# Contents

Executive Summary .................................................................................................................... 3  
Study Personnel ........................................................................................................................ 3  
Acknowledgements .................................................................................................................. 3  
How to Use this Report ............................................................................................................ 3  
Purpose/Background ................................................................................................................ 4  
Context ..................................................................................................................................... 4  
Definitions ............................................................................................................................... 5  
Brief Methodology .................................................................................................................... 6  
Results ....................................................................................................................................... 7  
  A General Course Development Process ................................................................................. 8  
  Instructors’ Background and Characteristics .......................................................................... 13  
  Learning Outcomes ................................................................................................................... 21  
  Expectations ............................................................................................................................ 27  
  Facilitation of Learning .......................................................................................................... 33  
  Recognition .............................................................................................................................. 41  
Recommendations ..................................................................................................................... 43  
Conclusions ............................................................................................................................... 43  
Appendix 1. Current Core IMPACT Assessment Questions ..................................................... 45  
Appendix 2. Actual Interview Protocol .................................................................................... 46  
Appendix 3. Prospective Interview Protocol ........................................................................... 47  
Appendix 4. 2015 COACHE Survey ....................................................................................... 49  
Appendix 5. The Impact of IMPACT on Faculty Success ......................................................... 50  
Appendix 6. Planning to Achieve Departmental/College Outcomes ....................................... 55  
Endnotes: References for Instructors ....................................................................................... 56
Executive Summary

“We teach the way we were taught,” the instructor stated, while humbly claiming various mistakes made during 30 years as a college professor.

A well-respected and popular colleague added, “How do we revise a class to help students be more successful when the DFW rate is like a dumpster fire?” She proposed to her department chair transforming this course, and then combined her prior knowledge, skills, and what she learned in IMPACT to make the transformation happen.

This report compiles the stories of eleven instructors at Purdue University. Prior to this assessment, these instructors had a few things in common. They all:

1. Participated in the IMPACT program,
2. Transformed a course at Purdue, and
3. Were perceived by others at Purdue to be successful instructors.

Participating in IMPACT does not guarantee success, and many faculty are successful instructors without having participated in IMPACT. So, what do these eleven instructors have in common to make them successful? What challenges do they overcome and how? Through this study, we sought to discover what else these faculty members have in common. Two key characteristics we found within these instructors:

They all care enough to do their best; they all continue to try improving.

Other key findings of the study:

- There are many ways to be successful. We gained insight into what these successful instructors do to be successful, and found some strategies to explain how they do it.
- It takes extra time to be successful, including time to plan a course transformation, time to facilitate the course within an academic period, and time to maintain on-going course development.
- The lack of recognition these instructors receive for their time and effort spent transforming a course.
- These successful faculty members believe in continuous course improvement.

Study Personnel

Office of Institutional Research, Assessment, and Effectiveness:

- Diane Beaudoin, Director of Institutional Assessment, beaudoin@purdue.edu
- Craig Zywicki, Assessment & Data Analyst, czywicki@purdue.edu

Acknowledgements

Thank you to the participants of this study. We cannot identify you, but hope you all see your voices within the words of this report. When you make teaching matter, you make learning matter too.

How to Use this Report

Efforts by any instructor to develop skills and knowledge outside the scope of their primary discipline typically occurs in addition to (not in place of) other time-intensive expectations. To make this report useful to faculty unable to commit to the time required to be an IMPACT participant, recommended sources for further reading are cited throughout this report. These citations appear within the text as
Successful IMPACT Faculty

endnotes (in Roman numeral format) and are further detailed beginning on page 56. Some citations were recommended by study participants, while other citations commonly appear within the literature covering curriculum development, faculty development, and/or student development. This approach uses study results to identify literature and resources for faculty to review as personally needed.

**Purpose/Background**

Through on-going efforts, the IMPACT Assessment Coordination Team has collected and analyzed data addressing:

- IMPACT stakeholders’ expectations for, perceptions of, and experiences with the IMPACT program,
- IMPACT faculty participants’ attitudes, beliefs, and practices regarding learning and teaching,
- Students’ and instructors’ perceived effects of IMPACT on student engagement, and
- Effects of IMPACT on students’ academic performance and persistence.

It was determined that the IMPACT assessment plan lacked an answer to, “What makes the successful IMPACT faculty successful?”

As documented within other reports on the IMPACT program, patterns of success certainly exist, yet we lacked specific explanations for how or why instructors are successful. The purposes of this study are to explore patterns of these instructors’ success, and to identify effective strategies.

The findings reported in this document represent a starting point for understanding successful Purdue faculty. This study gathered data typical of a pilot study; the interview protocol used (see Appendix 2) could contain broader topics (see Appendix 3), or additional interviews could seek focused, deeper responses. We recommend continuing this study in additional phases to obtain:

- Greater breadth, to further expose what makes more instructors successful, and
- Targeted depth, to document and share specific successful strategies.

We invite anyone within the Purdue University community to recommend or prioritize future inquiry for similar studies.

**Context**

We assumed that much of the interviewees’ perceptions are based on first-hand experiences. Some of their perceptions of teaching and their perceived role of faculty at Purdue may be college or department specific. It is possible that some perceptions are swayed by rumor. We do not presume the perceptions of one instructor represent the perceptions of all faculty or of any subgroup of faculty.

To obtain general faculty perspectives on teaching, consider select items from the 2015 COACHE survey results, appearing in Appendix 4. First, note that 75.2% of survey respondents were satisfied or highly satisfied with their time spent on teaching, which was higher than the rate of faculty satisfied

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1 The IMPACT Assessment Coordination team consists of representatives from the Purdue University:
- Center for Instructional Excellence (CIE, [http://www.purdue.edu/cie/](http://www.purdue.edu/cie/)),
- Discovery Learning Research Center (DLRC, [http://www.purdue.edu/discoverypark/learningcenter/](http://www.purdue.edu/discoverypark/learningcenter/)), and

2 A list of core IMPACT assessment questions appears in Appendix 1.

3 For more information about COACHE, refer to:
- The Collaborative on Academic Careers in Higher Education: [http://coache.gse.harvard.edu/](http://coache.gse.harvard.edu/)
- Purdue Office of the Provost: [http://www.purdue.edu/provost/faculty/facultyninitiatives/coache.html](http://www.purdue.edu/provost/faculty/facultyninitiatives/coache.html)
with time spent on research (63.8% satisfied), outreach (57.3%), service (50.2%), or administrative tasks (27.4%). When reviewing these rates, consider: What level of satisfaction do we expect within the Purdue context? What should be done institutionally, or individually, for dissatisfied faculty? How do faculty impact satisfaction of their peer colleagues?

Definitions

As stated on the IMPACT program website⁴:

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

IMPACT participants develop their knowledge of teaching and learning practices within a Faculty Learning Community (FLC), which is a weekly, semester-long series during which FLC participants collaborate with a support team and other participants to develop knowledge and skills needed to transform a targeted course. The support team consists of staff or faculty from the CIE, Teaching and Learning Technologies⁵ in ITaP, and Purdue Libraries⁶, who collectively contribute expertise in pedagogy, technology, and information literacy. Each member of the support team also contributes their prior knowledge supporting other faculty through course transformations.

Through this series, IMPACT Fellows use backwards design to:

1. Develop learning outcomes based on what they want students to learn,
2. Decide on acceptable evidence of learning, and then
3. Create learning experiences to meet learning outcomes.

An IMPACT Fellow is a Purdue University instructor who participated in and completed the IMPACT FLC.

For this report, we used either interviewee or participant as a specific reference to an interview participant or participants. Instructor and Faculty are used in a broader context, not specific to the interviewees.

Outcome⁷ is used within this report to represent an instructor’s expected result or goal. Some faculty use other words—such as objective, competency, purpose, or goal—but the word outcome is used to represent any intended result or goal. (Except when used in a direct quote of a participant.)

To help deidentify study participants, They and Their are used within the report as gender-neutral pronouns, in place of gendered “she/hers” and he/his.”

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⁴Source: [http://www.purdue.edu/impact/](http://www.purdue.edu/impact/)
⁵Teaching and Learning Technologies (TLT, [https://www.itap.purdue.edu/learning/](https://www.itap.purdue.edu/learning/)).
⁶Purdue Libraries ([https://www.lib.purdue.edu/](https://www.lib.purdue.edu/) and [http://guides.lib.purdue.edu/impact](http://guides.lib.purdue.edu/impact)).
Successful IMPACT Faculty

Brief Methodology

The IMPACT Assessment Team collectively addresses assessment and research questions about IMPACT from a variety of students, faculty, and staff affected by IMPACT. Once the inquiry “What makes the successful IMPACT faculty successful?” emerged as a topic of interest, OIRAE staff began tracking prospective interview topics, then took the lead on designing a study of successful instructors’ perceptions of their success.

The following criteria were used to identify the pool of prospective instructors recruited to participate in this study:

1. Participated in an IMPACT FLC.
2. Facilitated at least three iterations of their IMPACT course transformation.
3. Succeeded in their transformation.

As of spring 2016, 215 faculty had participated in at least one IMPACT FLC. The second criterion decreased the pool of prospective participants to 108. Using reputations for being successful, student centeredness ratings, and/or changes in students’ final grades, the third criterion narrowed the count of prospective study participants. We invited 17 faculty with diverse personal characteristics to reach the goal of ten participants. Table 1 shows the distribution of participants, compared to the population, based on personal and course demographics.

Table 1. Instructor and Transformed Course Demographics, as of Spring 2016

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Sub Group</th>
<th>Count of Study Participants</th>
<th>Count of Study Invitations</th>
<th>IMPACT FLC Participants</th>
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<tr>
<td>Sex</td>
<td>Female</td>
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<td>9</td>
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<td>Unknown</td>
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<td>0</td>
<td>4</td>
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<tr>
<td>Faculty Rank During IMPACT Participation</td>
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<td>3</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Associate Professor</td>
<td>4</td>
<td>6</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Full Professor</td>
<td>4</td>
<td>6</td>
<td>40</td>
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<tr>
<td></td>
<td>Other (Lecturer, Unknown)</td>
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<td>2</td>
<td>41</td>
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<td>Home College of Fellow</td>
<td>Agriculture</td>
<td>2</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
<td>1</td>
<td>2</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Health and Human Sciences</td>
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<td>1</td>
<td>22</td>
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<tr>
<td></td>
<td>Liberal Arts</td>
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<td></td>
<td>Pharmacy</td>
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<td>Management</td>
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<td>0</td>
<td>5</td>
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<td>Spring 2012</td>
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<td>Fall 2012</td>
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<td>16</td>
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<tr>
<td></td>
<td>Fall 2013</td>
<td>1</td>
<td>2</td>
<td>25</td>
</tr>
</tbody>
</table>

7 At Purdue, use of “School of...” has different meanings. For purposes of this report, consider use of “College” to include the School of Management, and use of “Department” to include all other schools at Purdue.

8 Some faculty participated in more than one IMPACT FLC. Only their first cohort is counted within Table 1.
<table>
<thead>
<tr>
<th>Demographic Sub Group</th>
<th>Count of Study Participants</th>
<th>Count of Study Invitations</th>
<th>IMPACT FLC Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2014</td>
<td>2</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Fall 2014</td>
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<td>0</td>
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</tr>
<tr>
<td>Spring 2015</td>
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<td>25</td>
</tr>
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<td>Summer 2015</td>
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<td>Fall 2015</td>
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<tr>
<td>Spring 2016</td>
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<td>0</td>
<td>19</td>
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<td><strong>3</strong></td>
<td><strong>21</strong></td>
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<td><strong>Murphy Award</strong></td>
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<td><strong>25</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Teaching Academy</strong></td>
<td><strong>4</strong></td>
<td><strong>24</strong></td>
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<td><strong>79</strong></td>
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<tr>
<td></td>
<td><strong>20000-29999</strong></td>
<td><strong>3</strong></td>
<td><strong>87</strong></td>
</tr>
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<td></td>
<td><strong>30000-39999</strong></td>
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<td><strong>66</strong></td>
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<tr>
<td></td>
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<td><strong>22</strong></td>
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<td></td>
<td><strong>50000-89999</strong></td>
<td><strong>0</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Eleven, one-hour one-on-one interviews were conducted during the spring 2016 academic period with consenting participants. Interview recordings were transcribed, then coded within NVivo software based on procedures described by Saldaña \(^{10}\). Concept coding was used to create and define the observed nodes and for the first coding iteration. Pattern coding was used for subsequent coding iterations.

Results were organized based on aggregations of interviewees’ responses. Out of respect for the confidentiality guaranteed to interviewees, identifiable words/phases were removed from direct quotes used within this report. All [bracketed words or phrases] within quotes either replace identifiable words or were added to give meaning to a participants’ words. All quotes from interviewees appear in italicized tan-colored font.

**Results**

While not a study solely about their IMPACT experiences, some interview questions sought from participants information about their perspectives of IMPACT. For example, when asked about the single most important aspect of their IMPACT experience, overwhelmingly it was the fellow-to-fellow or facilitator-to-fellow contact. These contacts provided the means through which interviewees obtained the knowledge, skills, or experiences they personally sought through IMPACT.

Some interviewees identified more than one “most important” aspect, but the following list covers the variety of their responses:

- Interacting with others to share knowledge, obtain ideas, hear about successes or challenges, etc.
- Interacting with others who are passionate about teaching.
- Freedom/flexibility to transform the course based on what the fellow thinks is best.
- Empowerment to be brave.
- Data about the students and student engagement.

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\(^9\) Some faculty transformed more than one course during the IMPACT FLC. Counts in Table 1 include all courses transformed during an FLC, but “IMPACT Influenced” course transformations are not counted.

• The value placed on teaching and learning.
• Facilitated experiences.
• The open space to talk about the IMPACT process.
• Understanding learning, creating learning outcomes, and mapping of outcomes.
• New ideas for teaching (e.g., use of technology, active learning, etc).

Some of these important aspects of IMPACT continue to matter to the interviewees, and they all (albeit in their own less structured way) continue to discuss teaching and learning with colleagues and/or support staff at Purdue. These characteristics possibly model how faculty individually evaluate their approach to on-going skill development.

**A General Course Development Process**

In general, interviewees’ responses to various questions identified chronological factors within the general timeline of a course. Figure 1 uses this timeline to identify factors affecting faculty success, within three stages:

1. Pre-course “inputs” occurring before the course is offered.
2. The Course “process,” which contains the sequences of learning experiences occurring within an academic period, including:
   a. “Facilitated Teaching/Learning” experiences during which the instructor and students interact formally, and
   b. Students complete tasks separate from the instructor, both “after class” (e.g., assignments, test preparation) and “before class” preparation (e.g., reading).
3. Post-course “outputs,” occurring after the academic period.

All three stages occur within a learning environment.

**Figure 1. The Development Process for a Typical Course**

Figure 1 models the experience within an academic period for one course. Most students enroll in more than one course. While students may only be in one place at a time, or effectively complete one academic task at a time, each student possesses multiple intertwined spirals. Other experiences within an academic period may change what an instructor perceives to know about students.

**The Learning Environment**

Instructors’ experiences with a course occur within an environment where some factors remain consistent and other factors continually change; some factors are physical while others are conceptual.
We asked interviewees to identify how they felt about the support they received for their IMPACT course redesign. Interviewees’ responses varied greatly regarding higher-level support, and it is likely each instructor has individualized circumstances—including responsibilities beyond teaching—which dictate the level of the support desired, actively sought, and/or received.

Other environmental factors mentioned by interviewees affecting their course development include:

- Requesting specific learning spaces, or specific characteristics within potential learning spaces, that may be assigned to them.
- Characteristics of the assigned learning spaces.
- Curricular expectations within three levels: the department, college, or institution.
- Current events within and outside of Purdue University, affecting students’ interest in a course topic and/or need to learn about a topic.
- Institutional policies and/or practices.

**Support Within the Institutional Environment.** Within the institutional environment, interviewees were affected by institutional support, most notably due to the centralized organization of the IMPACT program, and support received from centralized units (i.e., CIE, TLT, and Libraries). Interviewees identified IMPACT is a valuable institutional program for curricular and skill development. As one interviewee described:

> “I think that they (in Office of the Provost) wanted to transform undergraduate learning at Purdue University. I think it was a great idea. I think the university ought to continue to let IMPACT evolve and exist because at the large research institution, having a provost-level program, where people are encouraged to improve the learning environment in the classroom, I think that's a heck of a good idea. You can't just all be about the research. You can run a model where...having a program like IMPACT helps those faculty think about the learning that's taking place in their classroom.”

Interviewees experience misinformation or conflicting information about the purpose of IMPACT or the justification to transform courses. For example:

> “Because of the Purdue Moves pieces that deal with transforming STEM education, I know there are people on campus who are like, ‘Hey, it's not an IMPACT classroom unless it's flipped.' Well, let's hold on for a sec. There are lots of innovative things that you can do to transform your classroom.”

IMPACT is an institutional-level program, relying on the staff and faculty in CIE, TLT, and Libraries, to collaboratively support the IMPACT participants. When asked to identify the support they received from these units during the redesign process, the following emerged:

- All interviewees valued the support received within the FLC meetings.
- Most interviewees received support after the FLC ended. Compared to those who did not maintain contact with their support team, those who maintained contact appeared to have stronger meaning or purpose to what they experienced through IMPACT.
- When people from the support team leave Purdue, this support may not be replaced. It may be that an interviewee did not know who to contact.
- The role of the Librarian or TLT staff member was not clear to all interviewees, possibly due to each interviewee’s perceived need for help.

Due to the interesting descriptiveness of many interviewees’ responses regarding the support they received, their detailed responses appear in entirety within Appendix 5.
Successful IMPACT Faculty

Support Within the College and Department Environments. Support for instructors at the college and departmental level differed for each interviewee, based on what support they expect compared to the support they receive. The range of opinions starts with “Oh, they’re great. They’re absolutely the best.” and goes to, “They allowed me to do it but they’ve been very skeptical.” but includes:

“When I look around at my colleagues who have been through IMPACT, I don’t think that has been recognized or appreciated. This additional effort that I am putting in, if anything maybe I’m getting jeopardized because there’s no release, there’s no relief, and yet here I’m putting in more effort. So, that’s pretty tough. It’s almost a punishment going through this. I’m being a little facetious but it is hard because it does take that extra time and I don’t really feel any release for it.”

It seems instructors receive encouragement to transform courses, or they are just not discouraged from it. Possible explanations offered by interviewees to explain the level of college or department support include:

- Administrators’ awareness about courses and/or efforts to transform courses.
- Culture of the department.
- Department or college interests with higher priority (i.e., research).
- Other department or college responsibilities of higher priorities (e.g., putting out “fires” first, and course transformation is not a fire).
- Value placed on teaching within evaluations and reviews.
- Beliefs about what is best for students and their learning.
- Conflicts between written and unwritten expectations.
- Conflicting messages between:
  - College-level and department-level administrators, or
  - Multiple departments, for faculty with multiple appointments.
- Contrasts in priorities between the department hosting the course, and the major department for students enrolled in the course.

Each of these explanations could swing in a manner that is encouraging or discouraging to faculty prior to or while transforming a course; however, the study interviewees’ resilience leads them to succeed regardless of any difficulties; positive support simply enhances their success or perceptions of success.

Within departments, peer-to-peer faculty support also affects interviewees differently, based on:

- Amount of emphasis placed on teaching for junior faculty seeking promotion.
- Partnerships between faculty to teach courses.
- Comparisons based on differences in students’ final grades, course evaluations, or enrollment counts.
- Differences in what motivates individuals.

Finally, one interviewee added an interesting perspective regarding college-level buy-in to course transformations:

“I [spoke] with the Dean a couple of months back and [the Dean said], ‘Let’s have all of our faculty go through IMPACT...this year maybe freshman faculty, next year sophomore faculty, next year...’ I said, well, wait a second. First of all, it takes a lot of effort but the first time IMPACT class runs, it’s not always smooth. Faculty are trying new things, and you don’t want one group of students following through the bad experiences, the first trial run, the entire way through. You’ve got to stagger it and, you know, maybe go every
other year, something, but just there’s no recognition that you don’t just go to IMPACT, get fixed, and then come back and be more efficient.”

This interviewee, who possessed extensive support from colleagues and administrators, took a tangent during the interview to share how a single course transformation achieves departmental and college outcomes. This vision is detailed in Appendix 6.

**Instructors’ Pre-Course Inputs**

Pre-course inputs occur before an academic period begins. To prepare to teach, instructors use:

a. Their personal inputs,
b. What they know of students, and
c. What is available within the institutional environment.

Their personal inputs are documented in other sections of this report, based on knowledge (see p 13), skills (see p 14), personal characteristics (see p 16), and philosophy of teaching (see p 20).

Instructors’ perceptions of student inputs might not align with actual student inputs; however, interviewees’ used what they know, or believe to know, about students during course preparation. For example, interviewees believe students have differing levels of confidence in their knowledge or abilities:

“I teach a course [that uses problem-solving strategies] for mostly undergrads...and probably half of them are deathly afraid of math or they’ve always been told that they’re not any good at math. While my class is not a math class, they worry that it is. And so they’re quite stressed when they start the semester.”

Another interviewee with a problem-solving course added the following, showing how instructors' attitude, teaching style, and personality can affect students' confidence:

“The course that I teach is what I would consider a math [course] in disguise. Many of our students, when you say the word ‘math,’ come unglued and have this notion that math is always hard and it's something they can’t learn. I don’t believe that for a minute. These people are certainly capable of learning the things that we talk about in this class. So I try to dissuade them of this notion, that it may be difficult for you or it may not be as easy as your other courses because it does have a mathematic basis to it.”

Besides affecting their confidence, interviewees also set expectations for students’ knowledge entering the course. For example:

“...we have some of the top students at the university and these are top students.”

“I was teaching an [introductory course] of about 200 students, and I also had another honors section. It gave us a chance to compare two different sizes and methods. The first semester, first experience in my mind had to be much more explicit and much clearer and more directive than I would have expected. Some of the teaching methods evolve from their freshman year to their senior year, but you have to start helping them think in

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11 Students come into any course with their own inputs, but determining actual student inputs requires use of other data, possibly interviews with students enrolled in the participants’ courses, or use of other institutional data.
“a certain way when they start if you are going to end up with students that think the way you want them to think.”

“A lot of my colleagues that I’ve worked with have been known to call a group of students just stupid because they’re not getting it.”

Perceptions of students’ struggles changes this interviewee’s approach to supporting students. They continued:

“Somewhere along the way...I questioned myself. I became much more interested in the students. The more I became interested in the students the more I wanted it to be student-centered because they were giving me the feedback to be formative so I could get better as the semester went on.”

Finally, interviewees also perceive students:

- Choose specific sections based on reputation for the course and/or instructor. These reputations indicate whether students are willing, or not willing, to experience courses with reputations for being challenging.
- Come into class having had prior experiences with peer students, good and bad, possibly specific relationships with other students in class.
- Possess related knowledge and skills, but must presume a certain level of each from which to plan and facilitate their course.
- Possess specific intentions for the course, which might not align with the instructors’ intended outcomes.

### The Course Process

The course process consists of sequences of learning experiences occurring within an academic period, including any structured or unstructured activity experienced by the students or the instructor. Within Figure 1, the course process is represented as a spiral because the sequence of learning experiences commonly occur within a three stage cycle based on pre-class preparation, in-class activities, and post-class assignments or other responsibilities. In a well-defined cycle, post-class tasks often align with pre-class tasks for the next class period. Figure 2 is a slice of the spiral from Figure 1, modeling how students and faculty, together and separately, act before, during, and after the class. Further description of facilitated teaching and learning begins on page 33.

![Figure 2. A Single Cycle Within Figure 1.](image)

### Post-Course Outputs

What happens after a course ends may be quite variable, based on a wide array of questions such as:
**Does the instructor teach the course again?**

**What did the students learn?**

**What related course(s) will students take next?**

While some contact between the instructor and some students may still occur, these contacts exist within a different format (such as another course, advising/mentoring). Students’ future experiences are enhanced by each past or present learning experience.

Whether an instructor teaches the same course or not, successes within one course impact the instructors’ future teaching experiences. Figure 1 presumes an instructor teaches the same course again: the end of one iteration course begets preparation for the next iteration. Most other sections within this report allude to continuous course improvement, both within an academic period and between academic periods. The opportunity to start over gives instructors a chance to build upon successes, and learn from mistakes.

The remaining results are presented within topics driven by the interview prompts. Interviewees’ described their own lived experiences from their perspective as an instructor; however, these perceptions may not align with students actual experiences, or may not align with others’ experiences within institutional, college, and departmental “environments.” Hence, transferability of these results to other instructors, students, or situations depends on how similar these instructors’ circumstances are to any reader’s circumstances. For example, none of the interviewees are new to teaching. While many recommended skill development for new faculty, their own experiences may not transfer to the experiences of a first-time instructor.

**Instructors’ Background and Characteristics**

Each interviewee possesses knowledge, skills, and a core set of characteristics that contribute to their success or, in some cases, contribute to their on-going challenges. Whether explained, observed, or implied, the content within this section emerged as common among five or more of the interviewees.

**Knowledge of Content**

Some interviewees identified knowledge of course content as key to their success as an instructor. Rationale for knowing the content varied. For example, “students’ expect [instructors] to know subject matter,” which builds credibility to teach, and creates flow during class:

> “Once you get the content under control, the content just rolls...I don’t think you can ever get tripped-up by the content. You’ve got to know the content really well, so that facilitation piece can go and you’re not babbling with the content.”

Comfort with knowing the content also shifts the delivery of the content. As one interviewee explained, “Rather than ‘how do you teach?’ [consider] ‘How do you inspire learning?’” Comfort with knowledge is particularly important for faculty who lecture:

> “I think there are some faculty members who know their content really really well and what they try to do is they explain it really well to students. So, there’s a person at the
Most interviewees questioned whether their knowledge alone was sufficient to become an effective college instructor. The act of questioning oneself might suggest some faculty lack teaching-efficacy, but their experiences with IMPACT led some interviewees to explain how teaching requires skills beyond knowledge to be a successful instructor.

Skill Development, in General

Content knowledge aside, what skills are required to be a successful instructor? Two interviewees expressed concerns regarding the limited teaching skills possessed by faculty as follows:

“Only in academia do you take people who have no training in education and say, ‘Now your main job is to teach.’ Of course a lot of people don’t think that’s their main job, but you’re really, really good at [this other] thing and so by association you should be really good as a teacher [of it].”

“Higher education [is] an interesting thing. You spend a lot of time becoming technically efficient in—or technically knowledgeable in—a small little sliver of life and somehow, the institution thinks that qualifies you to teach.”

Four interviewees previously studied teaching and/or learning in their field. It might seem obvious these four interviewees would become successful instructors; however the climate for teaching at Purdue may affect instructors’ use of teaching skills or affect instructors’ perceptions of acceptable teaching methods. One of the four shared how the Purdue climate did not encourage them to use what they knew:

“I’ve got a Bachelor’s, Master’s, and PhD in [education of my discipline]. So, I understand Bloom’s taxonomy, I understand backwards design...but the first couple of years that I was here, I was able to escape without really having to do that, [even though I knew how to] do some engaging activities with the students, get them hands-on.”

A second interviewee clarified their pre-IMPACT approach to teaching, and the basic value of IMPACT, as follows:

“When I first came [to Purdue] as an instructor, I fell into the trap of what I had experienced, and what I had experienced at college was ‘here’s the book, we’re going to go through 16 chapters, we’ve got 16 weeks, so one week a chapter. You read it before class, I will review it in class, and then class is over.’ We’ll do the same thing again and again and again. I was tempted to do that when I first got here because that’s what I thought college education was about because that is all I had seen, but it was hard for me. I was much more interested in active learning strategies, much more interested in having the students solving problems and applying what they are thinking about, applying what they are reading rather than just simply regurgitating. IMPACT, I think to a certain extent, enabled me, gave me the confidence, [and]...validated my interest in teaching that way.”

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13 For example, if an interviewee taught undergraduate “STEM” courses at Purdue, their own graduate studies emphasized “STEM Education.” Similar graduate programs at Purdue University, emphasizing education in a particular subject, are listed online at: https://www.education.purdue.edu/academics/graduate-students/degrees-and-programs/graduate-programs/
In sum, relevant skills likely develop through ongoing teaching experiences, but the same experiences expose to instructors any deficiencies in their skills or knowledge. All interviewees justified participating in IMPACT to further develop knowledge of learning and course facilitation. For example:

“If in your teaching practice you have paid attention to ‘What is it that students commonly don’t understand?’ Or ‘How is it that students commonly do this in terms of problem solving and do these things successfully or think about these concepts in the correct sorts of ways?’ If you paid attention to that, or done some reading on that, then you can integrate that into your practice.”

All interviewees advocated for faculty skill development and course development, many alluding to a need for on-going development rather than one-time development. Developing skills and/or courses might come at a cost to instructors, based on either the lack of recognition or reward for teaching at Purdue, or the extensive time it takes to redesign a course. These course redesigns require on-going time commitment for continuous course improvement.

**Skill Development, through IMPACT**

All study participants have recommended IMPACT to peer faculty who seek development of their teaching skills and/or courses; however, interviewees’ emphasize different reasons what faculty could benefit from participating in IMPACT. Collectively, interviewees believe IMPACT may benefit instructors who:

- Seek to develop knowledge and skills related to college teaching and/or student learning.
- Receive support from within their academic department and college, and receive recognition for their time to participate in IMPACT.
- Possess a general awareness of what strategies work and do not work in their discipline, but want to broaden their knowledge of strategies (e.g., active learning) or resources (e.g., use of technology).
- Want to gain knowledge of research about teaching and learning.
- Need assistance working through pedagogical ideas or details.

Beyond these general characteristics, interviewees most frequently suggest IMPACT may benefit instructors who are new to teaching, pre-tenure, or graduate teaching assistants. Regarding this group of instructors, one interviewee stated:

“I think if we are going to change Purdue we’ve got to change it with the assistant professors and maybe the new associates at the latest. In the first three or four years we are such a research institution that we are going to be focused on getting graduate students and grants and publications. They will have some teaching, but that is also when they’re more receptive to new ways of teaching. With the exception of the College of Education...the faculty have never ever been taught to teach.”

One interviewee, who also recommended IMPACT to experienced faculty, stated:

“I recommend it to all of my colleagues because teaching is important and the students at the university have changed so much. I’ve been here (many) years and we just are not getting the same students at all. They have different experiences and different expectations, they behave completely different as students. I think you have to continuously reinvent your instructional strategies, and IMPACT is a great resource to help you do that.... if you’re not in IMPACT and you’re not reinventing your instructional strategies, then you’re going to be missing something.”
Instructors possess individualized needs for skill development, which may explain why IMPACT participants:

- Enter the IMPACT program with different expectations, and
- Leave with different gains in knowledge and skills, or changes to their attitude and behaviors.

Individualized desired outcomes of IMPACT further justifies why the IMPACT program does not prescribe transformation models for all participants and courses. Misperceptions of course transformation models remain. As explained by one interviewee:

“I think that freedom is important. My understanding now is that there is a lot of emphasis given on, ‘Hey you should run a flipped classroom.’ I think that’s not good. I don’t think flipped classrooms are for every student. I think there is plenty of educational literature about the social aspects of learning that off-loading that into an online environment is not so good. I have this sense now that IMPACT is somehow tightly associated with flipped classrooms and I just think, ‘Oh my gosh, there’s got to be something more than this.’”

Interviewees identified faculty who should not participate in IMPACT, including instructors who are:

- Forced to participate by their college or department.
- Unable to commit the time to participating in the FLC, or the time required to transform their course.
- Not committed to a real course transformation.
- Generally strong instructors, whose time may be better in the classroom with student or spent developing other skills.
- Faculty who do not value teaching.

In sum, interviewees predominantly recommended on-going skill development and on-going course transformation, but acknowledged IMPACT does not fit all instructors (see Appendix 5).

**Instructors’ Personal Characteristics**

Successful instructors also possess characteristics handy for teaching, developed in and outside of higher education, but useful far beyond teaching. Interviewees integrate personal characteristics into their course transformation in various ways, modeling how instructors develop and use personal characteristics within their classroom. Collectively, these characteristics demonstrate how the interviewees care about their students and interactions with students, care about the course, and care about their teaching, but this care may not align with their perceived role of faculty on campus. For example:

“Especially at a big research university, first and foremost is grant money and doing journal articles. If you can’t do some of that stuff, you’re not going to survive, no matter how good a teacher you are. You really [must] care about this stuff to become a great teacher.”

**Teaching Efficacy.** Self-efficacy in the four interviewees with an education background appeared generally stronger than the other seven interviewees who did not have a formal background in education; however, statements by all interviewees modeled their own teaching efficacy. For example:
“You’ve just got to be brave every now and then and try something different, and try and figure out how to make it work. Or if it doesn’t work, to know you’ve got to try something different.”

“I know that I can get the tools and the people I need to help me implement them if I’ve got a big, crazy idea. I can find a way to make it work where before I would have been scared to try something unusual or that might be a hassle. Now I’ve learned to minimize the hassles and give us a chance to try some new things.”

Reflection. Successful instructors use reflection to identify successes and weaknesses in their own skills, evaluate strategies used to facilitate learning, or course circumstances. Interviewees’ statements showed the value of reflection about students and the course during class, between classes, and between academic periods. For example, consider this interviewee reflecting on their frustration with classrooms, where encouragement and support from others led to their introduction to IMPACT:

“I’m glad I went through IMPACT and I enjoy talking about it. It just has made my job better because I was really in a funk with my class. I was seriously thinking about not teaching it anymore. I went to Marne Helgesen, when she was the director for CIE...and said, ‘I’m totally, utterly miserable. I just had the worst experience of my life...the worst semester. I can’t do this anymore.’ I didn’t know about IMPACT. [Helgesen] introduced me to Tomalee Doan who took me over to Hicks and showed me Hicks B848 and said, ‘All you need to do is apply and we’ll put you in here this fall. Even before you’re an IMPACT fellow.’ I said, ‘That’s a deal.’”

Another interviewee reflected on their early teaching as follows:

“What a terrible teacher I was when I first started. Oh my god, I was horrible, horrible! I think about my first couple of semesters, I didn’t know anything about preparing for class, how to put a syllabus together, beginning, middle and end of a lesson, nothing. I didn’t know anything.”

We might presume all faculty reflect to some extent, but there are many instances within the interview transcripts where interviewees explained how their actions, following reflection, led to a perceived change in their teaching or improvement in their students’ learning experiences.

Resilience. Often accompanying their reflectiveness, study participants expressed a variety of one-time problems, such as technology issues, failing activities, or lack of student engagement. Explained by one interviewee:

“You know when your lesson has been a disaster. You know when this active learning thing has been a disaster because you see students not engaging, you see students withdrawing, you see frustration on people’s faces because the active learners are not able to get those who are passive involved....trust me, you could be in the room and know when your activity is a failure.”

Instructors must also deal with systemic issues such as large enrollment classes or poor classroom characteristics. Successful instructors recognize a problem and identify a reasonable solution, sometimes through iterations of change. For example:

“There’s just a whole trial and error process that goes along with finding those things that work for you. You gotta change the way that you’ve been teaching. For most of us, we’ve never had any experience at trying to do this other stuff. And so there’s a lot of
Successful IMPACT Faculty

"fumbling around that goes on. I think that in some cases, you've must convince the students that this is worth their time and effort, too, because I think you’re asking them to spend more time at learning than they now perceive that they’re devoting in a pure lecture, regurgitate model.”

Successful instructors persist through difficult situations and challenges.

**Respect.** Successful instructors respect their students, and expect to be respected by students. Mutual respect enhances the context for learning. For example, one interviewee stated:

“Let me go down the respect road. I think if you communicate to them that you are available, and you would like to help them learn, I think if you integrate some things from their majors into the course that's another way of showing respect for what they’re interested in. I think by doing those kinds of things you communicate to the students that, 'I respect you. I respect your desire to learn.”

“I think faculty who are not empathetic and not intuitive in being able to read others, they’re very challenged at being a great teacher.”

Another interviewee, who now creates a student-centered learning environment, described their pre-IMPACT perspective as follows:

“I probably would have called the rapport between the teacher and students [as] ‘the relationship’ or ‘the distance.’ Everywhere else I’ve ever taught there is a huge distance and maybe respect or fear of the teacher. The teacher was the authority. There was a one-way communication of information flow and hopefully a one-way communication back in what I now call regurgitation.”

Similarly, an interviewee who now relies heavily on peer discussions during class respects students’ need for time to think, react, and change their thoughts. To establish this dialogue, the interviewee stated:

“Give the student a chance to sort of reformulate their question again. I think that little interchange is in and of itself one of the most useful things we do in [my class], because it’s those kinds of interchanges that can prevent people from just talking past each other when they’re disagreeing about something. If you can learn in a public setting where there’s disagreement, to be charitable and go back and forth a little bit like that, it’s amazing how much that improves communication and conversation.”

One interviewee described a situation in which they disrespected students unintentionally.

I’d share with students, ‘Yeah, some disciplines maybe don’t focus so much on understanding. It may be more on memorization.’ I realize that’s a little naïve, and I’m not necessarily going to say that that now, but that was kind of the point I was making a few years ago. I didn’t name what the specific discipline it was and on my course evals at the end of the year, I had a particular group of students who were sure that I was talking about them and was disrespecting their discipline. Clearly I’ve come to realize that they are [students] who feel a little marginalized in their classes. I make it a point to use [different] examples in class and try to instill a sense of respect for what they do.”

In general, interviewees want to respect their students, but understood the challenges they took to transform their course created risk for their students and themselves alike. To challenge students effectively, instructors must provide support to meet the challenge.
**Humility.** Interviewees balanced knowing they are successful, yet recognizing they could be more successful. For example, all interviewees were willing to seek help transforming a course, whereas other faculty may not perceive a need to improve their skills, knowledge, or course, or obtain help from others.

In the invitation to participate in the study, we referred to prospective participants as successful instructors, but never told them why they were perceived to be successful. One interviewee shared:

“[We] began by talking about successful instructors...I’m not so sure I can put myself in that category. And yet I don’t know that I really get to observe other people in that category either. I suppose I could reach out. I could look and see who the Murphy Award winners are, and ask if I can observe their class...it would probably be inspiring, actually. I’m sure I’d get a lot of really good ideas.”

When combined with their reflectiveness, interviewees’ humility emerged in at least three different ways. For example:

- **Desire to improve oneself,** for example: “Somewhere along the way my poor self-esteem probably caused me to question myself...then I became much more interested in the students. The more I became interested in the students the more I wanted it to be student-centered because they were giving me the feedback to be formative so I could get better as the semester went on.”
- **Limitations of control,** for example: “I can’t control exactly how students are going to perceive everything I do in the classroom or whether they’re going to like me. I can just try to do my best.”
- **Miscommunication,** for example: “I think I still can be more precise with my instructions. Sometimes maybe I am not very clear conveying my expectations from students, so I think that’s something that I admire in those instructors who have set instructions, and they are very good in communicating that with the students.”

While all interviewees were all perceived to be successful, “I can get better” was a consistent tone throughout their responses.

**Obligation.** Some interviewees expressed obligation to students, to provide a strong learning experience. Various examples of obligation included:

- **Availability to students,** for example: “I’m trying to always make them aware that I care and I’m available and I’m here to help...I tell them repeatedly throughout the semester I am enthusiastically available to you as a coach and mentor...”
- **Adaptability.** For example, this interviewee created multiple versions of the same course to fit different student groups: “When I plan a project, it’s not just as simple as having a good idea for a project. I have to figure out how am I going to make it work in a traditional large lecture class, in the hybrid class and the online class. I have all those sections closely coordinated and I don’t want one class to have an experience that the other sections don’t get to have.”

**Shared Ownership.** Some interviewees explained their successes within the context of partnerships. While each interviewee claimed ownership over their course, use of partnerships extended interviewees’ perceived success beyond what each would achieve by themselves. Three types of partnerships emerged:

- **Peer faculty partnerships,** where instructors collaborated to develop and facilitate the course based on each instructors’ knowledge and skill strengths. Four interviewees claimed use of peer partnerships to develop their IMPACT course. It’s likely the same sense of collaboration emerges in
Successful IMPACT Faculty

other contexts of their roles on campus, including three interviewees who possess part-time administrative appointments.

Interestingly, three of these four interviewees no longer teach their IMPACT transformed course, but passed on the transformation plans to current instructors to continue teaching and adapting the course. At the time of the interview, the fourth interviewee seemed poised to pass on the IMPACT course to another instructor, in order to transform another course.

- Two interviewees described their use of undergraduate teaching assistants as in-class peer mentors and facilitators. These interviewees recognized the value of peer-led activities and sought to help these TAs develop interpersonal skills. Undergraduate TAs provided these instructors with useful feedback throughout an academic period, based on what they experienced in their peer-to-peer interactions.
- Other instructors integrated graduate teaching assistants into course planning and facilitation. This model appears more common at Purdue University, but interviewees’ empowered these TAs to take greater ownership during content development and/or facilitation. For example, one interviewee with graduate TAs empowers the TAs to take ownership over recitations by:
  - Emphasizing and expecting outcome mapping during planning of recitation activities.
  - Expecting the TAs to meet these learning outcomes and assesses learning based on these outcomes.
  - Discouraging relecturing during recitations.
  - Pushing for development of all graduate TAs within their department.

Philosophy of Teaching

A teaching philosophy is unique to each instructor based on their view of students, knowledge of learning processes, and expectations about what it takes to teach well. One interviewee, who is long-tenured at Purdue, shared the following:

“I was in my third year as an assistant professor at [a peer institution] when I was forced to develop a teaching philosophy. I was forced to write what were my own objectives about teaching broadly; not about a course, but about teaching and learning and how does that interact with counseling, advising, advising clubs, and interacting with students. Like, ‘What is the role of faculty on a campus?’ I’ve grown up since then thinking more like a mixture of a student services person and faculty. I’ve always thought student services people kind of think about the whole student and their well-being and their life. Faculty worry about their brain. Somewhere in between there was a revolution. That philosophy has changed, I bet you not more than 15 percent over the years.”

Within the context of their subject, one interviewee conjured a philosophy of teaching during the interview:

“I never sat down to try and write out (my philosophy of teaching). Maybe I should try and do that....I’m enough of an [expert] to think that if the stuff we do in [this subject] doesn’t make meaning out of your life, then we’re not teaching you the right [content] or in the right way....[I] try and give them as many [experiences] as possible....What you’re

trying to teach them is how to perceive the world...you’re trying to get them to imagine the world by means of these concepts that [subject experts] use. That’s actually a very difficult thing to do, and they’ve never done it before. My teaching philosophy is showing them how to live the life of the mind, and trying to show them...this isn’t just about this class.”

All other interviewees possessed components of a teaching philosophy that motivates and inspires them to achieve goals related to personal and student success. Beyond their use of personal characteristics, prospective components for philosophies of teaching emerged. A few interesting examples regarding student success were:

To create a learning environment, for example: “Getting the students excited enough that they want to learn more is important. That the students can see the value for why they would even want to take the time to learn about this particular subject. I think that the students need to feel that the classroom is a fairly safe and organized place.”

To challenge students, for example: “Do you understand what it means for me to poke my finger in your eye?...My goal is to make you uncomfortable. To get you to think about stuff.”

To encourage students’ ownership over their own learning, for example: “The emphasis really is less on keeping score and more about I need to make sure I’m doing the things that I need to do to help their learning. Part of that is showing respect. Part of that is creating the sense of belonging. I know that them liking me is important, but I can’t do anything about that. What I can do is like my students and respect my students. That I have control over. Now, how they respond to that I have no control over whatsoever.”

To clarify the role of the instructor, for example: “I don’t use the word entertained; I go back to the word engaged and a boring teacher is not engaging. That’s why engage is such a good word. When you are engaged you are an active participant in the experience, right?”

To be student-centered, for example: “I probably had learned over the ten years before I did IMPACT that if the attention is focused on the person in front speaking, the less active thinking and learning there is. I do a lot of teaching in other countries and I learned over time that we were already much more student-engaged, student-centered.” Another interviewee added, “Teaching and learning is important. I think really important, and I’ve always felt like it’s important. I mean, I prepare [subject experts]. That’s what I care about. But I feel like it gets lost here at the university because it’s just not the focus. And with IMPACT that was the first time that I had anybody—anybody—want to sit down and talk about the teaching and learning process, you know, so that was just a miracle.”

While the personal characteristics of successful instructors are important, there are specific tools and techniques taught in IMPACT that also make faculty more successful in the classroom.

**Learning Outcomes**

During the IMPACT FLC, participants create and revise learning outcomes for their course. Pre-IMPACT use of learning outcomes varied across the interviewees, but for all interviewees, pre-existing outcomes were less structured than recommended during the IMPACT FLC. For example:

“The biggest difference I feel IMPACT’s made with me is that I’m just very cognizant of [outcomes] now. I had been cognizant of the broader, I need to make sure I cover this particular content in a course, but in terms of crafting specific learning outcomes, yeah, I
totally did that with IMPACT and hadn’t done that before. It was like I kind of know what I want students to accomplish, but I hadn’t really articulated that very well.”

In terms of inputs to a course, the development of learning outcomes is based on the instructors’ understanding of outcome types and how instructors plan to achieve those outcomes over the course of the semester. During the course, it is important how instructors communicate outcomes to students and assess student learning of those outcomes.

**Outcome Types**

Interviewees shared variety across the types and levels of outcomes they use. The variety of outcome types mentioned across all interviewees included:

- Orders of learning outcomes, as explained by Bloom’s taxonomy.
- Knowledge outcomes, particular to their transformed course and/or curriculum across courses.
- Skill outcomes including and beyond the specific course, such as interpersonal or public speaking skills often developed through peer-to-peer activities or oral presentations.

Outcome types also varied by scope within a course or beyond a course. Figure 3 models a hierarchy for outcomes, showing how higher-levels define intended outcomes for lower levels, and how lower-level actual outcomes empower higher-level outcomes. Interviewees collectively referred to the various levels, but these levels differently influence planning of course-level or activity level outcomes. For example:

“There’s really no outside source of learning outcomes, in terms of the [department] piece. What we have done, which I would say is really important...is to go to the relevant committees in the colleges where our students come from.”

“[There] are departmental goals. This is the strategic plan for this department.”

“I’m very cognizant...[that] a lot of the standards that our accrediting agency has are met actually in this course. So I’m very cognizant of the fact that we need to cover this, we need to do that, etc.”

![Figure 3. Sample Hierarchy of Outcomes Affecting Course Planning](image-url)
Successful IMPACT Faculty

Within each level of the hierarchy, outcomes chronologically stack to achieve a greater purpose. Instructors must plan to stack outcomes, which is formally known as scaffolding, during course preparations. For example, one interviewee uses related outcomes to explain how they expected students to know, understand, and apply:

“This course builds upon the previous outcome. So if you don’t know today how to [do a task] and [then do the task], then in [class tomorrow] you are going to be totally lost.”

Similarly:

I think it’s important for students to revisit topics throughout and do some scaffolding and apply as their learning deepens so I try to not cut those pieces out but instead make it clear that we are going to run through three different design problems. There will be one. We will deepen it a little bit. We’ll try again. There will be a second one. And then we’ll deepen it a little bit and we’ll try to get on a third one, and I hope that reduces the redundancy complaints by making it clear why we were revisiting these topics two or three times throughout the semester rather than trying to dump them, but that’s how I try to listen to the students. Those are three kind of direct or formal examples.

Planning to Achieve Course Outcomes

Interviewees described various ways to use outcomes during course planning. All interviewees now create and use written course-level outcomes, and all course content is traceable back to a course-level outcome; however, this was not always the case pre-IMPACT:

“We had no learning objectives when we started...we wrote them from scratch. The truth is, some textbooks have learning objectives, and at least that gives you some place to start.”

“When I first took over the course, they just said, ‘Teach the whole book,’ and so I picked my outcomes just going through the book, seeing what the book’s outcomes were. But then the more I taught it and then went through IMPACT, I realized these particular outcomes aren’t all that useful. [We now] focus on the ones I really care about, and then do a fantastic job with those. It’s been a much more effective way to teach.”

Interviewees vary in the extent to which they continue to create outcomes. Some interviewees write detailed, specific activity-level outcomes to determine how to meet higher (i.e., course or unit) level outcomes. Consider the interviewee who described his pre-IMPACT course as “all lecture” but became outcome driven during the course transformation:

“I didn’t really use outcomes until IMPACT and now I use them all the time. I literally go to my Bloom’s Taxonomy and I look for the appropriate verb that I want to use....You cannot act a noun. You can only perform, present, or act a verb....well, teaching really only works with verbs. What do I want them to do? What level of understanding do I want them to have? You can structure outcomes, and then your lecture, and your activity should enable that outcome to be accomplished. But if you don’t know how outcomes work then you don’t use them.”

During planning, outcome revision typically appeared as writing and rewriting, or changing when an outcome might be addressed within the chronology of course activities. Some interviewees actively revised outcomes while teaching a course. For a case example modeling how instructors plan to achieve departmental or college outcomes, refer to Appendix 6.
Communicating Outcomes to Students

Interviewees seemed to communicate outcomes to students in manners similar to how they communicate expectations: orally and in writing, to begin the course and throughout the academic period, and so on. However, all interviewees seemed more prepared to explain how they communicate outcomes to students, possibly resulting from the extensive outcome development strategies emphasized during the IMPACT program.

All interviewees share written course-level learning outcomes with students to start the academic period. For example:

“I put those front and center... maybe halfway down the first page of the syllabus...so that students know the direction that we’re going.”

Besides the syllabus, instructors might share course-level outcomes in Blackboard (or other learning management systems) or within presentation materials (e.g., PowerPoint). One interviewee questioned the effectiveness of sharing course-level outcomes on the first day of class, choosing instead to model the type of engagement they expect from students:

“I guess I don’t really start class with [outcomes], although the activity that we do on the first day of class I think gets at them indirectly, but we don’t make them clear or read them to the students or really actually check to see if the students have read them.”

Modeling expected behaviors and engagement may set a tone for the academic period. The same interviewee circles back to course-level outcomes throughout the course, through the learning outcomes used for classes or assignments. For example:

“Outcomes at the activity or assignment level...they are embedded in the rubric. These are the pieces that I want the students to come away with. Now, to a certain extent they're a little bit procedural or checkbox, like, ‘do this,’ and I infer that if they can do this they’ve got the ability to meet the outcome that I was targeting.”

Some interviewees provide written outcomes for each class period. For example:

“We do a thing called a daily slide that says, ‘Hey, here’s what we’re going to learn about today.’”

Two other interviewees, who meticulously define and use numerous activity and unit-level outcomes, also share outcomes to begin each class, but use these outcomes to promote informal self-assessment by the student. For example:

“The first slide after the introduction of what we’re doing today should be here are your learning outcomes for the day. Sometimes in some slides I’ll say, ‘By the conclusion of this lesson you should be able to this, that, and the other thing,’ and then the last slide is that same slide. ‘Now you should be able to…. Then I’ll say, ‘So if you cannot do this go back and review your notes, come and see me, whatever, whatever, whatever...’”

Similarly,

“The second slide of every lecture is what the learning outcomes are for that lecture. I also have a separate file in the lectures folder on Blackboard listing all the outcomes leading to a particular exam. I also put those same outcomes in the review packet for each exam along with old exam questions. I stress to the students that they should use that as a checklist for your studying so you can see what’s important. ... I stress to my
students that the learning objectives are your map to tell you where you need to go and make sure that you’ve hit everything that you need to hit.”

Beyond informal student self-assessment, interviewees had a variety of other ways to formally and informally assess learning outcomes.

Assessing Learning Outcomes

Many instructors use assignments, projects, quizzes, and/or exams to assess learning, and the interviewees collectively used these same methods; however, they typically used these methods in atypical or alternative formats.

First, interviewees had different purposes for outcomes assessment, which shifts how they perceive use of assignments or exams. For example, one interviewee explained outcome assessment based on a change in knowledge:

“Every single day of the semester has the learning outcomes that are relevant to that day right on that schedule. And then I do pre- and post-unit assessment. It’s not a graded thing. I try to make it fun, just what’s your level of knowledge before we begin the unit? And what’s your level of knowledge at the end of the unit?... I tell them before every one of these units begins, ‘The whole purpose of this pre-unit assessment is to wring out the sponge of your mind and get it ready to assimilate information. I’m trying to pique your curiosity here.’ I’m very open about that.”

This strategy has multiple purposes, for the student and instructor. The interviewee continued:

“The pre- and post-unit [assessments] are a way of evaluating the content of the class, and myself as an instructor. Did my students learn the stuff that I wanted them to learn? If you get to the end of a unit, and you give an assessment, and people didn’t make any advances, that’s troubling. It used to just be on paper, and then I never would show them the results because it would take too long to pull them together. But Hotseat has this polling tool in it, it’s very much like an i>Clicker in terms of its functionality. And so I set up multiple choice questions and we go through, usually about six, seven questions, go through the whole thing. And then I go right back and I show them how [they] answered.”

The in-class pre-/post-unit assessment strategy helps students determine how to prepare for other course assessments and exams. Another instructor shared a different way to use outcomes for exam preparation, explaining it to students:

“When you do your exam reviews just take all the learning outcomes from all of your lessons and those serve as the basis for your exam reviews. ‘What’s going to be on the exam?’ Well, to be successful in this exam you should be able to do this, this, this...because that’s what the exam is going to be on.”

Other purposes for outcomes assessment extend beyond the grade for an assignment, exam, or the course, often into application of knowledge or skills gained in a course. Some examples:

“We really emphasize that it’s really about assessing your understanding. It’s not just about memorization. If my course is a little bit different, it’s that we’re very explicit about what we’re trying to assess and that it’s deeper thinking about the material.”
“You’re constantly trying to show the student how the thing that we’re learning relates to them in 2016 and that’s just an ongoing thing in everything you’re teaching. [You want students to explain how] this relates to this thing that we do now, this relates to the thing we see on the Internet, and this relates to the thing that just happened in the news.”

“Grades don’t mean anything. The grade is not a measure of what was learned. A thorough assessment of knowledge is how you measure whether students learn anything. I’m trying to get better at assessing what students know at the beginning of a semester and what do they know at the end.”

“I think that we should set up interesting, thought-provoking assignments and discussions for them so that they can come to learn some of this on their own, just through their own thought processes. Hopefully, we can put them in a position where they want to learn more, too, beyond our class, and keep learning, even just in their personal lives through their daily reading, that they would spot these concepts and think more deeply and share them with their family and friends.”

How interviewees formally assess learning outcomes differs based on the type and/or scale of outcome being assessed. One interviewee begins the academic period quizzing students about the course-level outcomes:

“The course outcomes are in the syllabus. I actually gave a quiz on the second day of class on the syllabus to make sure they read it. Some of the questions are on the outcomes, so if you read the outcomes, you’ll like get that question right.”

This approach models the quiz format for the course and may hold students accountable for understanding course outcomes.

Interviewees learned about outcome mapping within the IMPACT program, and still use the strategy to some extent. One person described two stages of mapping as follows:

“The syllabus consists of several parts. In one part, I have just listed the course learning outcomes and the objective under each outcome, so they know it well. Then I designed my assignments, and tests, and so forth so that it covers these learning objectives throughout the assessment of my students of the course. For each assignment, I specify the objectives...”

Finally, methods to assess learning outcomes may also help instructors continually improve their courses. One interviewee shared:

“I toss out anything that doesn’t fit with those outcomes I’ve already decided are important, and then develop new assignments and activities to match the important outcomes.”

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15 At this point within the transcript, the interviewee described their outcomes using language of the course, which were impossible to anonymize and retain the value of the interviewee’s words. Generally, the interviewee described how completing all components of the assignment would stack to result in knowledge, skill (e.g., problem solving or critical thinking), and application outcomes. Within the course timeframe, assessment of the outcomes was the third chronological step.
Another interviewee similarly removed course content based on what students knew before coming into the class, enabling this instructor to spend more time on developing students’ competence and competence in other outcomes:

“At the beginning of the course, [I had] my students evaluate themselves. What is your knowledge? what is your experience? Are you confident with this competency? ...I discovered through that process that some of the things I was expecting of my students, they thought they had already mastered or they thought they were already competent in this area, So why should that be my objective? Over the years I got rid of those things a lot of students already had and I’m focusing on those areas...that would be new to them: something where they’re not competent or where they haven’t had experience. I see my course then as aiming to give them that experience.”

During weekly reflection with the TAs, another interviewee regularly tracks prospective course improvements, asking:

“‘Did we meet the learning outcome?’ This is the process we’ve been going through...six, seven, eight semesters now. I’m feeling pretty comfortable about every single day and now we’re kind-of trying to polish some things and fix some things. At the end of every semester, I will go through and say, ‘You know what? Here’s three or four days where I want to make some improvements. These are the classes that I’m not satisfied with.’”

While outcomes define intended learning, instructors similarly defined additional expectations for students. The following section addresses expectations that are in addition to the learning outcomes.

**Expectations**

We asked interviewees to share their expectations for students, and students’ expectations for the instructor, including what are the expectations and how expectations are communicated. In general, interviewees readily described their expectations of students, but were less clear or certain about students’ expectations of them.

**Expectations of Students, by the Instructor**

Instructors’ expectations of students affect actual student outcomes. Students might have basic expectations across all instructors, regardless of how they are communicated, but expectations never expressed in any format leave students open to interpretation.

One interviewee phrased these basic expectations as follows, but suggested basic expectations do not necessary result in learning:

“There’s sort of one level of expectations that I think are probably fairly, clearly communicated and maybe relatively standard. Namely, things like come to class, do the reading, ask questions when you don’t understand something, and so on, right? There’s those kinds of expectations. That said, there’s certainly a subgroup of students who do all of that and don’t really manage to learn very much, in my sense of learning. You can do all of that and never really sort of engage with the material, or see why it might be important, or significant. Either for the world in general, or for you, and really in any sort of way. That second-level expectations is really what’s most important about what we’re doing. I try and do my best to point it out when it’s happening and to take time.”
Course characteristics will create different expectations—for example, some interviewees perceived more was expected out of students in higher-level courses; however, the actual scale of expectations is up the each instructor to set. One interviewee explained their high expectations as follows:

“My expectations of the students are actually pretty high I think. In my department, we have some of the top students at the university...I’m actually expecting them to not just learn a bunch of [science] but to learn to think as a [scientist]. There are particular contexts that we delve deeply into rather than trying to cover everything which is not possible in [this course]. My expectation is that they gradually over the course of the [semester] begin to think as a [scientist] and see themselves as a [scientist] which means thinking about experiments and data and how is it we think things work. I think most peer courses are simply marching through the subject matter and asking students to learn and memorize and repeat what their professor told them. So it’s hugely different.”

Another different interviewee with high expectations for students, briefly clarified the consequences:

“If students are] really not taking the course serious, I see them as doing a disrespect for themself, because the content is really important in terms of being a [professional].”

Two more interviewees share their own approach to raising the scale of difficulty:

“I tell [students], ‘This stuff is so hard, you should get all of the help that you can get. If you can get somebody’s notes from a past semester, great. You still have to sit down in an exam and write it.’ I hope part of what I do there is that I undermine any incentive to cheat or plagiarize. I really do think there’s not much point in it in my class.”

“My exams [for first-year students] are more like what you might find in a graduate level science course where you have to think and write and create stuff. I do use the multiple choice so that I get a sample of knowledge that they’ve covered, but I ask them to do deep-thinking questions that have more than one kind of right answer. I also had them do some independent library research. Come up with a question for themselves at the beginning that they would master by the end of the course and then we had like a poster session so that they would experience putting information on a scientific poster and presenting it to others.”

Categorically, interviewees collectively identified the following expectations of students.

First, interviewees expect Academic integrity\(^{x}\) and professionalism, for example:

“Well I think in the expectations in terms of professionalism and ethical behavior...it’s part of the Purdue academic integrity expectations, which is on my syllabus.”

“My expectations of students are that they behave as professional adults. That they engage in the course material. They communicate well. They have high ethical standards. No laptops, no packing up early. When you’re here, we’re only together for so many minutes a week.”

“I expect them to act like [professionals]. We talk about professionalism and I expect them to be [professionals in our field]. We talk about what that looks like...we talk about various components of it, respect for others, respect for yourself, punctuality and all that stuff. I’m very clear that in terms of respect that they can expect me to respect them.”

Second, interviewees expect openness to gaining new knowledge or new experiences,\(^{x}\) for example:
“I want [students] to just be open to learning some new things and being open to have a new idea of themselves.”

“They’re generally surprised that they like learning the material as much as they do. But I want them to be open-minded enough to try it and to consider looking at things from new perspectives. They don’t have to have any advanced knowledge before they come in. But I do want them — for example, I don’t let them use laptops in class. Because I want them actively participating in the discussion. And so open-minded and willing to talk things out. That’s what I want from them.”

Third, interviewees expect students to commit to learning, for example:

“Learning is a two-way street. And so that means they’re gonna have to expend some energy and effort to try and capture things and ask questions and that sorta stuff. I would like them to come to class having thought about things before they darken the doorway each class period. I have not found a successful way to do that yet.”

“The mathematical nature of the course...requires [students] to put in some extra time. Those that do that get along quite well. Those that don’t struggle.”

Fourth, interviewees expect students to be prepared to learn, and accountable to the instructor and peer students. Accountability to the instructor is, for example:

“[Students must] do something to prepare for class before [they] show up...My shtick has been there’s a five question quiz you’ve gotta answer about what I’ve asked you to read and you’ve gotta do that before you come to class.”

Accountability to peer students could be:

“There’s a little peer pressure to have to show up in class because you’re gonna work on these things as a group. Some students are oblivious to that. They just don’t care. The majority of 'em do [care], so they show up and try to participate more than when everybody's on their own.”

One interviewee emphasized mutual accountability within expectations as follows:

“Give me your full attention and I’ll give you my full attention. We form a community in the classroom. I try to make that clear: we’re a community. What I do affects you, what you do affects me, what you do affects your fellow classmates. So let’s make this a great community.”

Preparedness includes more than just doing completing academic tasks before class. For example:

“First off, [I expect] that they come to class prepared to learn. They have to come to class rested, they have to come to class alert, they have to come to class with whatever materials they need for the day.”

“They should come with their homework done or their reading done, sure, but more than that I am hoping to have students in the class who are ready to be a participant in a learning environment.”

Fifth, interviewees expect some level of students’ engagement in class. From the beginning of the course:
“If they’re not willing to engage in this experience, that they make a decision whether or not the course is going to be right for them, right then the first day.”

Or on a daily basis:

“I hope students will feel more comfortable speaking up, and taking their own positions, and perspective, if they’re not worried about aligning with mine.”

“They have to come to class with the expectation and understanding that for the next hour and 15 minutes, hour and 50 minutes, that they’re going to be an engaged participant in this learning experience.”

However, some interviewees did not set attendance expectations, which itself has consequences for engagement. For example:

“There [is] no requirement for attendance. If you don’t want to come to my class, fine. You’re going to find out what happens with that behavior when you take the exam or whatever. I know a number of faculty basically say, you know, if you don’t come, you don’t get to hear the material or whatever. So the expectations of participation and engagement are different.”

Finally, interviewees expect each student to apply what you learn. For example:

“If students want to sit down and read a textbook about something, they could memorize all of the facts, but the value that I think I can bring is providing an opportunity for the students to apply that learning in a meaningful context.”

Collectively, these six categories of expectations may not cover the full variety of expectations students receive from their instructors; however, this variety covers core expectations possibly used by any instructor. Expectations do need to be communicated to students.

**Communicating Expectations to Students**

Having expectations of students is one thing, but interviewees communicated expectations to students through various oral or written means. When these expectations are communicated also matters. Multiple interviewees emphasized sharing of expectations to start an academic period. One interviewee set expectations for the course apart from students’ prior experiences, and expected students to commit to expectations specific to this course:

“I communicate my expectations to my students the first day of class. It’s written down in a PowerPoint slide, and I talk about it. I tell them that [this course] is not like other classes, and that because it’s different, their experience will be different.”

Multiple interviewees state expectations within the course syllabus. For example:

“In a way it is the syllabus. Your expectations are in the syllabus and the syllabus is paramount. You must have a thoughtful and well-crafted syllabus. But you say this. You say this repeatedly. You say it when you’re doing the introduction to the class at the beginning of the semester, you’re constantly reminding the students about their responsibility in the learning environment, and so on.”

“Having a well-prepared syllabus that writes and documents the expectations is critical for this semester, but I also think that you have to talk about and verbally review and emphasize the things you really, really think are important. The most important part of
the whole syllabus is the list of learning objectives and outcomes. How [students] get their grade, and how [we are] going to assess that when it is all said and done. I think that is what students are interested in, so communicate it in writing and then post on the blackboard of course so it is available all the time.”

Another interviewee, who also questioned how students receive expectations, changed how they use the first day of class from reviewing expectations to modeling model expectations. As the interviewee explained:

“For a couple of years I tried to start the first day of class with getting some of the technicalities out of the way. Let’s get into Blackboard. Let’s figure out rubrics. Let’s submit an assignment. The last two years I’ve been thinking that’s the wrong approach. What I need to do is start with the interaction that I expect to have. What I’ve been doing in the first day is having a discussion. I want the students to come prepared, I want the students to be engaged [the first day] in some kind of active learning strategy—think pair share, small-to-big groups, discussion, thinking, report out—that’s the way I’ve begun class. From that perspective, I think that allows them to see what my expectation is on the first day and then hopefully that will transfer throughout.”

As the course progresses, instructors’ expectations require clarifying, focusing, or repeating. For example:

I really believe that the students are going to function better if they know what your expectations are. If you clearly communicate them and then you enact them over and over and over and over. There's proof in the pudding of, 'Hey, they said we're going to do this and this is what we're going to do.'”

“You’re constantly reminding the students about their responsibility in the learning environment, and so on. Just being in the seat is not enough but they need to be engaged and so on, even if that’s just active listening. Active listening is important, not being a passive listener but an active listener. It has to be a kind of constant pattern that you are using because some faculty have this strange notion that if you say something once then it’s done. Their responsibility is over. They wrote in the syllabus, they said it; it’s done. You have to say it over and over again.”

Questioning how students differently perceive and understand expectations, one interviewee stated:

“I have not...found a very good way of communicating [expectations] to students. I try and do my best to point out [expectations] when it’s happening and to take time. Anybody in any one of my classes who asks a question that begins something like, ‘But wait a minute. That means....’ Class can just stop, and we can talk about that for the whole rest of the class as far as I’m concerned.”

Finally, expectations help students meet intended outcomes, and these outcomes reaffirm expectations. As explained by one interviewee:

“It really helps the students to feel like, 'It's a self-fulfilling prophecy. What [the instructor] said they were going to do is really what we do in class.' It's a self-fulfilling prophecy that gets even better if the students feel like, 'Hey this helps me be successful.' Then they buy into it even more. They say, 'OK, she's doing things in the classroom that help me learn and help me perform better in the class.' They then come in and it’s like,
‘We’re ready to work on some of these problems. That sounds like a good idea. I think I can be successful by doing that.’”

**Expectations of Instructors, by the Students**

One interviewee, who claimed to have high expectations of students, knew of the following expectations students had of him:

“Students have lots of expectations of their teacher. They expect them to be on time. They expect them to be consistent in all things and never vary. They expect them to be prepared. They expect them to deliver a high quality experience. They expect that assignments will be credible, that they’ll be delivered in a credible manner, that they’re going to be graded on time. Students have very high expectations of [their instructors].”

Other interviewees were aware of students’ expectations of instructors to a much lesser extent. Collectively, interviewees identified students’ basic expectations of instructors, such as:

- Respect
- Fairness (e.g., reasonable expectations, fair grading)
- Clarity (e.g., of expectations)
- Consistency (e.g., grading between students, treatment of students)
- Knowledge of the subject matter
- Prepared and organized (e.g., good use of class time and space)
- Timeliness
- Consistency

When given more time to think about students’ expectations, individual interviewees added additional perceived expectations that do not align with what the interviewees perceive to be their role as an instructor. These expectations included:

“Do they want to be entertained? No, but they don’t want to go to sleep either.”

“At least keep their interest up. Find ways to make the material relevant to them.”

“I really think their expectations of me is they just want me to give the answer so they’ll do well on the test.”

“I wonder if students expect me to just read them the textbook. Sometimes students aren’t well-prepared for class.”

“One thing that I guess I find a little surprising sometimes is students will often, in response to a low grade, simply talk about how much time they put into an assignment. I’m not grading them on how much time they put in. It actually really matters whether they conform to the expectations of the assignment and whether they demonstrate that they understand the material.”

**Establishing Students’ Expectations**

Prior experiences dictate what interviewees perceive to be students expectations of their instructors, including:

- Instructors’ experiences with different students in prior iterations of the course, or
- Students experiences with different instructors in other courses.
However, interviewees generally had no formal way to establish students’ expectations within the course. Two interviewees shared how course evaluations shifted their perceived expectations by students of them as the instructor.

> It’s so really easy to get very defensive when you’re reading [evaluations], and I sometimes have to read them and then put them away and kind-of come back to them. It’s probably somebody who didn’t really engage in the course and didn’t get a lot out of it. What I observe is really common among young people—and it was my behavior, too, when I was that age—when they’re struggling, it’s somebody else’s fault. They have no responsibility for the situation they’re in, therefore they take it out on the course and the professor.”

> “Course evaluations I usually get are bimodal. Like one group thinks I’m the best professor they’ve ever had and some semesters that’s a very large group. There’s usually a little tail who really are disappointed at the end of the course and feeling I’m out of touch with what they needed me to tell them to learn.”

Instead of relying on evaluations to understand expectations, these two interviewees informally used undergraduate teaching assistants to obtain and understand students’ expectations of the instructors. These peer leaders are an anonymous way of obtaining on-going perceptions from students. A third interviewee sought written feedback from students multiple times within the academic period, and was reviewing their most recent stack of feedback immediately prior to the interview.

**Facilitation of Learning**

Interviewees facilitate their courses differently, based on:

- Knowledge of students (e.g., human differences, academic background).
- Enrollment capacity for each section, count of sections, and overall course enrollment.
- Course format (e.g., all in-class, hybrid, or entirely online).
- Course level.
- Preferences of the instructor.
- The instructor’s stronger skills, or preferred skills to use.
- Prior experiences teaching the same course, similar courses, or teaching similar students.

For interviewees who taught more than one course, facilitation strategies may differ between courses as well. All interviewees integrated some versions of active learning within their course facilitation plans, but they also used a wide range of strategies to facilitate learning and to evaluate their facilitation strategies.

**Active, Learner-Centered Experiences**

Active learning methods are neither conceptually nor strategically new, but are often presented within literature as part of the newer “learner-centered” paradigm. Each interviewee described use of strategies to become more active due to their experiences in the IMPACT FLC. Some interviewees justified their transition to active learning, for example:

> “It’s important [for our course subject] that one point of view not dominate. It’s important that one kind of person not dominate. “Here’s one of the most important things that I’m trying to get across in terms of active learning: I want people to be comfortable thinking out loud in the classroom, and I want people to feel comfortable
Many interviewees felt their shift to active learning was not a comfortable transition. One interviewee quantified this shift, then explained their current approach as follows:

“[Before IMPACT], I probably told stories and lectured 90 percent of the time...maybe 50-60 percent is now 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 together 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... and how they can use the information that I wanted them to learn instead of me telling them what they were supposed to learn.”

For instructors comfortable with traditional lecture-style instruction, the shift to active learning may be challenging. Students’ transition to active learning can be difficult too. For example:

“What I have to do is get them comfortable, behaving more like a [professional] where we make mistakes all the time because we throw out screwy ideas and we want other people to respond to our screwy ideas and say which ideas have evidence and which ones are wrong, and have that kind of conversation. But it’s a bit threatening to them until they’re accustomed to that. I think once they learn to become accustomed to that, my guess is they go through the rest of their next three years and they’re more ready to be skeptical of what the professor is telling them.”

However, most students adapt to each course/instructor within academic periods, regardless of the pedagogy, which emphasizes the importance of creating, sharing, and maintaining expectations. Questioning why students may not prefer active learning, one interviewee speculated:

“I do wonder whether it is laziness or whether it is just tradition, but I just wonder if they’re expecting me to lecture at them for three hours. It is certainly relatively easy for them to be passive students, so the active learning piece I think is really important. I fundamentally believe it is the right thing to do, but it is a different experience for a lot of students and it is hard. It is hard at 7:30 in the morning, for example, to be active and participate and be completely engaged. It is a whole lot easier to sit there with your notebook and mindlessly write down everything that shows up on the white board. In terms of expectations, I wonder if there is a little misalignment there between students and what I think.

Hence, expecting active learning requires more action from students. An instructors’ effort required to integrate active learning into a course shifts when the time is spent preparing the course.

“The difference between now and before IMPACT...I guess I tend to have my exercises in place before the semester starts. I’ve given more thought to what I want to accomplish with those things than I did before.

“Once the semester starts, there just isn’t adequate time to really get things put together, especially if I give them the answers to the exercises. So more upfront time to
get ready, less time thinking about each individual class because that's all been planned out ahead of time.”

“So you just kind of have to make the best of it. If your goal is really to have more active learning and problem solving, you've gotta do stuff where you help that happen.”

Finally, one interviewee summarized their perspective of an instructor’s role in active learning as follows:

“If you are a professor, instructor, or a teacher, who presents material in an engaging way, how is that a bad thing? So if you want to call that edutainment, which is a word that I hear where you are educating and entertaining, I feel that that is a way for boring people to excuse the fact that they are boring. You can be a very rigorous teacher and still be interesting and passionate. Vary the level of your voice. Speak in a loud volume. Don’t stand behind the furniture. Move around. Break up the lesson so it’s not all one thing.

“If that means entertainment, I know a lot of people that’s a real touchy subject for them. I do think you have to be engaging. You do have to be engaging. I think in the 21st century the delivery of information should not only be educational but it should be engaging. It should keep your interest.”

Facilitation Strategies

The vast quantity of prospective facilitation strategies far exceeds the scope of this study; however, this section covers a variety of key perceptions of interviewees to create a learning environment, integrate self-testing, engage students in peer partnerships or teams, facilitate within cycles of activities, encourage constructive behaviors, and expect students to apply what they learn.

Create the Learning Environment. First, the extent to which interviewee sets expectations (see page 27) or establishes learning outcomes (see page 21) affects the learning environment. Second, an instructors’ attitude about a learning space determines the extent to which they take ownership over the space. For example, the interviewee who was “…in a funk with my class…[and] seriously thinking about not teaching it anymore” also shared:

“You work with what you have. I would never say it’s the classroom’s fault….one of the things I tell my students is I consider it my job as an instructor to [become a] space invader.”

Similarly,

“My view of classroom structure is you just do what you gotta do, in the environment that you’re in. Certainly, having round tables makes it easier to have students work on things jointly than being lined up in rows….just deal with it.”

Interviewees’ pursuit of skill development (see p. 15), resulted in improved use of learning space. For example, an interviewee who switched from a traditional lecture-style classroom to an active learning space shared:

“What I do is a lot different [after] IMPACT, even the physical space and temporal space. I feel like since IMPACT I have far more flexibility in the classroom. The physical space allows for a lot more group discussion, small group discussions. [Instead of a] lecture we typically have large group discussions. We [now] typically have small group discussions, which do get finished with a large group kind of summary.”
Characteristics of a learning space affect interviewees’ use of the space and students’ experiences within the space. Interviewees learn what works within a space, based on the match between planned uses and actual outcomes, and adapt strategies to fit within the space; however, the breadth of characteristics desired shows no single space design will fit all. Every interviewee wants something different, but learned how to adapt to whatever room they were scheduled to use. For example:

“Always end up teaching in the crappy, ordinary classroom with the ordinary seats. This is part of why I’ve done think-pair-share more than anything else. It’s easy to get two students [to talk].”

Alternatively,

Sometimes I want the students all sitting in teams. Sometimes I want them all to line up and face each other. And sometimes I want them to put all the tables in a big circle and have students sitting on both sides, inside and out. Sometimes I want to move all the tables out of the way and I want them moving around. I’ll be really disappointed if I [am not in an active learning space] because then everything has to be redesigned around the space. If you want to do different stuff, you’ve got to be able to move the furniture.”

Noise within the learning space is also a cue for faculty. “You can use noise as a barometer of how much fun, how much energy, how much the students are engaged,” shared one interviewee. Another interviewee, who uses peer-to-peer activates during class time, explained how noise indicates students’ engagement in the expected task:

“If you listen to noise in your room...If I turn the students loose to do problem solving and it’s quiet for a really long time, they're lost. They're really lost, because they aren’t talking to each other. They're just sitting there, looking puzzled. If I'm walking around the room helping people, I can figure it out really fast. Once they start to get what's going on, it's like the noise bubbles up and it stay at the same level for awhile. When they get done working on the problems and they really start to chat, then the noise level goes way up. If you listen for that, or you differentiate between low and high noise, then when the high noise kicks in, it tells you, 'You better dash down to the front of the room and do whatever is it you are going to do next’”

Another different interviewee uses noise to determine when to shift expectations of an activity:

“...there’s a group vibe that you can pick up on, and you can get this in a classroom too. You know when it’s totally dead...I think the really good teachers, they’re tuned into that vibe. I mean, because you know when you’ve lost everybody and it’s like I’m going to just wrap it up and let them go or do something different. I’m not willing to give up on this class because there’s too much time left. I have to communicate to the students that I have different expectations for what’s going on in the most positive way and maybe more innovative way.”

It appears traditional “lecture” spaces created the most challenging facilitation situations for interviewees. One interviewee looked to alternative spaces to create the desired environment:

“[During lecture,] I had to give up on a lot of discussions and helping them because I just couldn’t get their attention. It was bad. It was really bad. There’s only so much group work and discussion I can do. We really need those recitations for the students to feel comfortable. They’re just asking questions in front of 19 other people instead of 179, and they get attached to their TAs, and that’s very good.
“Online, I do surveys where I ask them very pointed questions about how different aspects of the course are going and if they’re having trouble...[If] all 80 of them [answer the question], and [if] I write all 80 back individually, that gives us a little bit of closeness there.”

**Integrate Self-Testing.** Some interviewees create opportunities for students to self-test what they know, through quizzes or classroom response tools\textsuperscript{xvi}. Self-testing may also provide an instructor with content to cover within class. Two examples:

> “I probably talk more about wrong answers in i>Clicker questions. I think that is something I’ve become more aware of in best practices.”

> “I encourage [students] to talk to each other during the i>Clicker questions, and there’s a lovely roar throughout the classroom when I put one of those up – especially if it’s a debatable one where they’re not sure of the answer. You can hear the words that I used in lecture popping out. But everybody’s talking to each other and debating things.

Interviewees differed whether self-tests were graded or ungraded, and whether to do them before class or in-class.

**Engage Students in Peer Partnerships or Teams.** All interviewees used some version of peer-to-peer engagement in class, including:

- Impromptu peer partnerships (e.g., Think-Pair-Share or Turn to Your Partner\textsuperscript{xvii})
- Informal teams (e.g., discussion groups formed for one purpose)
- Formal, semester-long teams (e.g., Cooperative Learning or Team-Based Learning\textsuperscript{xviii})

Using teams requires a plan to set up groups that result in engagement. One interviewee mentions a variety of ways they used to set up a team, each with different consequences:

> “[I] try to create a safe environment where students feel comfortable stepping out of their comfort zone. That is a challenge because every group is different and then every table that you set up is different. We’ve set up tables in many different ways. We’ve let students self-select. We’ve used CATME\textsuperscript{xix}. We’ve organized students in the groups. Part of encouraging active learning is trying to put together a good group and I still don’t know that we’re successful there.”

In many cases, characteristics of the space itself dictated to interviewees which peer engagement methods were possible. From an interviewee who uses a room with a poor reputation:

> “I think it’s harder having students work in groups, but anybody who has seen research about group learning and how students are actually situated, they know that being in those old-fashioned lecture halls, where the seats are bolted to the floor and they can’t really move, that’s not the greatest thing under the sun. It makes it harder to move around.”

Interviewees desire to interact with students during peer-to-peer activities, but the same interviewee reached out to each student in the lecture hall “once a year. It’s tough. You have to climb over people. Fortunately I haven’t fallen and killed anybody yet.”

Some interviewees who use in-class activities still provide “lectures” to students; however, rather than lecturing for the full class period, these instructors try alternatives such as:
• Lecturing within shorter blocks of time in-class. Some interviewees alternate lectures with peer-to-peer activities to encourage engagement and avoid fatigue,
• Creating videos of lectures for students to view before class, or for students to reference at any time. Recorded videos can be edited for accuracy or to focus, and
• Relecturing when needed. For example, a corrective lecture based on students’ performance during an i>Clicker question or problem-solving activity.
• Integrating student participation within a lecture via Q/A, discussions, videos, demonstrations, etc.
• Using humor or storytelling within a lecture.
• Having students facilitate the lecture, based on peer presentations of the material.

Facilitate Within Cycles of Activities. Some interviewees use consistent patterns of activities to help students assimilate to the course format. For example, one instructor who uses a weekly cycle for each topic, explains this cycle to students as follows:

“We have one of these topics each week. We [will] talk about the next idea on Monday, and [you get] this exercise. You have probably a week to work on this exercise....[During] class time, there's more self-learning going on or self-teaching going on or peer-teaching going on. Thursday evening, I'll give you my key. You can choose to just wait ‘till Thursday night and copy down what I've given you or you can get together, work with your friends, try to figure this stuff out, and this’ll be there to help you get unstuck and get things completed and see what I think the answers are.”

Another variation is based on a cycle of activities within a class period, for example:

• A short lecture.
• An i>Clicker question for students to self-test, and the instructor to gauge students’ learning.
• Clarifications as needed, based on the i>Clicker question.
• Individual problem-solving, and
• Team problem-solving (to compare and discuss solutions).

Similar cycles repeat within a class period as time allows.16

Encourage Constructive Behaviors. Facilitating learning requires setting expectations and identifying outcomes, as previously described. For example, “We have written expectations as far as ethics and cheating and classroom attendance and behavior accountability in that regard.” However, to meet these expectations instructors may need to manage students’ behaviors during course facilitation. For example:

“If you really want everybody to contribute in a discussion, you cannot just open the floor for discussion, or you’re likely to get some viewpoints crowding out other viewpoints, or you’re likely to have the same social power dynamics reproduce themselves in your classroom.

“I am more cognizant now of needing to be more active in discussion. I don’t know that I’m very good at that, but I work on it now. I see the need for it. It’s real-time stuff. There’s some classes where I come out of and I think, ‘Oh, yeah. That was good. I got So-

16 While not explained by any specific interviewee, we noticed the use of multiple activities within cycles creates different ways students get exposed to a concept, which may engage students differently based on their preferred ways to learn. Lecturing only may engage only the students who prefer aural learning.
and—So to speak up when I could see that they had something to say, but they were uncomfortable and so on.”

Two interviewees who use peer groups in class also use CATME to help students obtain information about their behaviors. For example:

“I use CATME software. Essentially what it does is allows students on a team to provide feedback to each other based on their contributions. There are a series of metrics that I can choose as an instructor to use in the class, click on administer survey, the students will then receive that and they will be able to rate themselves on a behaviorally-anchored scale based on the behaviors they think they and their teammates are exhibiting in the group, and then once that is done I will release it to the students and they get back a screen that shows them here is how you rated yourself, here is how your team rated you, and hear is the average of your team.

“Then I model interpreting that with the students, so I bring up two different screens. One is an example of a student that is not doing well. One is an example of a student that is doing really well. I show that the student thought they were doing okay. Their teammates thought they were doing really well, and the average of the team was functional. So, I will talk them through that interpretation so they can see what my expectation is in terms of group and team interaction, but then also how to interpret the data individually and make sense of it and try to move forward communicating with your group in the future.”

**Expect Students to Apply What They Learn.** Interviewees build into the previously mentioned cycles of activities opportunities for students to apply what they learn. For an interviewee who uses in-class groups, students might apply knowledge to problem solving in multiple ways:

“Groups share information back and forth [too]. There’s self-learning, self-teaching, or peer-teaching going on. [If] somebody or some group gets stuck, up comes a hand. I go answer the question.

“They’re in groups, basically working on things in class...probably two thirds of the time, they’re working on stuff. I talk to them maybe a third of the time. I try to keep it less than that.”

Another interviewee, who provides lectures and presentations via video, added:

“I don’t need to lecture to them about the idea – I want them to take that idea and then apply it to the problem they’re working on in class. With some luck that problem will be engaging and they’ll be interested and they’ll try [it].

“I think my value-added piece, what would be a good facilitation strategy, is having them apply that experience in class and creating that group experience where they get to interact with their peers because that is something they can’t get elsewhere.”

Scheduled time in-class is the only time within a week any instructor knows students can interact with peer students. Hence, flipping the course activities maximizes peer-to-peer interaction.

Instructors who use flipped strategies may be concerned whether students appropriately use and understanding materials provided outside of class; however, this concern may exist with lectures as well—are students attentive during lectures and understanding lecture material, are they doing the
required reading before class? A different interviewee provides information to students in advance via lecture slides, which are referenced when lectures do occur during in-class time:

“I post my [lecture] slides on Blackboard. So that could also promote students not to come to class, because they think, ‘Okay, I can look at them later,’ which is totally a mistake, because probably they won’t go. They won’t make time to go through them, and they will miss on the interaction we have during the lecture.

“Also, after the lecture, I always I fill in some blanks in the lecture slides. Then I repost the updated lecture slides. [Students] really like it. This semester I made a point to consistently do this, because then this would be more valuable. And the answer to i>Clicker questions, I also post those after the lecture.”

Consider the instructor who used peer review of students’ work:

“In my other classes [students do projects], so much learning happens in that class in peer-to-peer because they do a lot of peer review. It’s a public critique and then there’s lots and lots and lots of peer review. When you do that you still have to front-load it with learning outcomes. We’re going to look at each other’s work and remember that by the time you’re done you should be able to look at your partner’s work and be able to A, B, C, and 1, 2, 3, and those all have to be active verb phrases.”

Facilitation Evaluation

All interviewees used end-of-term course evaluations to obtain feedback from students, but they collectively used a variety of other ways to obtain feedback from students.

Regarding the course evaluations, interviewees found them useful, but some possess mixed feelings about the extent to which they are useful. For example:

“The current way of doing student evaluations is absolutely not effective because you get such a low [response]...but my experience is you get a bimodal response to the extent that the means mean absolutely nothing.”

Some interviewees do not believe course evaluations contain all the feedback they need. For example, to obtain the targeted feedback desired, one interviewee used in-class time to obtain descriptive feedback not usually documented in the comments of course evaluations:

“I will typically take 20 minutes on the last day and I will do an experience with the students where I will ask them, ‘What is going well in the semester?’ [Later, I’ll ask] ‘What didn’t go well?’ I might spend five or so minutes there, and sometimes I will type it up on the screen. Problems only, I don’t want any solutions. Just tell me what didn’t go well.”

“Then I’ll ask,] ‘What were the priorities? They can have a whole list of things like the temperature wasn’t nice in the room or something, but what were the really important pieces? I will get two or three of them up top.

“I typically go whole-group, so, all right, how do we fix these? By that point they are pretty comfortable with each other, they’re warmed up, and they give me some suggestions on how we can improve these for the future. [using small groups I’ll have] this group tackled this problem, this group tackled this problem, and then report out in five minutes. Give them just a quick moment to say, okay, how do we fix this issue and try to get it back?”
‘We tend to use that as a barometer of how things are going. They always have problems, but if the problems are things like the projector did not work consistently or the audio didn’t work or class is early in the morning, if they are those kinds of problems, I think things are going okay. But if they’re bigger problems like I really didn’t understand what the assignments were throughout the semester, or there was some redundancy, I feel like we did this a couple of times, then I feel like I need to be able to improve that in an upcoming semester.’

Another interviewee looked to comments in evaluations to find out what stands out the most for students. Comments like the following reinforced for this interviewee that the course transformation worked:

“I was scared about [subject], but I love the way you teach and you’re really encouraging. We do lots of in-class problem solving and I don’t have any other classes do that and it really helped me learn.”

Some interviewees feel course evaluations do not provide timely feedback. Strategies used by interviewees to obtain feedback during the academic period included:

- Muddiest point\sup{xii}, which includes a prompt for students to write and submit to the instructor what is the least clear point (i.e., muddiest point) from the class period.
- Using i>Clicker or Hotseat to obtain immediate, publically shared feedback.
- Pre-/post-unit quizzes, to determine the change in students’ learning, and associate that to the facilitation methods and activities used.
- Obtaining midterm evaluations, similar in content to end-of-term evaluations.
- Recording personal observations and ideas throughout the semester, applying some immediately and using others while planning for the next academic period.
- Recording who participates in class.
- Use surveys to obtain feedback relevant to specific components of the course.
- Observing students behaviors, in response to activities. Similarly, some interviewees set goals for each course—such as seeing, talking to, or listening to every student—that help them connect with each student.
- Obtaining from undergraduate TAs what they hear from students and observe in the class. These TAs, as undergraduates, recall what it was like to learn the material, and relate to the students.
- Obtaining feedback from CIE staff who observe the class and/or conduct focus groups with students.

While no interviewee uses every method, each interviewee selects a method that fits well within the course plans and provides the feedback desired. These methods may take time away from other learning experiences, but their use results in improved facilitation and learning.

**Recognition**

As shown in Table 1, some interviewees have received institutional recognition for their teaching, including awards received pre-IMPACT and post-IMPACT. Besides these awards, interviewees felt recognized for their teaching when:

- Informal gratitude comes from colleagues. For example, one interviewee appreciated a message from the Dean in another college stating, “Hey, you’re great. You treat our students really well. We really appreciate that.”
• Students express appreciation, for example: “Teaching in this different way is helping me get [a larger number of students] that think I’m the best professor they’ve ever had.”
• Scholarly articles get published based on their teaching.
• Teaching is valued during annual reviews and promotion.

However, some interviewees perceive teaching has less value than their other responsibilities, or prioritized lower by a department or college. For example:

“I [teach different from everybody else in [my] department… I would never win a teaching award. I know who wins the teaching awards and they’re people who give charismatic lectures to large classrooms and they tend to give easy tests where the students know before the test that they’re going to do well. So it’s quite a different paradigm, the award-winning faculty, from what I’m doing. It could be that I’m perceived as a threat. I think being different is gonna hold me back from promotion. I came here tenured, so tenure is not an issue, but I would like to get promoted. I don’t want to be an associate professor forever.”

“You just recognize the lay of the land and the people that are really good at getting grants and lots of money and building up a lab and having lots of people doing their work for them [will get] rewarded more than someone that’s good in the classroom. As long as you can get paid well enough to do what you want to do, it’s okay. You knew this going in. This is the way it is.”

“I think junior faculty should [participate in IMPACT] but I know people are very protective of their time and they’re not going to get tenure by being a good teacher.”

Changes to recognition, either via reward or acknowledgement, may affect interviewees’ other primary concern: the amount of time it takes to transform a course. Stated one interviewee:

“When I look around at my colleagues who have been through IMPACT as well, I don’t think that has been recognized or appreciated. This additional effort that I am putting in, if anything maybe I’m getting jeopardized because there’s no release, there’s no relief, and yet here I’m putting in more effort and that’s pretty tough. I [know] one young faculty who went through [IMPACT], and he focused too much on teaching. He didn’t get promoted as a result, so he was functionally fired. I [know] another faculty who has gone through [IMPACT]…she had a review that didn’t go very well. I wonder if focusing on student learning is not well-valued.”

One interviewee felt recognition of the IMPACT program itself may support the recognition needed for IMPACT Fellows and IMPACT courses:

“I think the endorsement of the IMPACT program and the fact that I’m not the only teaching in a more engaging way is very helpful in shifting some of the expectations of our students.”

Similarly, recognition for what students’ expect when attending may further support the recognition needed for effective teaching:

“The more you can recognize teaching and learning early I think is really good, not only for the quality of teaching but for the recognition of the importance of teaching and learning and the land-grant mission….Students, families, alumni, and stakeholders come
to Purdue because they expect us to be great teachers. They give money to Purdue because they had great teachers.”

Recommendations

The following recommendations either come directly from an interviewee, or emerged during analysis. Variations on these recommendations are expected, depending on who would implement the recommendation, how or when it could be implemented, and what intended purpose the recommendation actually serves. Hence, we first recommend faculty, staff, or administrators collaboratively determine and discuss recommendations to determine the best change(s) for the greatest outcome.

Regarding Efforts to Transform Courses

1. Accommodate instructors’ time commitment to fully transform a course, through shifting expected use of time.
2. Develop plans to transition course transformation to future instructors.
3. Recognize and reward quality teaching.
4. Identify IMPACT within recognition of faculty who receive teaching awards. An interviewee who has received teaching awards recommended this strategy to help promote the value of IMPACT and acknowledge how faculty learn to become better teachers.
5. Support any research-based program to help with faculty development, including alternatives to IMPACT for faculty not able to commit to IMPACT.
6. Prioritize curricular transformation within strategic planning.

Facilitate Sharing of Knowledge

7. Record (in writing or video) successful facilitation strategies. Create reference materials to help instructors apply strategies within their own courses.
8. Use data collected through IMPACT to further develop instructors’ knowledge of students’ perceptions. For example, two interviewees specifically asked to see results from the IMPACT student perceptions survey. The same data may be presented in a manner useful to justify to other faculty what they might change within their course.

Future Assessment or Research

9. Determine the challenges experienced by subgroups of instructors, and prepare resources for these instructors to obtain either the skill development or support needed. For example:
   a. What do faculty new to Purdue (and teaching assistants) need to know about learning spaces, technology, academic policies, etc? Distribute reference materials to these instructors in an easy to use format.
   b. What do long-time instructors take for granted about curriculum, spaces, and/or students? Create opportunities for these faculty to discuss teaching and learning within faculty groups of diverse teaching backgrounds.
10. Use feedback from this report to determine additional data collection desired.

Conclusions

As mentioned in the introduction, the faculty interviewed for this study have in common:

They all care enough to do their best; they all continue to try improving.
The steps to transform courses may begin with transformations of instructors: changing their attitude about success, improving their personal skills, and developing their knowledge of teaching and learning. Since each instructor has their own “best” answer among many right ways to facilitate learning, Purdue will do well to continue to support continuous course and instructor improvement.
Appendix 1. Current Core IMPACT Assessment Questions

The IMPACT Assessment Coordination Team maintains a document identifying course IMPACT assessment questions and indicators, from which team members derive any IMPACT assessment or research efforts. Core IMPACT questions are listed below. More information, including select reports, are posted online at: http://www.purdue.edu/impact/program-effectiveness.php

What are stakeholders’ expectations, perceptions and experiences of IMPACT?

- To what extent do partners perceive that IMPACT is meeting goals? Is not meeting goals?
- To what extent do administrators perceive that IMPACT is meeting goals? Is not meeting goals? What teaching and learning changes would you like to see in your college/school?
- What are non-participating instructors perception of IMPACT?

What are the immediate and longer term effects of IMPACT on faculty attitudes, beliefs, and practices regarding teaching and learning?

- What are the perceived effects of participating in IMPACT on instructor attitudes, beliefs and practices regarding teaching and learning?
- What are the benefits and challenges of participation in IMPACT for instructors?
- To what extent is the transformation begun in IMPACT transferred to other courses taught by IMPACT faculty fellows?
- To what extent is the transformation begun in IMPACT sustained over time and across instructors?
- What are the associated barriers and supports to transferability and sustainability?

What are the effects of IMPACT on student academic performance and persistence?

- What is the difference in final course grades for IMPACT versions compared to non-IMPACT versions of the same class?
- How does student participation in IMPACT courses improve student performance in selected future courses (post-requisite courses, etc.) compared to non-IMPACT participants?
- What is the difference in retention rates for students participating in IMPACT courses after one year, compared to non-IMPACT participants? After two years?
- What is the difference in four-year graduation rates for students participating in IMPACT courses compared to non-IMPACT participants? Five-year? Six-year?
- What factors/attributes of IMPACT courses lead to better student academic performance (within a course or among courses) and persistence (within a major or to graduation)?

What are the effects of IMPACT on student engagement and learning (as perceived by students and faculty)?

- To what extent do IMPACT courses create a student-centered learning environment (as perceived by students)? What redesign models, and/or active learning strategies/tools are associated with the creation of a student centered learning environment?
- To what extent do IMPACT courses satisfy students’ basic psychological needs? What redesign models, and/or active learning strategies/tools are associated with the satisfaction of student basic psychological needs?
- To what extent do IMPACT courses foster student motivation? What redesign models, and/or active learning strategies/tools are associated with strong student motivation?
- To what extent do IMPACT courses foster strong perceptions of learning gains in students? What redesign models, and/or active learning strategies/tools are associated with the creation of strong perceptions of learning gains?
- To what extent do IMPACT courses affect student performance on faculty identified measures of learning?
Appendix 2. Actual Interview Protocol

1. Regarding your expectations of students:
   a. What are your expectations?
   b. How are expectations communicated to students?
   c. How do your expectations compare to similar courses (at other institutions) or peer instructors?
2. Regarding students’ expectations of you:
   a. What are their expectations?
   b. How are expectations of you established?
3. Regarding learning outcomes, how do you:
   a. Use outcomes? (Consider different levels of outcomes: course, class, activity, assignment, etc)
   b. Write/edit outcomes? (Align outcomes with department/curriculum? Other courses?)
   c. Share outcomes with students?
   d. Evaluate outcomes?
4. Regarding your preparation to teach...
   a. What did you do before IMPACT to prepare for the semester?
   b. What did you do before IMPACT to prepare for a typical class?
   c. What do you do now to prepare for the semester?
   d. What do you do now to prepare for a typical class?
5. What are the core strategies/methods you used to facilitate learning in-class:
   a. Prior to IMPACT?
   b. Since IMPACT?
   c. Which do you still use? How do you now facilitate differently?
6. How are you encouraging active learning, or creating the learning environment?
   a. How are you using classroom characteristics, and aligning goals/outcomes with characteristics of the classroom?
   b. How do you evaluate your facilitation strategies? (e.g., Self eval? Eval by students?)
   c. What goals or outcomes are you unable to achieve because of the classroom?
7. Thinking generally, what do great faculty do to be great facilitators of learning?
   a. If you think of great faculty who are different than you, what might they do that makes them facilitators of learning?
8. Describe your interactions with your IMPACT support team through the redesign process.
9. How do you feel about the level of support you receive from your college and/or department in terms on your IMPACT redesign?
10. Who would you recommend complete a program like IMPACT and why?
11. Reflecting back on your IMPACT experience, what was the single most important aspect?
   a. [If not previously covered within other responses:] What do you believe were the goals of the IMPACT program when you started the FLC?
   b. [If not previously covered, for each goal specified by the interviewee:] To what extent (and how) were these goals met?
Appendix 3. Prospective Interview Protocol

The following questions either were excluded from the actual interview protocol, or emerged as potential questions for further inquiry.

Goals of IMPACT:

1. What do you believe are the goals of the IMPACT program?
2. *(For each goal specified by the interviewee)* Based on your needs for skill development needs, and your course curriculum, to what extent (and how) were these goals met?
3. *(For each additional goal stated by the IMPACT program)* Based on your needs for skill development needs, and your course curriculum, to what extent (and how) were these goals met?
4. How do you value teaching? (i.e., balance with research or other responsibilities; personal value vs. institutional/departmental value)

Planning:

5. What are your non-subject intended outcomes for students in your course? (Whether written or not, these could include knowledge outside of your subject, skill, or behaviors, such as: critical thinking, problem-solving, communication, etc.)
6. Describe your interpretation of outcome mapping and how you apply the strategy. (Alternative: interpretation and application of backwards design)

Facilitating:

7. How are you encouraging active learning or creating the learning environment? Consider:
   a. Developing reciprocity and cooperation among students?
   b. Encouraging peer-to-peer interaction?
   c. Encouraging contact between students and faculty?
   d. Using classroom characteristics, and aligning goals/outcomes with characteristics of the classroom?
8. How do you encourage time on tasks in-class?
   a. How do you align goals/outcomes with time on tasks?
9. What are you doing outside of class that facilitates learning? *(consider: expectations, motivations, interactions, use of resources, etc.)*
10. How do you respect diverse talents and ways of learning in your classroom?
11. How do you encourage peer-to-peer respect for diverse talents and ways of learning?

Elements of the college experience:

12. How do you:
   a. Show care towards students as a person?
   b. Make students excited about learning?
   c. Encourage students to pursue their dreams?
13. Do you expect students to work on a project that takes a semester or more to complete?

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a. If yes, what is the project?
b. If yes, what are students’ perceptions of the project?

**Academic Success:**

14. How do you teach students to be successful in your course? Consider:
   a. How to prepare for class (e.g., how to read/use the book)
   b. What to do during class (e.g., note-taking/listening, questioning, working with peer students)
   c. What to do, and how, after class (e.g., completing assignments, preparing for exams)

15. What do you know about students’ academic success after your course, due to participation in your course?
Appendix 4. 2015 COACHE Survey

The COACHE survey consists of hundreds of items related to research, teaching service, resources and support, balance, benefits, collaboration, mentoring, tenure and promotion, leadership, governance, collegiality, engagement, recruitment and retention, satisfaction, and campus climate. This appendix contains descriptives regarding select COACHE items. 940 faculty at Purdue University participated in the COACHE survey during the 2015 data collection period. When reviewing these results, consider what level of satisfaction is expected, and how to address dissatisfaction. For example, what percent of faculty do we want to be satisfied with their time spent teaching, and what possible solutions exist to address dissatisfaction for faculty who have reasonable justification to be dissatisfied?

First, Table 2 shows how satisfied faculty are with the amount of time they spend on different responsibilities. Among the five categories, faculty were most satisfied with their time spent on teaching, but the overall level of satisfaction with time on teaching is skewed by rank. Of those who were dissatisfied (n=73) with the amount of time spent on teaching, 83.6% indicated they spent too much time on teaching (from Q50A).

Table 2. Time Spent on Responsibilities

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<thead>
<tr>
<th>COACHE Survey Item</th>
<th>n</th>
<th>Md</th>
<th>Mn</th>
<th>% Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q45A Time spent on teaching (all)</td>
<td>822</td>
<td>4.0</td>
<td>3.9</td>
<td>75.2%</td>
</tr>
<tr>
<td>Time spent on teaching (Assistant Professor)</td>
<td>142</td>
<td>4.0</td>
<td>3.5</td>
<td>62.0%</td>
</tr>
<tr>
<td>Time spent on teaching (Associate Professor)</td>
<td>268</td>
<td>4.0</td>
<td>3.8</td>
<td>71.6%</td>
</tr>
<tr>
<td>Time spent on teaching (Professor)</td>
<td>412</td>
<td>4.0</td>
<td>4.0</td>
<td>82.0%</td>
</tr>
<tr>
<td>Q45B Time spent on research</td>
<td>818</td>
<td>4.0</td>
<td>3.6</td>
<td>63.8%</td>
</tr>
<tr>
<td>Q45C Time spent on service</td>
<td>827</td>
<td>4.0</td>
<td>3.3</td>
<td>50.2%</td>
</tr>
<tr>
<td>Q45D Time spent on outreach</td>
<td>655</td>
<td>4.0</td>
<td>3.6</td>
<td>57.3%</td>
</tr>
<tr>
<td>Q45E Time spent on administrative tasks</td>
<td>777</td>
<td>3.0</td>
<td>2.8</td>
<td>27.4%</td>
</tr>
</tbody>
</table>

Scale: 1, Very dissatisfied; 2, Dissatisfied; 3, Neither satisfied nor dissatisfied; 4, Satisfied; 5, Very satisfied.

Second, Table 3 provides descriptives related to instructors satisfaction related to teaching. Of these items, consider how:

- The IMPACT program might affect “Q70: Support for improving Teaching.”
- Interviewees’ perceived lack of recognition is modeled by Q215A.

Table 3. Nature of Work-Teaching.

<table>
<thead>
<tr>
<th>COACHE Survey Item</th>
<th>n</th>
<th>Md</th>
<th>Mn</th>
<th>% Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q70A Number of courses taught</td>
<td>808</td>
<td>4.0</td>
<td>3.9</td>
<td>76.4%</td>
</tr>
<tr>
<td>Q70B Level of courses taught</td>
<td>810</td>
<td>4.0</td>
<td>4.1</td>
<td>85.8%</td>
</tr>
<tr>
<td>Q70C Discretion over course content</td>
<td>808</td>
<td>5.0</td>
<td>4.4</td>
<td>89.2%</td>
</tr>
<tr>
<td>Q70D Number of students in classes taught</td>
<td>806</td>
<td>4.0</td>
<td>3.8</td>
<td>72.8%</td>
</tr>
<tr>
<td>Q70E Quality of students taught</td>
<td>808</td>
<td>4.0</td>
<td>3.5</td>
<td>58.0%</td>
</tr>
<tr>
<td>Q70H Equitability of distribution of teaching load</td>
<td>799</td>
<td>3.0</td>
<td>3.0</td>
<td>41.9%</td>
</tr>
<tr>
<td>Q70I Quality of grad students to support teaching</td>
<td>686</td>
<td>4.0</td>
<td>3.6</td>
<td>63.6%</td>
</tr>
<tr>
<td>Q70F Support for improving teaching</td>
<td>787</td>
<td>4.0</td>
<td>3.4</td>
<td>50.4%</td>
</tr>
<tr>
<td>Q90D Resources and Support: Classrooms</td>
<td>812</td>
<td>4.0</td>
<td>3.3</td>
<td>55.3%</td>
</tr>
<tr>
<td>Q195G Teaching effectiveness of tenured faculty</td>
<td>731</td>
<td>4.0</td>
<td>3.6</td>
<td>60.5%</td>
</tr>
<tr>
<td>Q195H Teaching effectiveness of pre-tenure faculty</td>
<td>716</td>
<td>4.0</td>
<td>3.8</td>
<td>68.9%</td>
</tr>
<tr>
<td>Q215A Recognition: For teaching</td>
<td>765</td>
<td>3.0</td>
<td>3.2</td>
<td>47.3%</td>
</tr>
</tbody>
</table>

Scale: 1, Very dissatisfied; 2, Dissatisfied; 3, Neither satisfied nor dissatisfied; 4, Satisfied; 5, Very satisfied.
Appendix 5. The Impact of IMPACT on Faculty Success

A few interview questions specifically solicited information about IMPACT, but most of these responses did not fit within the scope and format of the results as presented in this report. These interview questions and responses, are identified here.

Describe your interactions with your IMPACT support team through the redesign process.

Given the descriptiveness of many interviewees’ responses, we present their responses in entirety here, using minimal editing only to preserve anonymity. Interviewees did identify many specific names of staff or faculty from CIE, TLT, and Libraries.

This interviewee emphasized the level of challenge within IMPACT, the support to meet the challenges, and the on-going support received by one particular person.

“Going through the IMPACT program, when I went through it, this was a huge part of it was writing and editing your outcomes. I probably went through maybe half a dozen iterations or more. I had two mentors assigned to me as part of the IMPACT program. It was an effort.

“It was very good and it was very intense. They held my feet to the fire. I had deliverables and they expected those things to be delivered. Then there was follow-up during the redesign process, and follow up on the follow-up. One of my mentors would actually come to class regularly and would participate in my instructional meetings. He’s since left the university, but through the redesign process...he seemed to really like the class and wanted to be part of it. He became part of it. It was good. We have instructional support here at this university that includes ITaP. We have a lot of good stuff going on. I still ask for help when I need it.

“This is part of my own maturing as a person, as a faculty member, letting go and not being such a control freak. Trying to build a support team, and using the support that you have to help you. You just can’t do everything by yourself. A lot of times, you just really need to ask for help.”

This interviewee added how they value collaboration with the IMPACT support team, and the on-going contacts with them.

“I feel like all the information we got through IMPACT gave me some tools and gave me some context for people I can talk to when I have these administrative challenges that I need to deal with.

“I love my IMPACT support team. They let me be in charge. They made it clear it was my course and I was in charge. They were great if I wanted to bounce ideas off or if I had questions that weren’t answered in an IMPACT session, they would go find answers to those and get back with me. But it went so far beyond that. We...(redacted for anonymity)...so we’re still collaborating. All of us are collaborating on things related to my course. Whenever issues come up, I go back and then they get back with me immediately. I have coffee or lunch with them on a regular basis still, four years later. [My ITaP team member] makes sure that whatever new innovations are coming out, I’m one of the first ones to know. If I have concerns, they make sure those get worked into the next round of upgrades. I feel like I have an in to all the new developments that are happening.

“They still bring me over to talk to the new IMPACT cohorts sometimes, so I get to interact with the new people in here about new courses that are being developed. It definitely did not end with the redesign process. We are still a team and we continue forward. I really appreciate that. For several of the new projects I developed two years ago, not only did [They] help me develop them, but they’ve even gotten press for me since then, too, which was really nice.”

This interviewee felt supported, but has since lost contact with the person who provided the support:
“Somebody over in the Center for Instructional Excellence does a [student perceptions survey] early semester and late semester. [I] suppose if I looked at that, it might tell me something about how they find the atmosphere in the course. Probably should look at those.\(^{19}\)

“Through the redesign process...they all tried to be helpful, certainly. It wasn’t ever quite clear to me as to why there was a librarian in the group, but maybe I just didn’t understand. [If] you asked a question, they tried to be helpful. They had good suggestions, things to think about.

“Sometimes the instructions of what you were to do were a bit ambiguous. It seemed that in some cases, you were asked to do the same thing several different times, or it wasn’t clear all the time what differentiated one activity from another. There tended to be some things that seemed to overlap, but they tried to make them sound different, but I suspect we all do that.

“So anyway, so it was good to have some support. The group that that was supporting our little group, some of them left [Purdue], and so the follow-up part didn’t work probably as smoothly as it would have otherwise.

“I’ve enjoyed the periodic visits with the person that now is watching over me and the conversations we’ve had about things. [They] will run across things they think are helpful and will e-mail ‘em over and that sorta stuff....things to think about. I think the support post IMPACT has turned out to be helpful, as well.”

This interviewee wanted to emphasize the level of support received through IMPACT.

“[They] were in there a lot, that I can remember. [They] had us going through Wiggins and McTighe...it’s a really interesting book about reform and how you think about it. I really appreciated that. From [Them], there was this sense of ‘We want to be supportive of what it is you’re trying to do. What kinds of assessments can we do to help that? How does ITaP play a role?’ That’s what I really remember them doing. think they’ve done that pretty much all the way along. I think that they tried to be supportive of the people involved in IMPACT.”

In addition to identifying various supportive individuals, particularly from Libraries, this interviewee explained how the data gathered through IMPACT is more useful than course evaluations.

“I had a really great person assigned to me...but they then got hired into a different position. [They] would come and sit with me and look at my syllabus for example and think about how well my syllabus communicated to my students the expectations I had with clarity. [They] really helped me organize this syllabus because I had policy [confusion, like] what the consequences will be if this happens or that happens all mixed up with the kind of more academic stuff. [They] made it clear that the syllabus was so hard to read that nobody would probably figure it out. We put all the policy stuff to one end of the syllabus and then the more academic stuff that my students had to pay attention to front and center so that they would have that to refer to. So that was good.

“What IMPACT did that was hugely important was collect data from my students about...their autonomy, their ability to see the relevance of what we’re doing in our classroom. I forget what all of the questions were. Because of this bimodal thing [in course evaluations], I’m not getting the course evaluations that an award-winning professor gets. I have groups of students of varying size who really don’t buy into what I’m doing in the way that they might in an award-winning professor’s lecture hall. [I] pull out that data and put that in my promotion package. [I

\(^{19}\) The interviewee who stated they had not seen student perceptions survey results was primarily targeted for this study due to their very high student centeredness ratings.
can] show that there’s something that Purdue values through this IMPACT project and my course is at the top end of the scale on these items that have been deemed by somebody else to be important. I think it protects me is the way I would say it. I could be under huge pressure just to teach like everybody else if I didn’t have data like that.

“I think continuing to collect data is a good thing, and getting that data back to me. I can’t say if I’m continuing to receive support because I didn’t teach the IMPACT class last year.

“I was working with [a Librarian for] informed learning and we collected some great data....I’m sure we’re still going to continue to collect and write up that data. I think our library has been tremendous, that whole idea of making library resources available so that students can inform themselves and what it means to inform yourself. They help me break down the process from a simple question at the beginning to actually going deep into the research literature toward the end. I think [my Librarian] is getting busier than they used to be.

“[A libraries staff member] has been wonderful with the facility over there at Hicks and they continue to be supportive. [An ITaP staff member] comes to that classroom and make sure that the technology works. The idea with IMPACT that all of the campus facilities that are supportive of teaching and learning, that you could figure out who to call on and they would come and make things work, that’s been hugely important. I don’t know if they’ve replaced [a Librarian, but] we still have the librarians that used to work with me. It could be that they need to hire a few more librarians because I haven’t seen them for a while.”

This interviewee also acknowledged the support received from Librarians and added additional post-IMPACT support received from CIE, but still needs support for IMPACT-related scholarship.

“There’s this continuum of structure that is helpful....it was a wonderful experience. We went through it [with peer faculty]. I felt just a little bit confused [if I missed a session.]

“I didn’t fully understand the whole system, I suppose, but given that we had a fantastic support team of a coach who helped us think through some of the problems, to somebody from libraries [who] has really been enduring and interactive with us the entire time. This semester they’ve kind of fallen off a little bit since [a Librarian left Purdue, but other Librarians] have just been fantastically well-connected the entire way throughout always providing support. We have a couple of assignments that really tie deeply into some information literacy pieces because we get information literacy as one of the university core outcomes this class meets.

“Libraries sends an instructor into the classroom for one day during the semester to help facilitate an information literacy discussion with the students. [The Librarian] helps to create that experience with us in Black Board and the classroom plan, so that piece has been really strong.

“[Interaction with a CIE staff member] was just absolutely fantastic because their [background brought] pieces to our class that we didn’t have before, like faculty design critiques and active learning strategies. I had some conversations with them throughout and afterwards, and I believe they took away from our experiences some very concrete examples. I imagine that changed and improved their ability to support other faculty. I think that was really a two-way street that was just a wonderful interaction in both directions. That was above and beyond, probably not what everybody gets, but I think it really changed us and it changed probably their ability to work with IMPACT.

“This class [has many] students a year, interfacing with [multiple] instructors...I’m exhausted. I’ve had conversations in the last couple of months with [college administrators] saying, ‘If you want me to do this, I can, but I need some help. I can’t do this by myself.’ The dean came to me personally [over] a year ago and said, ‘Could I lead this whole thing? Could I think bigger than
just the class and could I think about an experience?’ I’ve got some support but I don’t think anybody is talking to each other and I don’t think people recognize that IMPACT takes time.

“I don’t know [about] help with the scholarship side. [CIE staff] showed up in my office one day and [offered] help with scholarship. I said, ‘What? Who are you? Can everybody get this?’ That would be just wonderful, to have some help for faculty getting some kind of scholarship out of their redesign. We didn’t have that at all and, you know, at the end there was a moment of, okay, how are we going to publish this? Well, we should have probably thought of that all the way through or done some kind of pre and post or done something to help leverage that, so I don’t know what support IMPACT could give to the scholarship side.”

This interviewee also focused on the support for scholarship after the FLC:

“[The support team] was fantastic and really helped me try to bridge the gap between the weekly presentations and my course. I couldn’t ever figure out a way to incorporate the technological suggestions made during the program, and so the IT representatives on the support team were not as helpful.”

Over half of the interviewees previously published or presented based on their IMPACT course transformation, yet another interviewee expressed the need for on-going support for scholarship and technology:

“I didn’t find [a] research project. I don’t know how to do that. You know how to do that, and you should do it, but I don’t. A social scientist, I am not.

“The support team] was fantastic and really helped me try to bridge the gap between the weekly presentations and my course. I couldn’t ever figure out a way to incorporate the technological suggestions made during the program, and so the IT representatives on the support team were not as helpful.”

This interviewee had a positive FLC experience, exceeding what was expected:

“I guess I could just say it was very positive because we had [a support team and] a group with a couple of other faculty. They were just great resources and we’d ask questions about, ‘Well how do we do this? How does this work? How do we schedule an impact classroom? How do we do these things on Blackboard?’ They would listen to what we had to say even about what we were trying to do and say, ‘Oh, well you should do this. You should do that.’ So it was a really great experience.
“The [FLC] lessons were great and the facilitators…it was a good program. I went in thinking it was going to be terrible. I was like, ‘Oh, this is going to be miserable,’ but it was really useful.”

This interviewee valued members of the support team differently:

“We had a great time. I know they’ve changed the way they structure the support teams and the colleague teams, but we had a really good [support team]. We had a library person that I never quite figured out how to utilize as well as I should have.

“The ITaP person was very dynamic and very creative and was really good at helping us figure out what I was doing online or what I was doing digitally. I made all my PowerPoints in videos, narrated so they were more stand-alone and they supported my existing class. They didn’t have to be an online class at all. So, I think the ITaP person was really, really valuable.

 “[The CIE person] was really provocative in the way they would ask questions and stir you up and make you think. I felt like the support team was really, really strong in …helping me through the process. I didn’t find enough time to stay up on the schedule that they expected, so they did well at raising the expectations for our performance, frankly higher than I was able to keep up with, which I thought as a positive. I’d much rather have that than not do enough.”

This interviewee chose to focus on contact with the support team after the FLC, and what contact they still need:

“I should mention that they are very supportive. A couple of times I have asked to meet with some of my IMPACT coaching group when I was participating in IMPACT, like [CIE and TLT staff]. They have been very helpful. [TLT staff have] been helping me with the i>Clickers, and with Blackboard questions. I wanted to write a paper about my course results before IMPACT and after IMPACT. [The CIE staff member] has met with me a couple of times, and gave me good information about that. They are very cooperative and very helpful when you ask for help.

“Actually, they interviewed me, or they recorded what I had been doing at the end of each semester. There are some survey questions that they sent to my students at the beginning of the semester and end of the semester, but I have not heard from them at what they have learned from these.

“These questions or these answers …I get them in my course evaluation. So it’s not like I have no clue, but I am not going back to the past semesters to see how these numbers are changing. I don’t know if they are doing any study on it. It would be nice to know.”
Appendix 6. Planning to Achieve Departmental/College Outcomes

Within the interview protocol, we asked study participants to describe their course planning. One interviewee took an interesting tangent to explain how they worked with other faculty to synchronize outcomes beyond a single course. This instructor coordinates a course commonly taken during students first or second term at Purdue, with many sections and multiple instructors each academic period. The IMPACT transformation for this course also relies heavily on active learning within teams.

The coordination for many people/sections in this single course required extra pre-course planning, beginning with open communication with departmental and college faculty:

“[We are] trying to provide better service to the departments because this is a college-level course that serves [many] different departments within our college....[We] met with the instructors for each of [the gateway] courses in each of the departments hoping to do two things: to help raise awareness for the other classes the students are taking in their department so that they can integrate what we were doing...and to begin to understand what the departments were doing. [This] answers...how their students’ major classes in their departments align with a core class to the college, and we saw some themes.”

Regarding the gateway courses within the college, the interviewee added:

“We started to hear from the students and the instructors that they are using some of our strategies that we are using in their gateway classes. A couple are using CATME software, for example. Some are using some of the strategies that we are using throughout, so I think there is some cross-pollination there.”

The interviewee continued, mentioning courses taken later in the curriculum:

“We have established a sophomore-level class...the other instructor and I are in close communication on a regular basis and he is actively trying to build on what we are doing in his freshman class.”

“I do hope that when they get to their senior capstone project that the capstone instructors will tie back to some of the strategies that they use in our class.”

Finally, the interviewee added a story from a student who used what she learned from this course in an internship:

“I had a young lady, Molly was her name, and she took this class in the fall semester of her freshman year. In the spring semester she was in an internship group where they're working on a problem with [Company X] and she was with a couple of senior males, and a couple of grad student males. Nobody [knew] how to get started.

She says, ‘Well, let’s do what we did in the [freshman-level] class.’ She starts the process and helps the group to find the problem. She does some benchmarking, what are others doing, and she does some ideation with them, and how do we come up with solutions, and works through to the point where they've got a result, a solution, at the end of their internship. She really took the lead in that experience, where she was an under-represented female in the group, and just took over and had a fantastic experience essentially leveraging, mimicking everything we did in [the freshman-level] class. If we see a thousand students a year, hopefully there are more examples like that out there.”

While the scope of planning outlined by this interviewee exceeds the explanation we sought from interviewees, this case suggests instructors communicate with peer faculty to align outcomes across the curriculum. The skills and knowledge developed in one course affects students’ experiences in other courses.
Endnotes: References for Instructors

Rather than a typical literature review, we offer these annotated endnotes, for instructors wishing to pursue a self-study in a particular area. These (and many other) references many offer valuable information for faculty interested in transforming a course and/or understanding teaching and learning; however, Purdue faculty may use their colleagues for support, ideas, encouragement, and motivation. Learn from others’ mistakes and successes, based on using the same learning spaces for targeted Purdue University students.

First, a sampling of general references include the following.


Second, many additional references are cited within the following endnotes.

Results from a larger study of successful faculty are well described in:


Bain’s book explores how the best teachers:

- Know about how people learn
• Prepare to teach,
• Set expectations for students,
• Organize class sessions,
• Treat students, and
• Evaluate student and themselves.

Elements of Bain’s work overlap with the Purdue faculty interviewed in this study. Faculty interested in Bain’s work might also be interested in:


Various formats for learning outcomes appear within literature, and usually contain similar content. For one example, consider the ABCD format, which appears in:


This model contains 4 basic elements of a well-written outcome. ABCD is an acronym for:

• **Audience**: Who will meet this outcome?
• **Behavior**: What do you expect the audience to be able to do? (Tip: consider adjectives taken from the desired level within Bloom’s Taxonomy.)
• **Condition**: During what experiences will the audience demonstrate the behavior?
• **Degree**: To what level of proficiency will the audience be able to demonstrate the behavior?

Using these four components, the resulting outcome could be:

*Through [Condition], [Audience] will be able to [Behavior] to [Degree].*

For example,

• Through reading and understanding this report, instructors will be able to explain at least one new idea for teaching success.
• Through completion of this assignment, students will be able to demonstrate intermediate or expert level proficiency in grammar and style, according to the assignment rubric.

Instructors may find success stacking outcomes based on Bloom’s taxonomy. For example:

• Through reading [book chapter] before class, students will know...
• Through participation in class, students will understand...
• Through completion of [assignment], students will apply...

For more information regarding Bloom’s Taxonomy applied to college teaching, see:

[http://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy](http://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy)
Successful IMPACT Faculty

Also see:


Development of teaching efficacy emerged a key finding in a recent Purdue study of faculty perceptions of learning spaces. Within this study, physical features in, and personal/peer experiences with assigned learning spaces affect instructors’ course planning, use of time in class, and their teaching efficacy. A report of this study is available online at:


Self-efficacy is a construct within Social Cognitive Theory. For more information, see:


Students require a balance of challenge and support, according to Sanford in:


In general, research on college student development borrowed heavily from psychology, until theories of college student development were established on their own within the latter decades 20th century. For an overview of student development theories, see:


For additional research about college students, the following volumes present research about college students:


Scaffolding was introduced in:


Scaffolding, as defined within an adult-child relationship is a:
“...process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his [sic] unassisted efforts. This scaffolding consists essentially of the adult ‘controlling’ those elements of the task that are initially beyond the learner’s capacity, thus permitting him [sic] to concentrate upon and complete only those elements that are within his range of competence. The task thus proceeds to a successful conclusion. We assume, however, that the process can potentially achieve much more for the learner than an assisted completion of the task. It may result, eventually, in development of task competence by the learner at a pace that would far outstrip his [sic] unassisted efforts” (p. 90).

vi For strategies to effectively develop rubrics, see:

vii Early versions of IMPACT were facilitated based on the book:

Wiggins & McTighe structured the book based on “backwards design,” which is a three stage process to course development:
- Identify desired results. (i.e., what are your intended learning outcomes?)
- Determine acceptable evidence. (i.e., how will you assess the learning outcomes?)
- Plan learning experiences and instruction. (i.e., through completion of what in- and out-of-class activities will students develop the knowledge, skills, or behaviors to meet the outcomes?)

While content within the IMPACT FLC continues to evolve, IMPACT still includes these three stages. Wiggins & McTighe may be an excellent self-study for any instructor seeking to improve their course, but unable to commit to IMPACT.

viii The following resource provides an interesting, broad review of expectations in higher education:

Briefly, two particular chapters are useful because:
- Chapter 2 exposes how expectations, in general, affect people and their behaviors.
- Chapter 3 addresses students’ expectations about teaching and learning experiences.

Other chapters review other expectations within higher education affect students; learning experiences.

ix Instructors might align their expectations for academic integrity with the Purdue University policy:

[https://www.purdue.edu/odos/academic-integrity/](https://www.purdue.edu/odos/academic-integrity/)
“Openness to experience” is one of the five dimensions identified in the five-factor model of personality. The other four are: extraversion, agreeableness, conscientiousness, and neuroticism. For more information about the model, see:


Various articles exist posturing applications for the Five-Factor Model in the classroom. We recommend searching for applications of the theory to your own subject or learning environment.

For additional strategies to develop your syllabus, refer to:


Since syllabi contain broad content, this resource overlaps with many other topics of this report, including active learning, facilitation strategies, and assessment.

For more Classroom Assessment Techniques (CATs), see:


The following table identifies common “active” features within a newer paradigm, compared to the teacher-centered paradigm.

<table>
<thead>
<tr>
<th>Teacher-Centered Paradigm</th>
<th>Learner-Centered Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge is transmitted from professor to students.</td>
<td>Students construct knowledge through gathering and synthesizing information and integrating it with the general skills of inquiry, communication, critical thinking, problem solving, etc.</td>
</tr>
<tr>
<td>Students passively receive information.</td>
<td>Students are actively involved.</td>
</tr>
<tr>
<td>Emphasis is on acquisition of knowledge outside the context in which it will be used.</td>
<td>Emphasis is on using and communicating knowledge effectively to address enduring and emerging issues and problems in real-life contexts.</td>
</tr>
<tr>
<td>Professor’s role is to be primary information giver and primary evaluator.</td>
<td>Professor’s role is to coach and facilitate. Professor and student evaluate learning together.</td>
</tr>
<tr>
<td>Teaching and assessing are separate.</td>
<td>Teaching and assessing are intertwined.</td>
</tr>
<tr>
<td>Assessment is used to monitor learning.</td>
<td>Assessments are used to promote and diagnose learning.</td>
</tr>
<tr>
<td>Emphasis is on right answers.</td>
<td>Emphasis is on generating better questions and learning from errors.</td>
</tr>
<tr>
<td>Desired learning is assessed indirectly through the use of objectively scored tests.</td>
<td>Desired learning is assessed directly through papers, projects, performances, portfolios, etc.</td>
</tr>
<tr>
<td>Focus is on a single discipline.</td>
<td>Approach is compatible with interdisciplinary investigation.</td>
</tr>
<tr>
<td>Culture is competitive and individualistic.</td>
<td>Culture is cooperative, collaborative and supportive.</td>
</tr>
<tr>
<td>Only students are viewed as learners.</td>
<td>Professor and students learn together.</td>
</tr>
</tbody>
</table>
The extent to which the learning climate is student-centered is a core indicator within the IMPACT assessment plan. See: [http://www.purdue.edu/impact/program-effectiveness.php](http://www.purdue.edu/impact/program-effectiveness.php)

The distinction between “learner-centered” and “student-centered” is more than just a linguistic difference. Within literature, “learner-centered” and “student-centered” are used in overlapping or conflicting manners, depending on the sources being referenced. For example, Consider the following explanation by Weimer (2013):

> “Being student-centered implies a focus on student needs. It is an orientation that gives rise to the idea of education as a product, with the student as the customer and the role of the faculty as one of serving and satisfying the customer. Faculty resist the student-as-customer metaphor for some very good reasons. When the product is education, the customer cannot always be right, there is no money-back guarantee, and tuition dollars do not ‘buy’ the desired grades.

> “Being learner-centered focuses attention squarely on learning: what the student is learning, how the student is learning, the conditions under which the student is learning, whether the student is retaining and applying the learning, and how current learning positions the student for future learning. The student is still an important part of the equation. In fact, we make the distinction between learner-centered instruction and teacher-centered instruction as a way of indicating that the spotlight has moved from teacher to student. When instruction is learner-centered, the action focuses on what students (not teachers) are doing.”


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**xiv** Problem-based learning strategies result in learning or applying concepts based on students (often within teams) solving problems following open-ended prompts. For more information, see:


**xvi** According to a December 8, 2016 notice in Purdue Today, faculty should discuss room scheduling with their unit scheduling deputies. The following websites may be useful for faculty interested in requesting specific learning spaces:

- Class scheduling information: [http://www.purdue.edu/registrar/faculty/scheduling/class_scheduling.html](http://www.purdue.edu/registrar/faculty/scheduling/class_scheduling.html)
- Information about the Wilmeth Active Learning Center: [www.purdue.edu/registrar/faculty/scheduling/wilmeth.html](http://www.purdue.edu/registrar/faculty/scheduling/wilmeth.html)

**xvi** Purdue supports two student-response systems:

- i>Clickers (see: [https://www.itap.purdue.edu/learning/tools/iclicker.html](https://www.itap.purdue.edu/learning/tools/iclicker.html))
• Hotseat (see: https://www.itap.purdue.edu/learning/tools/hotseat.html)

For a comparison of these tools, see: https://www.itap.purdue.edu/learning/tools-resources/hotseat-vs-iclicker.html

Think-Pair-Share consists of three stacked activities: An individual activity to force a student to “think” on their own, a “paired” activity during which students share what they thought of about individually with another student, and a final activity where select pairs “share” their paired discussion with the whole class.

The Turn-to-Your-Partner is similar to Think-Pair-Share, except that it skips the “Think” step, presuming students are prepared to share.

Describing their use of “pairing” strategy, one interviewee explained:

“I think it works pretty well to ask two people to pair up and say, ‘What’s the issue here?’ That’s something they should be able to do in two, three minutes. If you give them more than two, three minutes, that’s too long. These have to be short.

“I find that the think-pair-share stuff works well for that, especially when you can do multiple iterations. If you can have them pair up with the same person, three, four, five times during that class, I think that works better than just having it once.”

Think-Pair-Share, Turn-to-Your-Partner, and other collaborative learning strategies, appear documented in numerous printed or online references. Search for the phase “Collaborative learning” to discover these strategies and their many variations.

Cooperative Learning and Team-Based Learning possess a similar core outcome regarding peer student engagement, but differ in how to achieve this intention. For more information about each, see:

• Cooperative Learning:
  o http://www.co-operation.org/

• Team-Based Learning:
  o http://www.teambasedlearning.org/
Successful IMPACT Faculty


CATME (see: [http://info.catme.org/](http://info.catme.org/)) is an online tool used by instructors to manage teams of students. Features in CATME include helping instructors form teams based on information provided by students, and aid in peer-evaluation by gathering information from students about other members of their team.

For assistance creating videos at Purdue, contact Teaching and Learning Technologies ([http://www.itap.purdue.edu/learning/](http://www.itap.purdue.edu/learning/)). The variety of tools supported at Purdue include:

- **BoilerCast/ALP**: [https://www.itap.purdue.edu/learning/tools/echo-360.html](https://www.itap.purdue.edu/learning/tools/echo-360.html)
- **Camtasia**: [http://www.itap.purdue.edu/learning/tools/camtasia.html](http://www.itap.purdue.edu/learning/tools/camtasia.html)

"Flip" and “flipped” are used in different ways to describe non-traditional use of classroom space and expectations for students to prepare before class. For the given quote, this strategy required students to prepare for class by watching short video lectures, then using in-class time for peer-to-peer activities.

Selected references to motivate and/or describe options for in-class peer-interaction include:

- King, Alison. From sage on the stage to guide on the side. *College Teaching* 41(1), 30–35.

For more Classroom Assessment Techniques (CATs), see:


Boyer and Weimer respectively provide valuable justification for research on teaching, and a thoughtful guide for faculty interested in scholarship regarding their teaching, in the following references:

In general, some interviewees struggled with the “Scholarship of Teaching and Learning” because:

- Do not have the time to complete it,
- It is not valued by their department (e.g., during tenure review) or colleagues (e.g., not “research” in their field), or
- Do not have the background knowledge in social science research.

These reasons make it challenging for Purdue faculty to complete scholarship about teaching. Those who wish to pursue these studies are encouraged to partner with others who have the time and or expertise. IMPACT Fellows wishing to pursue scholarship about their IMPACT courses should follow-up with their IMPACT support team or [http://www.purdue.edu/impact/contact.php](http://www.purdue.edu/impact/contact.php).