaboration and partnership among multiple units on campus, ensuring autonomy in selecting redesign models and elements of the transformation, and the use of a theoretical framework to guide the design and assessment of the course transformations and program.

Internally, the growth of IMPACT since 2011, and the strengthening of the collaboration among the partnering units on campus have fostered culture change. It took time and systematic work to get where we are today with a strong spirit of collaboration among the partnering units. Today, the units regularly collaborate on supporting teaching, so much so that it has now become “the norm.”

Student Engagement

In order to assess student engagement with IMPACT courses, the CIE administers student perception surveys at the end of each semester. All students enrolled in a course that has been transformed through the IMPACT program in the last three years receive a survey containing measures based on the SDT framework. Specifically, the survey includes measures of the learning climate, satisfaction of the basic psychological needs of autonomy, competence, and relatedness; levels of self-determined motivation; and perceived knowledge transfer. When we first began assessing the program, we focused on examining whether different course transformation models tended to be more student-centered than other models; however, we did not see significant differences in

Important factors were collaboration and partnership among multiple units on campus, ensuring autonomy in selecting redesign models and elements of the transformation, and the use of a theoretical framework to guide the design and assessment of the course transformations and program.

student engagement between replacement and supplemental course redesigns, although the online model leads to slightly lower levels of student-centered learning.

The student perception data suggest that any transformation model can be effective as long as it contributes to the creation of a student-centered (autonomy-supportive) environment by fostering the fulfillment of basic psychological needs of autonomy, competence, and relatedness (see Figure 6). In turn, fulfillment of these needs fosters student motivation, which can then lead to student success, learning, retention, and ultimately progress toward degree completion. The scales measuring the student perception variables have been described in recent related work (Wang, Hsu, Bonem, Moss, Yu, Nelson, & Levesque-Bristol, 2019; Hsu, Wang, & Levesque-Bristol, 2019). Over 80% of the courses taught by faculty who have gone through the IMPACT program are perceived to be student-centered. Students exposed to highly student-centered classrooms report significantly higher levels of perceived competence, ability to transfer knowledge to other relevant courses and experiences, higher perceived learning gains, and more self-determined motivation (Levesque-Bristol et al., 2019)

Any transformation model can be effective as long as they contribute to the creation of a student-centered environment by fostering the fulfillment of basic psychological needs of autonomy, competence, and relatedness.

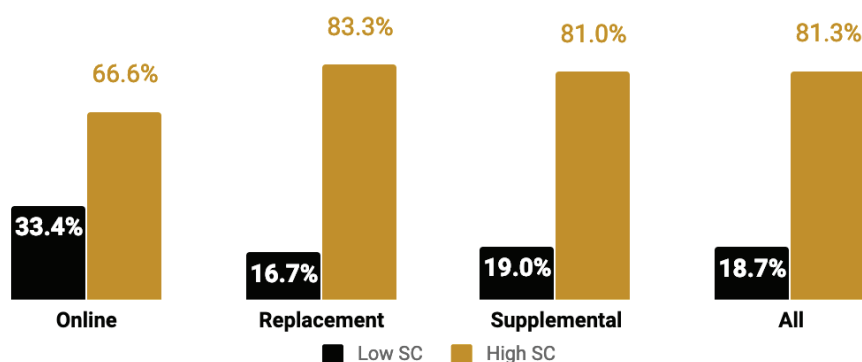


Figure 6. Student Engagement

When we use the theoretical framework to examine the factors that foster the development of self-determined level of motivation and learning outcomes, we find support for the propositions based on self-determination theory. Satisfaction of the basic psychological needs of autonomy and relatedness is associated with the development of perceived competence, which in turn is associated with greater levels of motivation and achievement of learning outcomes including academic performance. The findings indicate that for skills and knowledge to impact levels of motivation and learning outcomes, they need to be developed in an environment that is autonomy supportive and in which connections between people can be made (Wang et al., 2019; Hsu et al., 2019). Furthermore, autonomy supportive, student-centered learning environments are associated with positive outcomes, with students rating both

their courses and instructors more favorably than do their counterparts in low student-centered environments. This finding was particularly evident for students with lower levels of academic achievement. In other words, it appears that the creation of student-centered environments can reduce the achievement gaps for underprepared students (Levesque-Bristol et al., 2019).

Student Academic Outcomes

An initial goal of IMPACT was to increase student academic success and decrease time to degree by transforming traditionally difficult courses. Each academic year, OIRAE examines these metrics for courses with high failure rates (defined as pre-IMPACT DFW rates of 20% or higher) and that are large (enrollment exceeding 100 students) or foundational (course number of 299 or below).

For many IMPACT courses, we observe an improvement in the mean final grade and/or a reduction in the DFW rate. For example, within the 2016-2017 academic year, 12 courses met the high failure criterion and at least one of the large enrollment or foundational criteria. DFW rates improved in IMPACT sections for nine of these 12 courses (IMPACT Annual Report, 2017). Within the 2017-2018 academic year, 17 courses met the high failure criteria and at least one of the large enrollment or foundational criteria, and DFW rates improved for 12 of the 17 courses in the IMPACT sections. Overall, the DFW rates decreased an average of 5.1% when compared to the pre-IMPACT DFW rate. This rate of change corresponds to an additional 404 students passing the courses with a C- or higher in the 2016-2017 academic year, and 618 in the 2017-2018 academic year.

The OIRAE and CIE collaborate during IMPACT assessment to relate individual students' performance to their perceptions of the student-centeredness in the course. For IMPACT courses surveyed between spring 2014 and summer 2018, a small positive correlation of .20, regardless of redesign model, between students' rating of the learning environment and their mean final grade was observed. Figure 7 shows mean ratings of student centeredness (on a scale of 1 to 7), within final course grade groups.

Student Learning Outcomes

In addition, we assess student perceived learning gains. The learning outcomes faculty fellows create during the IMPACT FLC appear on the end of the semester course evaluation. When students perceive the learning environments as student-centered, they also report significantly greater attainment on the learning outcomes (M = 3.85) compared to when the learning environment is perceived to be low in student-centeredness (M = 2.85).

It appears that the creation of student-centered environments can reduce the achievement gaps for underprepared students (Levesque-Bristol et al., 2019).

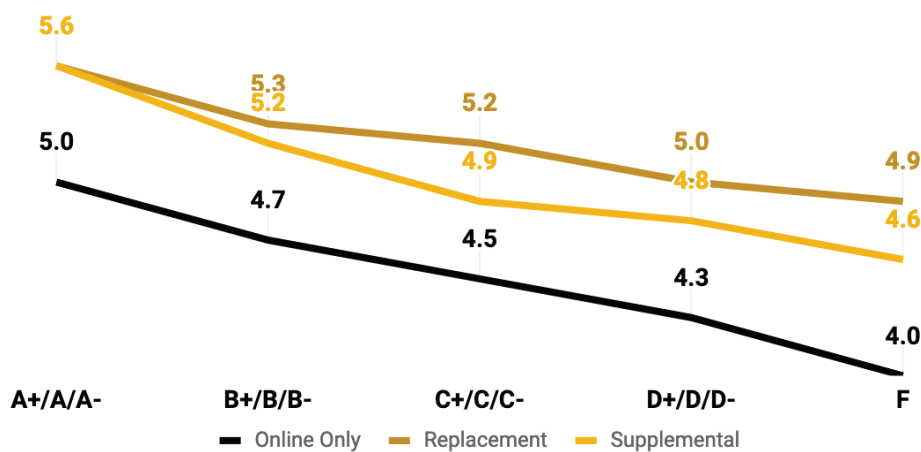


Figure 7. Mean Student-Centeredness Rating by Course Grades, by Final Course Grade Group

Our emphasis on developing clear, articulated and measurable learning outcomes results in an overall reduction in the number of course-level learning outcomes from an average of 5.37 before IMPACT to 3.75 after. Furthermore, an initial qualitative study coding learning outcomes reveals that new outcomes feature more specific and measurable wording and more frequently focus on higher-order cognitive processes (Lott & Nunes, 2018).

As Figure 8 shows, using Bloom’s Taxonomy of learning objectives (Anderson, Krathwohl, & Bloom, 2001) to code course-level learning outcomes, IMPACT fellows articulate more cognitively demanding Learning Outcomes as a result of IMPACT. The average level of cognitive complexity increased significantly during all semesters measured (spring 2015 to fall 2017) (Lott & Nunes, 2018).

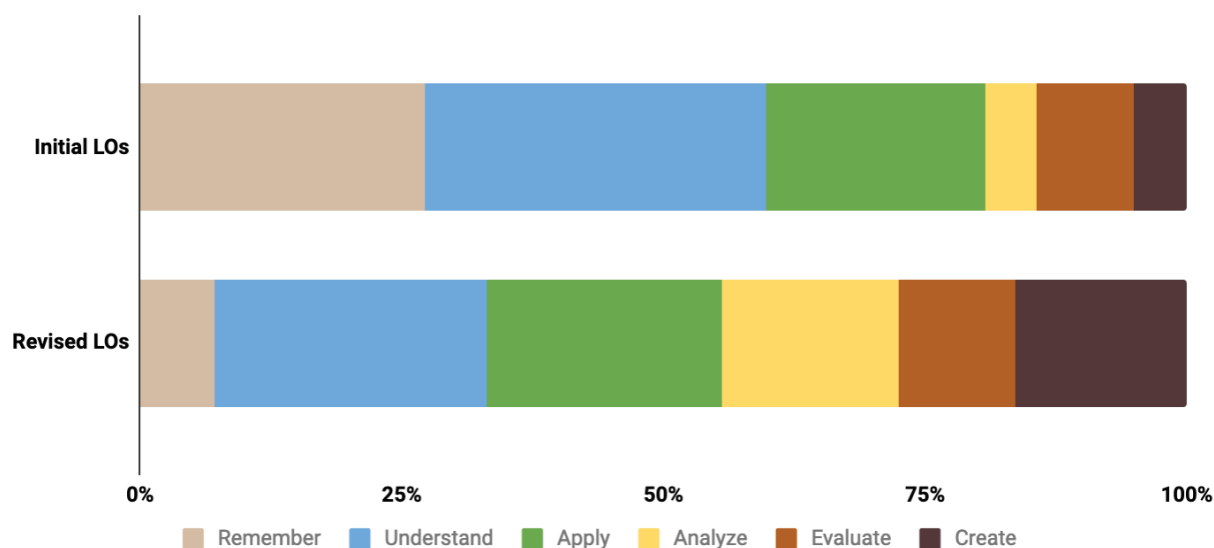
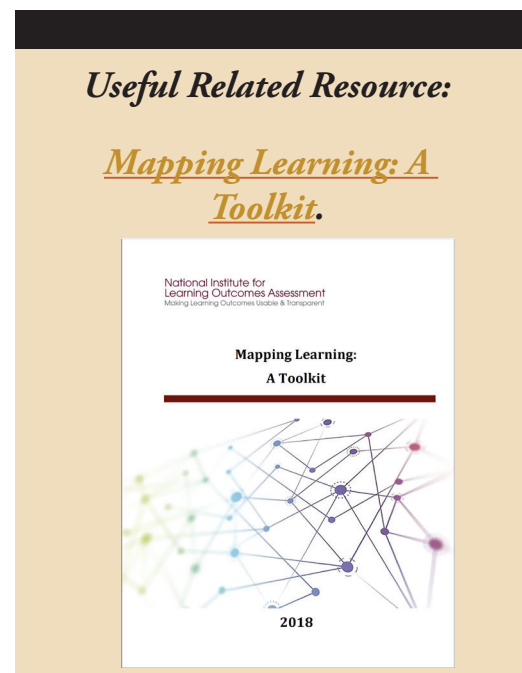


Figure 8. Change in Learning Outcomes, Pre- and Post- IMPACT



Implications for Assessment

The IMPACT team has used multiple indicators of success to gauge the effectiveness of the IMPACT program. We examined professional development and faculty change, institutional change and sustainability, student engagement, student academic outcomes, and student learning outcomes. Institutional change and sustainability is difficult to capture, but we have attempted to do so in a number of ways.

Having a strong theoretical framework to guide the design and assessment of the course transformation and overall assessment plan allowed us to be more intentional and systematic in the kinds of research questions we examined and program areas we assessed.

With regard to learning outcomes assessment strategies, the IMPACT management and evaluation teams struggled to identify a common measure of student learning. How could the program gauge its contribution to improved student learning if instructors from disparate classes were given choice in their redesign structure? Our initial solution was to require a detailed assessment map for all graded assignments, with explicit connections between learning outcomes, assessments and activities, and content. This map was prohibitively onerous, and was initially delivered near the end of the FLC—a herculean labor in the waning days of the semester without any preface or scaffolding. After several attempts at improving this summative process, the IMPACT management and evaluation teams, realized that a more formative process was necessary. The formative Course Development Plan (CDP) replaced the summative assessment map as a process and tool used throughout the IMPACT FLC and delivered by the fellows at the end of the semester. The CDP is a formative exercise, which is integrated throughout the FLC (Figure 9). The purpose of the CDP is to help faculty fellows visualize the decisions they are making in their course redesign and to ensure alignment between the learning outcomes, assessments strategies, and learning activities (Carriveau, 2010). It also is a place for faculty to describe how the learning activities foster the satisfaction of the basic psychological needs of autonomy, competence, and relatedness, and specify the educational technologies needed and how engagements with information can enable student learning outcomes.

The CDP, as part of a multifaceted and systematic assessment strategy has enabled us to more fully and comprehensively gauge the effectiveness of a program of IMPACT's scope.

The purpose of the CDP is to help faculty fellows visualize the decisions they are making in their course redesign and to ensure alignment between the learning outcomes, assessments strategies, and learning activities (Carriveau, 2010).

Course Design Plan (CDP)

Name: _____ Course Name: _____ Course#: _____ Semester: _____

		Summative Assessment			Active Learning Strategies, Pedagogies, and/or Educational Practices			Informed Learning		SDT			Educational Technologies			Classroom Space
		A1	A2	A3	S1	S2	S3	Source	Usage	Autonomy	Competence	Relatedness	T1	T2	T3	
Learning Outcome 1	LO 1.1															
	LO 1.2															
	LO 1.3															
	LO 1.4															
	LO 1.5															
Learning Outcome 2	LO 2.1															
	LO 2.2															
	LO 2.3															
	LO 2.4															
	LO 2.5															
Learning Outcome 3	LO 3.1															
	LO 3.2															
	LO 3.3															
	LO 3.4															
	LO 3.5															

Figure 9. CDP template

From the faculty perspective, it is important for faculty to question and deeply examine the purpose of their course—to think deliberately about what they want their students to know, do, and appreciate as a result of taking their course. This involves looking closely at learning outcomes and objectives through the lens of Bloom’s Taxonomy. Faculty who use words like “understand,” are challenged to use more specific verbs that are measurable and communicate precisely what instructors want students to learn.

Throughout several exercises, we encourage faculty to write 3-5 broad course-level outcomes, with more narrowly defined measurable learning objectives, which can be scaffolded toward these broader course-level outcomes. The learning outcomes considered involve cognitive learning outcomes focused around faculty thinking through topics like student characteristics, psychology, and instructional design. It also involves affective outcomes—where the intention of the FLCs is to challenge instructors to empathize with students, and to value thinking about student learning before thinking about other considerations, like learning activities.

Learning outcomes rarely remain unchanged throughout the 13 weeks. Support team members are trained to work collaboratively with faculty throughout the semester, and refine the learning outcomes as they work on their assessments and learning activities. Faculty and support team members regularly circle back to the learning outcomes, both refining and aligning the language used to depict specific learning goals, and sometimes making significant changes to

reflect new ideas, goals, or recognition of misalignment. Critical to the success of the redesign is for faculty to reflect on the alignment between the assignments they ask students to complete with the specific language they chose for their learning outcomes.

As faculty fellows reflect on their courses and its purpose and placement in the overall curriculum, they consider the balance of formative and summative assessments, whether assessments are successful in assessing the intended learning outcomes, and consider whether higher-order learning outcomes are appropriately assessed, which is often an overarching goal for the course. This often leads to targeted scholarship projects conducted with IMPACT faculty” Through scaffolding, formative and low-stakes assessments are emphasized as tools for student learning (Barkley and Major, 2016). Appendix B includes the placement of the assessment components within the overall FLC curriculum.

Conclusion

Well-designed faculty development programs can have a positive influence on both the quality of student learning and instructor efficacy. As a cohort-based large-scale collaborative faculty development program, IMPACT employed a comprehensive Faculty Learning Community (FLC) model designed to promote student-centered learning, teaching, and assessment. It incorporates active and collaborative learning as well as other student-centered teaching and learning practices, information literacy, and technologies into courses which taken together contribute to enhanced student engagement and competence, attainment of course-specific learning outcomes, degree completion, retention, and graduation rates (Kuh, 2018; Levesque-Bristol et al., 2019).

Applying SDT principles to a faculty development initiative shifts the focus from redesigning courses and delivering a product, to a holistic professional faculty development experience. In order to effectively engage faculty from all colleges in such efforts, it is essential to provide choices and options that acknowledge faculty perspectives and expertise. Faculty members need to feel agentic and authentically engaged and view themselves as an integral part of the transformation process.

Nonetheless, our work is far from being done. Interviews and focus groups pointed to cultural and structural barriers that may limit the ability of faculty fellows to sustain their continual pursuit of instructional excellence and limit broad culture change (Parker, Adedokun & Weaver, 2015). Although some departments and colleges view such efforts favorably and strongly encourage and value participation in IMPACT, this kind of professional development is not uniformly and systematically valued and recognized in tenure and promotion. This suggests that more work needs to be done in order to increase the value and recognition associated with professional development activities like IMPACT, especially, but not only, within research universities.

Faculty members need to feel agentic and authentically engaged and view themselves as an integral part of the transformation process.

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Appendix A:

IMPACT Fellows' Rank During the Faculty Learning Community (FLC) (summer 2011 through spring 2018)

Rank	Count
Full Professor	59
Associate Professor	95
Assistant Professor	108
Other (Lecturers, Instructors, and non-Faculty)	59

Appendix B:

IMPACT Faculty Learning Community Curriculum

The IMPACT program curriculum is enacted through 13-week Faculty Learning Communities (FLCs). A general syllabus for the program is presented in the table below. We organize the 13 weeks into five broad categories, ranging from 2 to 3 weeks in length, by drawing from principles of Backwards Design (Wiggins & McTighe, 2005) and aligning these with self-determination theory (SDT). The curriculum covers the following topics: Motivating Learners, Learning Outcomes and Objectives, Assessment, Learning Activities, and Drawing It All Together. We associated each topic category with a leading question for faculty fellows to consider in the redesign of their course. The questions are detailed in the recent *Change* article (Levesque-Bristol et al., 2019).

Weekly Topics and Deliverables of IMPACT FLC Meetings

Session	Unit	Topic	Major Deliverables
Session 1		Welcome to the IMPACT program. Meet your redesign team	
Session 2	Motivating Learners	Teaching Goals & Student Characteristics	Initial Learning Outcomes
Session 3	Motivating Learners	Motivation and Cognition Theories of Learning	Initial Redesign Goal
Session 4	Learning Outcomes and Objectives	Learning Outcomes and Objectives	
Session 5	Assessment	Assessing Student Performance, Part 1	Revised Learning Outcomes
Session 6	Assessment	Assessing Student Performance, Part 2	Learning Objectives
Session 7	Learning Activities	Learning Activities, Part 1	
Session 8	Learning Activities	Learning Activities, Part 2	Initial Course Design Plan
Session 9	Learning Activities	Connecting the Dots	
Session 10	Drawing It All Together	Redesign Decisions	Revised Redesign Goal
Session 11	Drawing It All Together	Redesign Presentations	Revised Course Design Plan. (including revised redesign goal & revised learning objectives)
Session 12	Drawing It All Together	Scholarly and Reflective Practitioner	
Session 13	Drawing It All Together	Closing the Loop and Focus Group	

Motivating Learners

This unit asks faculty fellows to think first about students before their own teaching, and focuses on introducing the principles of SDT.

IMPACT highlights student characteristics as the first topic to set the stage for having faculty think about their classes through the experience of their students, focusing on student learning rather than faculty teaching. Given the focus on students, the first topic discussed in FLCs after the welcoming session is student characteristics. In this session, faculty discuss and participate in exercises focusing on adopting the student perspective, and how different factors, like pre- and post-required classes, or being multilingual, can have an impact on how students can learn in their course. Rather than tell faculty they should caption videos, the FLC sessions attempt to enable faculty to consider the possible benefits and drawbacks captions may have for various student populations.

In this unit, faculty also learn about the basic psychological needs of autonomy, competence, and relatedness. These needs are discussed and connected to the redesign work throughout the entire FLC. In short, how faculty enable students to feel autonomous, connected, and competent is how IMPACT defines student-centered learning. Accordingly, many of the questions support team members ask, and comments they make revolve around how a proposed change to the course may foster or hinder the satisfaction of students' basic psychological needs.

Deliverable: As faculty fellows first begin to think about who their students are, the purpose of their courses, and the satisfaction of basic psychological needs, they are asked to provide their initial learning outcomes as well as their initial redesign goal. These learning outcomes will be refined through the program with the help of the support team members.

Learning Outcomes and Objectives

This unit begins the process of faculty more intentionally investigating their course-thinking deliberately about what they want their students to know, do, and appreciate. This includes SDT from the previous unit, but also looking closely at learning outcomes and objectives through the lens of Bloom's Taxonomy.

Learning Outcomes are defined as broad learning goals—there are typically 3-5 for a 3 credit hour class. Learning Objectives are smaller, more specific learning goals listed in support of Learning Outcomes. There can be a few or very many Learning Objectives listed in support of a Learning Outcome.

The learning outcomes considered involve cognitive and affective learning outcomes. Learning outcomes rarely remain unchanged throughout the 13 weeks. While working through the ensuing sessions of assessment and learning activities, faculty and support team members refine and align the language used to depict specific learning goals.

Assessment

The process of examining Learning Outcomes and Objectives, which begins in session 4, continues in this two-week unit, which concerns assessment of and for student learning. Fellows continue to consider Bloom's Cognitive, Psychomotor, and Affective Domains in relation to their Learning Outcomes and Objectives, aligning the assessments they ask students to complete with the specific language chosen for their outcomes. Fellows consider the balance

of formative and summative assessment and whether assessments are successful in assessing the intended learning outcomes (Barkley and Major, 2016).

Session 6 functions largely as a working session, so that faculty can work with their support-team members to align a summative assessment (usually a final exam or project) with their Learning Outcomes and Objectives. For instance, for a final exam, the fellow would go through each question and determine which learning outcome the question is measuring. This allows the fellows to identify areas of pedagogical misalignment and determine whether all of their learning outcomes are being adequately assessed. Often, IMPACT fellows find discrepancies between what they want their students to be able to know, do, and value/appreciate, and how or what they assess. For example, a fellow may want students to achieve greater development of higher order thinking skills, like create an appropriate safety plan for constructing a building, but only assess student learning via lower order assessments (like basic multiple choice questions where students classify or compare information relating to a safety plan).

Deliverables. By the end of session six, faculty fellows have a set of revised learning outcomes and objectives as well as an initial draft of how their summative assessment maps onto their learning outcomes.

Learning Activities

This three-week unit begins with fellows exploring the literature on learning activities. This is an opportunity to present what we have done in the FLC as learning activities drawn from the literature. In addition, particular emphasis is placed on fellows exploring different learning activities they may not have experienced or heard of before. Learning activities are evaluated in relation to SDT and Informed Learning, a theory of information literacy (Bruce, 2008). In exploring the literature and looking for learning activities to implement in their courses, we use the FLC to model intentional engagements with information. In addition, we encourage fellows to consider ways in which these learning activities support the satisfaction of the basic psychological needs of students.

Fellows in the following weeks continue to discuss and explore learning activities, emphasizing how such activities can enable a more student-centered autonomy-supportive learning environment. Scaffolding activities over time to build student competence is of particular importance, as students may not be familiar or comfortable with new learning activities when they expected a more lecture-style classroom environment. Ultimately, fellows document and justify their proposed learning activities for their redesigned course, acknowledging potential difficulties and mapping activities to Learning Outcomes, Objectives, and Assessments. Rather than focus on often vaguely defined notions of “active learning”, fellows work on identifying how chosen activities meet needs for autonomy, competence, and relatedness, developing the tools to implement and assess new ideas and techniques effectively. We emphasize the need for faculty to critically engage with implementation of particular learning techniques through SDT because internal data suggests that faculty who adopt active learning techniques without this critical reflection or who are uncomfortable teaching with these methods tend to receive lower student evaluations than they would by using traditional lectures. Accordingly, our emphasis on instructor autonomy in choosing class structure and activities results in greater comfort, sustainability, and adaptability while refining future course iterations with new learning activities.

This unit also asks faculty to consider how students will be expected to use information and data in their redesigned course. In 2013, the Purdue Libraries adopted an “Informed Learning” approach to information literacy that emphasizes teaching learners to use information within the context of learning disciplinary content (Bruce, 2008). Drawing from SDT, Libraries’ faculty members involved in IMPACT and other IMPACT support team members

are able to guide faculty in the design of informed learning activities that address students' perceptions of autonomy, competence, and relatedness (Maybee, 2018; Maybee & Flierl, 2017). Further research has found that the frequency with which faculty have students synthesize and communicate information correlates with student motivation and academic performance at the course level (Flierl et al., 2018).

Deliverable. Fellows create an initial draft of their Course Design Plans (CDP) which documents alignment between their learning outcomes, assessments, and activities, considers how the fellows will meet their students' basic psychological needs, and identifies potential technology tools, and ways that information will be used in their redesigned course. The CDP is a formative tool, which is integrated and revised by fellows throughout the FLC.

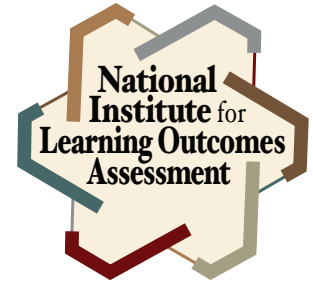
Drawing it all Together

The next three FLC sessions aim to help fellows revise, refine, and prepare to implement their intended redesign. This involves considerations of pace—how quickly they can realistically implement their intended changes, scholarly practice—how they will gather and analyze data to tell the story of their redesign, and sustainability—how to continually revise and refine one's course over time. In effect, this involves helping faculty develop practices and habits that cultivate a reflective attitude in their teaching which will continue well beyond the IMPACT FLC.

The last session is an opportunity for faculty to reflect and “close the loop” on what has been covered during the semester. The support team members engage in discussions about ongoing support with the faculty as they move toward implementation of their redesign.

About NILOA

- The National Institute for Learning Outcomes Assessment (NILOA) was established in December 2008.
- NILOA is co-located at the University of Illinois and Indiana University.
- The NILOA website contains free assessment resources and can be found at <http://www.learningoutcomesassessment.org>.
- The NILOA research team has scanned institutional websites, surveyed chief academic officers, and commissioned a series of occasional papers.
- NILOA's Founding Director, George Kuh, founded the National Survey for Student Engagement (NSSE).
- The other co-principal investigator for NILOA, Stanley Ikenberry, was president of the University of Illinois from 1979 to 1995 and of the American Council of Education from 1996 to 2001.



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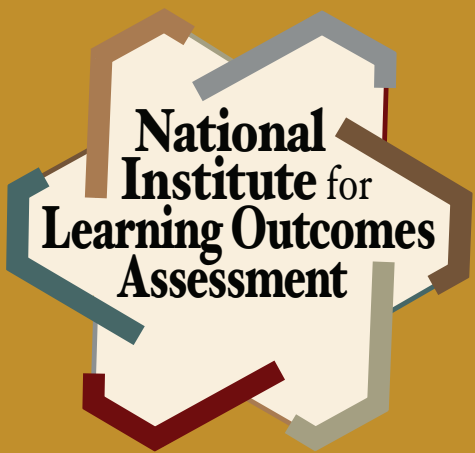


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