Engaged Learning at Michigan:

Understanding the Impact of the Transforming Learning for a Third Century Initiative

**University of Michigan
Office of the Provost
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THIRD CENTURY INITIATIVE
UNIVERSITY OF MICHIGAN

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

The Office of the Provost launched the Transforming Learning for a Third Century (TLTC) Initiative in 2012 with an ambitious agenda to define and cultivate a culture of engaged learning at the University of Michigan.

The TLTC program funded innovative projects aimed at improving teaching and learning and as the program evolved, the following engaged learning outcomes emerged as key elements of project-level reporting and assessment:

1. Creativity
2. Intercultural engagement
3. Social/civic responsibility and ethical reasoning
4. Communication, collaboration and teamwork
5. Self-agency, and the ability to innovate and take risks

The purpose of this report is to document the ongoing evolution of the Provost's Transforming Learning for a Third Century (TLTC) initiative and to address the following questions:

1. Who directly participated in the TLTC initiative, including units and individual faculty, staff, and students?
2. How has the institutional culture around engaged learning changed throughout the TLTC initiative?
3. What have we learned from the TLTC initiative that can inform other large-scale, learning and teaching projects initiated by the Provost's Office?

The TLTC initiative provided $20.5 million in funding to support innovative projects, faculty development, and assessment and evaluation. 128 projects representing 352 faculty and staff members from all schools and colleges across campus were included. More than 10,000 students were directly involved in one or more of these funded projects.

While engaged learning pedagogies existed in various units across campus prior to the TLTC initiative, evidence suggests that the TLTC Initiative stimulated the rapid development of new programs, courses, and centers aimed at increasing student opportunities for engaged learning since 2012. In summary, the TLTC initiative impacted the university in the following ways:

1. It more clearly defined the term "engaged learning" for the university. The initiative created a common language and shared understanding of engaged learning across a large decentralized institution. Emerging evidence suggests that it initiated a cultural shift in which engaged learning is valued and funded within our units, even beyond the TLTC program.
2. It encouraged interdisciplinary collaboration. The initiative helped build interdisciplinary capacity and provided the resources needed to address this complex and labor intensive work. TLTC funding eased administrative burdens for faculty by providing dedicated staff, sharing infrastructure and support from the Provost's Office and CRLT, and streamlining processes for distributing and spending the funds. In turn, this freed up faculty time and allowed more students to experience interdisciplinary learning.
3. It incentivized faculty to test their theories and ideas about extending their teaching into an engaged realm, and the process gave them preparation for applying for external grants to continue such work.
4. It validated and raised visibility of existing efforts that were geared towards offering and improving engaged learning experiences for U-M students. It changed the way students experience U-M through the establishment of new programs and projects, which influence not only those students who

1

      participated in TLTC funded projects, but future students as well.

5. It exposed more faculty to the science of student learning and assessment, making it accessible while simultaneously stressing the importance of rigor.

Several project-level activities within the TLTC initiative remain ongoing; however, this report captures some of the effects across the university at this moment in time. Several lessons learned are described, including specific suggestions for assessment planning and the implementation of future initiatives, as well as the importance of within-university communication campaigns and the value of collaborating with other universities.

As we undertake similar large-scale initiatives, key considerations should include:

1. Creating a general assessment plan during the early phases of planning the initiative.
2. Ensuring that all funding recipients submit a standardized report regarding annual progress, as well as a final reporting of outcomes.
3. Engaging with other universities implementing similar initiatives to learn and share knowledge about the work.
4. Focusing on strong communication and common language, particularly during the early phases of initiative launch.
5. Maintaining robust support structures, resources, and on-campus expertise for the science of student learning and assessment.
6. Nurturing sustainability and institutionalization; include regular check-ins with project leaders.

In this report we first describe relevant literature about engaged learning in higher education followed by background story of the Third Century Initiative. We then provide descriptions of the twelve Transformation projects funded through this initiative. This report also includes reactions from school/college leadership, as well as analysis of student learning in relation to the initiative. We conclude the report with a discussion of the lessons learned.

ENGAGED LEARNING

"Engaged learning" has become an increasingly popular arena of study in higher education and refers to a broad movement that involves students in active and experiential methods of education (Kuh, 2009; Young, 2010). A number of researchers and educators have tried to describe what it is, why it is important for students, the outcomes with which it is associated, and how to foster and assess it in a college setting. Engaged learning is rooted in educational scholarship that spans decades. Researchers have conceptualized engaged learning in a variety of ways and using different terminology - active learning, student engagement, experiential learning, (Moore, 2013), transformative learning (Hodge, Baxter Magolda, & Haynes, 2009; Mezirow, 2000), and situated learning (Fear, Bawden, Rosaen, & Foster-Fishman, 2002; Lave & Wenger, 1991) – interchangeably or to describe similar constructs.

In recognition of these sometimes vastly different conceptualizations, some researchers have made an effort to reconcile these terms, helping to narrow some of these discrepancies as the literature evolves (Bowen, 2005; Kuh, 2009; Young, 2010). Kuh (2003, 2009) describes engaged learning in perhaps the simplest of terms, suggesting that student engagement is the amount of time and quality of effort that students put toward productive learning activities. In a similar vein, Young (2010) suggests that academically engaged students are characterized by "positive conduct, class participation, involvement in the learning task, high effort and persistence, positive attitudes, and self-regulation of their learning" (p. 2). These conceptualizations are rooted in early work that found that student time on task (Merwin, 1969) and investment in high-quality learning activities, such as studying and exchanging ideas with instructors (Pace, 1990), are associated with achievement gains. On the other hand, Hodge, Baxter Magolda, & Haynes (2009) describe engaged learning as much more than simply putting forth effort. Rather, they describe it as being "transformative" and reflected in students' evolving from uncritical receptors of information from knowledgeable authorities toward critically analyzing information from multiple sources and acting in congruence with their own interpretation of said information. This definition shares commonalities with Chickering and Reisser's (1993) vectors of student development, which chart a pathway from developing competence to developing integrity, both across and beyond disciplines. The concept has evolved from one of students' quality classroom participation to deep personal and intellectual growth.

In light of differences in conceptual definitions, Bowen (2005) provides a taxonomy of engagement that encompasses four dimensions that vary both by source of engagement and also by pedagogy. They include: a) engagement with the learning process, which is associated with active learning pedagogies such as think-pair-share and group discussion; b) engagement with the subject matter of study, which is associated with experiential learning such as field-based or laboratory courses; c) engagement with the context, in which ambiguous problems are solved through the synthesis of multiple disciplinary perspectives, often with a capstone course and d) engagement with the human condition, which focuses on social and civic issues and often relies on pedagogies such as service learning and reflection.

Consistent with its multi-dimensional nature, engaged learning has been shown to promote a variety of positive outcomes associated with students' feelings, attitudes and behaviors (Harward, 2007). For instance, empirical evidence suggests that student engagement is associated with increases in critical thinking skills and grades (Carini, Kuh, & Klein, 2006; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Skinner, Wellborn & Connell, 1990), ACT scores (Ewell, 2002), persistence (Hughes and Pace, 2003), self-reported personal-social gains (Carini, Kuh, & Klein, 2006), well-being and self-esteem (Bandura, Peluso, Ortman & Millard, 2000), moral character, and intercultural effectiveness (Jones & Watt, 1999; Liddell & Davis, 1996). Furthermore, engagement appears to have particularly strong effects on grades among academically underprepared students (Cruce, Wolniak, Seifert, & Pascarella, 2006; Kuh et al., 2008; Pascarella & Terenzini, 2005).

In addition to the presence or absence of engaged learning opportunities, the nature and degree of those opportunities have differential impact on student outcomes. Coker, Heiser, Taylor, and Book (2016) explored whether depth and breadth of five different types of engaged learning - including study abroad, undergraduate research, internships, service-learning and leadership experiences – mattered for different outcomes. They found that "deep experiences" – defined as 160 or more hours of one type of experience – led to more positive outcomes than "broad experiences" on measures of contributing to the welfare of the community, writing clearly and effectively, and self-reports of overall college experience. Conversely, breadth–the number of unique types of engaged learning experiences of at least 40 hours–was found to be positively associated with increased ability to work with others and with higher order thinking, whereas depth was not. In a similar vein, the timing of an engaged learning experience in students' development appears to be an important precursor to whether it has a positive impact on students. Overall, active and collaborative learning strategies have been found to have positive impacts on students (e.g., Kuh, Laird, & Umbach, 2004; Freeman et al., 2014).

Students perform as a part of the "Into the Wind" Quick Wins project. This multidisciplinary project engaged students and faculty from dance and music, urban and regional planning, natural resources and environment, and literature, to explore what wind means as an energy source.

Given the generally positive outcomes associated with engaged learning, the research has naturally extended toward exploring what colleges and universities can do to foster opportunities for student engagement. Astin's (2003) early work in launching the Cooperative Institutional Research Program (CIRP) in the mid-sixties was a foundational source of data for identifying the impact of college on student learning outcomes, particularly when used in conjunction with the College Senior Survey (CSS). Using this data, influential work by Chickering and Gamson (1987) described seven principles of good practice for undergraduate education, including 1) student-faculty contact, 2) active learning, 3) prompt feedback, 4) time on task, 5) high expectations, 6) respect for different learning styles and 7) cooperative activities among students. Later, Pascarella and Terenzini (1991) expanded on this work with a comprehensive synthesis of the literature on the impact of college on student outcomes, which further validated the teaching practices described in Chickering and Gamson's work.

Following this research, a variety of U.S. higher education conversations, initiatives and policy changes related to engaged learning emerged. This cultural shift can be traced back as early as the release of the "Nation at Risk" report of the Department of Education (Gardner, 1983), which prompted the Department to fund a series of national centers on university campuses focused on research on teaching and learning. The last of these centers was the National Center for Postsecondary Improvement, a collective of Stanford University and the Universities

of Michigan and Pennsylvania. In the late nineties, Kuh and colleagues launched the National Survey of Student Engagement (NSSE), which measures several dimensions of student engagement, including 1) level of academic challenge, 2) active and collaborative learning, 3) student-faculty interaction, 4) supportive campus climate, 5) reading and writing, 6) quality of relationships, 7) institutional emphasis on good practices, 8) student-faculty interaction concerning coursework, 9) integration of diversity into coursework 10) higher order thinking and 11) enriching educational experiences (Carini, Kuh & Klein, 2006). In 2000, The National Center for Public Policy and Higher Education released "Measuring Up 2000" – a state "report card" that rated states on five performance indicators pertaining to higher education – which gave virtually none of the states a grade for the student learning indicator due to a lack of comparative data (Kuh, 2001). This further incentivized university participation in the NSSE, and to date, over 1,600 universities have participated in data collection efforts.

In a separate but related turn of events, The Bringing Theory to Practice Project was initiated in 2003 to encourage universities to go back to their liberal education roots and bring together three student outcomes – learning, civic development, and student well-being. Many felt that the last two of these had fallen to the wayside over the past few decades. Two years later, the Association of American Colleges & Universities (AAC&U) launched the Liberal Education and America's Promise Initiative (LEAP), which likewise encouraged colleges to attend to important, "non-traditional" student learning outcomes necessary to successfully navigating 21st-century life, such as civic responsibility. Each of these initiatives highlights the role of engaged learning opportunities in fostering desired student outcomes. In 2007, ten "high-impact" pedagogical practices were described and disseminated through the LEAP initiative, including 1) first-year seminars and experiences, 2) common intellectual experiences, 3) learning communities, 4) writing-intensive courses, 5) collaborative assignments and projects, 6) undergraduate research, 7) diversity/global learning, 8) service learning and community-based learning, 9) internships, and 10) capstone courses and projects (Kuh, 2009). Many universities are adopting a culture of teaching around these practices, and efforts have been underway to research more nuanced causal pathways linking university-wide practices to various student outcomes.

ENGAGED LEARNING AT THE UNIVERSITY OF MICHIGAN

At the University of Michigan, we refer to "engaged learning" as a variety of educational practices that help students develop important skills by "addressing unexpected, unscripted challenges in imperfect, authentic settings where stakeholders (including the students themselves) are significantly invested in the outcome" (http://thirdcentury.umich.edu/student-learning/). Key U-M engaged learning outcomes include creativity; intercultural engagement; social/civic responsibility and ethical reasoning; communication, collaboration and teamwork; and self-agency and the ability to innovate and take risks. The Third Century initiative played a critical role in defining engaged learning at the U-M. It emerged in the context of the nationwide engaged learning movement, the U-M's desire to enhance its own teaching and learning environment, and to prepare for the celebration of its bicentennial in 2017. To achieve those aims, former University President Mary Sue Coleman and former Provost Philip Hanlon established the Third Century Initiative – a $50 million/five-year project to develop innovative, multi-disciplinary teaching and scholarship approaches for the development of new leaders and new ideas for an unpredictably changing world. At her 2011 Annual Fall Address, Mary Sue Coleman announced the launch of the $50 million Third Century grant program.

The Third Century funding was subsequently divided into two general categories: Global Challenges and Student Learning. The university charged two faculty committees with providing recommendations to the president and provost regarding the allocation of funding for both components of the initiative. One of these committees, the Student Learning Advisory Committee, recommended the creation of the Transforming Learning for a Third Century (TLTC) grant program. The aim of this grant program was to intensify immersive and innovative educational experiences that expose students to the kind of complexity and volatility that they will increasingly face when they leave the university.

The TLTC grant program was divided into two distinct funding categories: 1) Quick Wins/Discovery funds, and 2) Transformation funds. Quick Wins/Discovery funds were relatively small-scale, "shovel ready" projects that had transformative potential for curriculum, pedagogy, and student learning and/or projects that embraced risk, discovery, and experimentation. These projects were based on a general hypothesis regarding teaching and learning that could be questioned, explored, and planned or piloted during the first phase of the funding period. Quick Wins/Discovery had a maximum funding level of $50,000. Transformation funds were aimed at large-scale changes to instruction and/or infrastructure, enabling faculty and staff to implement new learning approaches for sustainable and replicable adoption. Projects were based upon evidence that the proposed changes would favorably impact the learning experiences of the students involved. Transformation funding ranged from $100,000 to $3 million per project. Proposal reviews and funding recommendations were made by the Student Learning Advisory Committee, which was made up of faculty from across U-M.

DEVELOPMENT OF THE TLTC LEARNING GOALS

As the TLTC program progressed, the faculty committee adopted five key learning goals to frame project-level progress reports and to guide the rounds of transformation proposal solicitation and funding decisions:

1. Creativity – students must develop an understanding of creative processes and understand their own capacity to create new works and ideas. They must understand that creativity is not a rare gift to the few, but a fundamental human trait that can be developed and expanded.
2. Intercultural engagement – our learners must understand the role of values and culture in driving decisions, they must develop flexibility in working with others having different values.
3. Social/civic responsibility and ethical reasoning – students should develop an understanding of the human, social and environmental impacts of actions, and develop the ethical reasoning tools to make sustainable and responsible decisions; and they must develop their ability to hold and reason across the perspectives of multiple stakeholders.
4. Communication, collaboration and teamwork – students must have the ability to communicate with many audiences and to utilize varied formats and styles that will most effectively convey their messages. They must appreciate and leverage diverse contributions to a task, and know how to cooperate with others towards common purposes.
5. Self-agency, and the ability to innovate and take risks – students must know how to observe the opportunities and capacities of human communities, understand where new or existing ideas or systems could bring value within those communities, and be able to act effectively in order to drive sustained and positive change to provide that value.

One motivation behind articulating specific learning goals was to create a common language and consistent message for both internal and external audiences to describe engaged learning. These goals were adopted after a series of campus conversations about engaged learning. In the fall of 2013, Provost Pollack convened a series of four town halls on Engaged Learning (as well as on Digital Instruction). These town halls brought together groups of faculty, staff, and students to discuss the future of education at the University of Michigan, and especially the roles of engaged learning in that future.

Those involved in the town halls, grouped together in task teams for further meetings in 2014, observed two distinct approaches to defining engaged learning. The first approach defined engaged learning according to specific learning outcomes that are important for the future success of U-M graduates. In this case, there was strong consensus around four initial learning goals:

1. Creativity and innovation
2. Intercultural and ethical intelligence
3. Communication, collaboration and teamwork
4. Entrepreneurial mindset

After subsequent conversations with additional faculty and other stakeholders, the initial four outcomes evolved into the final five goals listed earlier in this section. This evolution involved separating "intercultural and ethical intelligence" into two separate goals: 1) intercultural engagement, and 2) social/civic responsibility and ethical reasoning. Additionally, "entrepreneurial mindset" evolved into "self-agency, and the ability to innovate and take risks," in order to more inclusively set a common language that spoke to all disciplines.

The second approach defined engaged learning as set of pedagogical characteristics that distinguish student learning experiences. In this case, task team members described characteristics of the learning experience, and generated examples of engaged learning practices. They defined engaged learning based on the following underlying constructs:

- Engaged learning makes teaching a shared, social experience through exchanges within learning communities involving students, faculty, staff, and external constituents - all in the roles of both teacher and learner.
- Engaged learning is understood as cumulative, iterative, integrative and often retrospective.
- Engaged learning connects critical thinking to real world interactions. Student learning tasks are closely and clearly related to the problems and challenges of the global society in which the students currently live and will experience in the future. Engaged learning tasks are challenging, complex and require students to stretch their research, social, and thinking skills to address them.
- Teachers play the role of facilitator, fostering student learning by assigning authentic tasks, challenging assumptions, providing critical feedback and encouraging independent inquiry. Students act as motivated explorers and are expected to discover new knowledge, concepts, and connections. They take risks to move toward deeper understanding and resolution of

November 2014 Thinking Big Symposium prompts
U-M faculty and staff to discuss the TLTC grant program
and share best practices.

7

challenges and they are expected to observe and refine their own understanding and actions based on the feedback they receive.

- Students are engaged in constructing their own knowledge and assume responsibility for their own learning. They are active participants in the creation of the learning experiences and in their own assessment.
- Students have agency and choice in their learning experiences and select them based on a long-term conception of their own goals for intellectual, professional and personal growth. This selection includes intentionality in both their curricular and co-curricular elections, based on a framework of learning and developmental goals (such as the learning outcomes articulated above).
- Groups and teams are used as appropriate, including participants with a range of disciplines and skill sets, as well as external stakeholders who are invested in the output of the group.

With this report, we begin describing the scope and reach of the initiative across the university.

November 2014 Thinking Big Symposium helps U-M faculty and staff discuss TLTC student learning and assessment goals.

TLTC GRANT-LEVEL DATA

A total of 325 grant proposals were submitted over the course of several funding rounds from January 2013 to December 2015. These included 38 Transformation grant proposals and 287 Discovery/Quick Wins grant proposals. 176 proposals (54.2%) had interdepartmental representation[1,2], a key component of U-M engaged learning opportunities. Additional data regarding information about grantees of TLTC funds can be found in Appendix A.
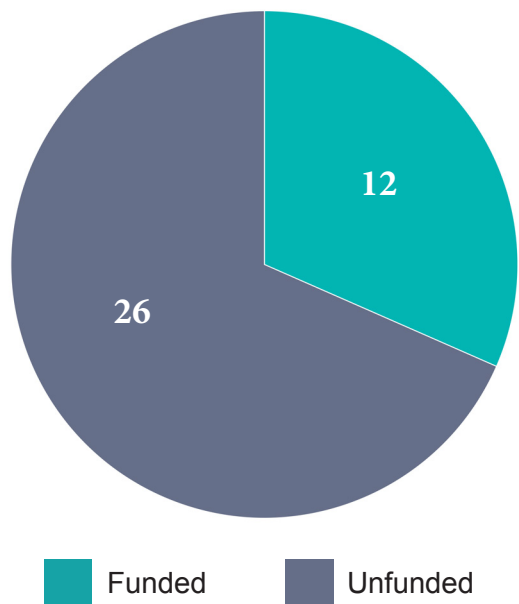
Transformation Grant Statistics

12 Proposals Funded

Totaling **$16,187,269**

Average of **4.33** Years Project Duration

54 Departments Represented on Applications

Funded   Unfunded
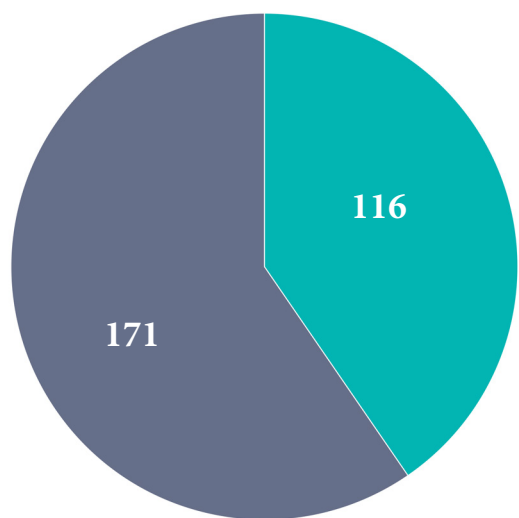
Discovery/Quick Wins Grant Statistics

116 Proposals Funded

Totaling **$3,804,258**

Average of **1.08** Years Project Duration

69 Departments Represented on Applications

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[1] Departmental representation was assessed by counting each department with which a grantee was associated only once on each grant. Thus, if multiple grantees were in the same department, it was counted only once. Additionally, grantees with interdepartmental association had each of their departments counted toward representation on the grant.

[2] "Public Goods" include U-M units open to the public, such as libraries and museums. "Central Units" include units that exist independently from the 19 schools and colleges, such as Institute for Social Research and the Center for Research on Learning and Teaching.

Number of Grant Proposals with School/College/Unit Representation
Transformation Grants

Legend:
- **Funded Grant Proposals** (teal)
- **Unfunded Grant Proposals** (blue)

School/College/Unit	Funded	Unfunded
Music, Theatre & Dance	0	2
Rackham	0	2
Business	0	3
Kinesiology	1	0
Law	1	1
Pharmacy	1	1
Dentistry	1	2
Nursing	1	3
Social Work	1	5
Medicine	1	9
Natural Resources & Enviro	2	4
Public Policy	2	4
Information	3	2
Architecture & Urban Plan	3	3
Central Units	3	4
Art & Design	3	7
Public Health	4	5
Engineering	4	10
Public Goods	6	6
Education	6	8
Literature, Science & Arts	8	17

Number of Grant Proposals with School/College/Unit Representation
Quick Wins/Discovery Grants

Legend:
- **Funded Grant Proposals** (dark red)
- **Unfunded Grant Proposals** (gray)

School/College/Unit	Funded	Unfunded
Rackham	1	2
Music, Theatre & Dance	1	3
Pharmacy	1	3
Nursing	2	9
Kinesiology	3	1
Business	3	4
Dentistry	3	9
Public Policy	4	5
Social Work	8	11
Natrual Resources & Enviro	8	13
Public Health	8	19
Information	9	12
Architechture & Urban Plan	9	15
Central Units	11	21
Medicine	11	41
Education	12	12
Public Goods	14	17
Music, Theatre & Dance	15	15
Art & Design	15	16
Engineering	23	39
Literature, Science & Arts	54	56

INITIAL CHANGES IN INSTITUTIONAL CULTURE

The ultimate goal of the Transforming Learning for a Third Century (TLTC) Initiative was not to be an end itself, but rather to catalyze a cultural shift at the University of Michigan where engaged learning ideals would spread beyond the original faculty and staff grant recipients. This section explores whether there is evidence for such a shift taking place.

Defining institutional or organizational culture from a theoretical perspective is difficult, as many researchers have noted the complexity and ephemerality of the concept (e.g. Kuh and Whitt, 1988). The following overview of relevant literature aims to succinctly describe definitions, dimensions, and models of institutional culture and possible change within it. While it undoubtedly oversimplifies the nature of institutional culture, it nonetheless provides a conceptual framework that is useful for exploring possible cultural changes at U-M.

Kuh and Whitt (1988, p. 13) define culture in higher education as "the collective, mutually shaping patterns of norms, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in an institute of higher education and provide a frame of reference within which to interpret the meaning of events and actions on and off campus". Peterson and Spencer (1990) note that these norms, values and assumptions are often latent but become manifest in behavior and language. At times, they are explicit – such as when they are codified in mission statements and the like.

> The mission of the University of Michigan is to serve the people of Michigan and the world through preeminence in creating, communicating, preserving and applying knowledge, art, and academic values, and in developing leaders and citizens who will challenge the present and enrich the future.

Culture is also, by definition, deeply embedded and resistant to change (Peterson & Spencer, 1990). However, several characteristics of institutional culture appear to contribute to its degree of malleability including strength of culture, size of institution, and type of governance structure within the organization. A strong culture is characterized by well-established patterns of behavior that are resistant to change, while a weaker culture may be more malleable (Kuh & Whitt, 1988). Larger and more complex institutions may house a variety of sub-cultures (Clark, 1963) that make unification difficult (Kuh & Whitt, 1988). Noting a distinction between academically-oriented institutional governance structures, in which faculty have substantial decision-making authority, and management-oriented governance structures, in which high-level administrators wield more centralized power (Ruscio, 1987), change proposed by high-level administrators is more likely to face resistance in the context of the faculty governance structure than in the management-based structure.

Several strategies for addressing resistance to change have been suggested in the organizational change literature. Eckel, Hill, and Green (1998) discuss the importance of change strategies being intentional and implemented with consistency. In a similar vein, Ramaley (2002) notes that project scale is important – it must be large enough to begin the momentum needed to carry an initiative into a transformative cultural shift. Additional methods identified as curtailing resistance include committing to collaboration and democratic decision-making during the planning process as well as employing a mechanism for rewarding desired behaviors (Kezar & Eckel, 2002; Roberts, Wren & Adam, 1993; Taylor & Koch, 1996).

Established in 1817, the University of Michigan is one of the oldest public universities in the country. Having

existed for 200 years, it exhibits a "strong culture" that places a high priority on research while espousing a firm commitment to a rigorous academic experience for students. It is also one of the largest universities in the country, with over 48,000 employees including the health system and 44,000 students enrolled on the Ann Arbor Campus. The governance structure is highly decentralized, and individual academic units have substantial autonomy in decision-making. While these characteristics lend themselves to institutional stability and have been integral to fostering the university's outstanding reputation across disciplines, they are also potential impediments to institutional change driven by a top-down initiative such as the Transforming Learning for a Third Century Initiative. Accordingly, the Provost's Office employed strategies that are consistent with the literature on cultural change, including collaborative planning along with a mechanism for rewarding engaged learning, committing both the time and the funding needed to create change at a scale that sustains momentum.

PROGRESS ON TRANSFORMATION GRANT-FUNDED PROJECTS

The transformation grant-funded projects exemplify types of projects that create change at scale. Nine of the twelve transformation grant-funded projects are within the third year of implementation with a corresponding round of reporting documenting their first year of progress. Below is a brief summary of the initial impact of these twelve projects.

Personalizing at Scale

Housed in the Office of Academic Innovation, the overarching goal of the Personalizing Education at Scale project is to develop digital tools that will enable U-M students to experience a more personalized education. Several smaller projects have emerged under the auspice of Personalizing Education at Scale, including ECoach, a digital application that gives tailored feedback to students to help them overcome contextually-relevant common learning barriers and maintain motivation in spite of obstacles. Another is Student Explorer, which helps academic advisors identify students at-risk of underperformance using an early warning system. As of July 2016, each of these systems has reached over 10,000 students.

Students on "Team Formativity" collaborate on a team project as part of the Innovation in Action project. "Team Formativity" won the University of Michigan Education Grand Prize and Audience Choice Award in 2016.

Gameful Assessment in Michigan Education (GAME): Building a Community of Engaged Learners and Teachers Supported by Gradecraft

The primary aim of the GAME project is to foster a large-scale learning community at U-M around best practices of gameful learning. In this approach, courses are designed to allow students the autonomy to chart a tailored learning path from a series of different options for assignments. A secondary aim of this project is to revise GradeCraft software - a platform used to implement gameful learning – to become more integrated with

other systems on campus, such as Canvas. As of July 2016, 25 instructors consulted with members of the GAME project, implementing gameful instruction using GradeCraft, resulting in the engagement of 4879 students with this learning platform. Another considerable achievement was the convening of five Learning Community meetings attended by individuals with a range of experiences with Gradecraft.

M-Write II

The M-Write II project is infusing writing into large gateway courses across the U-M campus. M-Write II is scaling up implementation of writing-to-learn pedagogies in high-enrollment courses in multiple departments within LSA and the College of Engineering. Writing-to-learn pedagogies foster engaged learning in several ways, and this is particularly true when students follow the M-Write II process of writing in response to a prompt, using a rubric to evaluate the responses of others, and revising their drafts on the basis of responses from their peers. This sequence of activities requires creativity for generating a text, social responsibility for responding effectively to the writing of others, communication skills for both producing and evaluating writing, and self-agency for offering explanations and raising questions about the concept under consideration. In addition, writing-to-learn pedagogies unite students' emotional, behavioral and intellectual capacities in the active participation, meaningful processing and focused attention that are also hallmarks of engaged learning.

Michigan Sustainability Cases

Sample view of a Michigan Sustainability Cases case study based on Gray Wolves in Michigan.

This project out of the School for Environment and Sustainability (SEAS) transforms the case-based approach into a distinctively innovative, creative Michigan Sustainability Case (MSC) model. MSCs are digitally accessible multimedia products that can travel well into a range of intercultural teaching contexts. They feature hands-on collaborative production by student/faculty teams, adoption through mixed faculty and student learning communities and improved learning outcomes in terms of analytical, communication and collaboration skills development. MSC connects students with scholars from humanities, social, natural and biomedical sciences, engineering and landscape architecture—all teaching aspects of sustainability—to develop the proposed curriculum. Learning from this experience, the project team will engage faculty and students in allied departments and units on U-M campus. There are also plans to expand the project's reach through global competitions for case materials and collaboration with strong partner institutions in Brazil, China, Ethiopia, Ghana and India in case-based teaching and assessments.

Center for Interprofessional Education

The Interprofessional Education (IPE) initiative includes the schools of Dentistry, Kinesiology, Medicine, Nursing, Pharmacy, Public Health and Social Work on the Ann Arbor campus, in addition to the College of Education, Health, and Human Services on the Dearborn campus and the School of Health Professions and Studies on the Flint campus. The goals of this initiative are to (1) foster collaboration amongst members of the health science schools, (2) integrate core competencies into an IPE curriculum, (3) develop faculty skills in innovative teaching in the context of IPE, (4) to document the value of IPE in increasing positive patient outcomes, and (5) to become international leaders in the IPE movement. As of July 2016, 436 faculty and staff have taken part in this project, in addition to 910 students. Substantial accomplishments include having developed a "window" of time across schools in which all health sciences students have mutual availability to engage with IPE courses, the development of an IPE curricular map, the establishment of an Interprofessional Leadership Fellows Program and IPE Learning Community and an IPE Workgroup with 12 other universities.

Practice Sessions

The purpose of the Practice Sessions learning model, out of the Taubman College of Architecture and Urban Planning, is to create an immersive learning environment in which students obtain hands-on experience creating designs aimed at addressing issues of public concern, in addition to participating in workshops, or practice sessions, that are facilitated by design practitioners with expertise in the issue. Fifty students participated in two practice sessions over the course of the first year. Furthermore, significant gains were made in scaling up this model, including planning and identification of future practitioners, content themes, and marketing materials for raising awareness of the program both within and outside of the college.

Architecture students present the products of their weekend-long workshop during the inaugural Practice Sessions.

Engaging the Archives: New Partnerships and Understandings of Teaching with Primary Sources

Housed in the U-M Bentley Historical Library, the goal of the Engaging the Archives project is to provide a broader swath of U-M students with the opportunity to engage with primary historical sources. The primary method of achieving this goal is by creating a mechanism by which faculty who may otherwise not have experience with using archival materials collaborate with archivists to develop new courses. Substantial accomplishments during the first year include the hiring of an "academic archivist" to help train faculty in best practices using archived information as a tool for teaching and creating a faculty fellowship and seminar series in which seven faculty members across a variety of disciplines participated.

Re-Imagining Legal Education: Earlier Experiential Learning and Community Engagement in Legal Education

The purpose of Re-Imagining Legal Education is to provide first-year U-M Law students with an experiential learning opportunity in which they provide free legal assistance to the poor in Southeast Michigan. During the first year, a pilot of this "live-client" learning model was implemented in four of sixteen sections of mandatory Legal Practice Program courses, involving a total of 68 students. Additionally, an elective opportunity to do pro-bono work with the Unemployment Insurance Clinic was implemented, providing 48 students with over 60 hours of experience doing live-client work.

Biological Station Initiative

This project works with multiple U-M units to develop courses that include a summer field placement at the Biological Station. These courses engage students not only from biology, ecology, and climate science, but also from other environmental sciences, public health, engineering, urban planning, and art and design, as well as the humanities and social sciences. Courses include field-based research and projects focused on solving environmental problems and sustaining healthy people and ecosystems. Emphasis is on climate change impacts, the Great Lakes system, biodiversity protection and stressed ecosystems. By broadening the types of students, faculty and research agendas hosted at the Station, and by partnering more effectively with initiatives already taking place on the Ann Arbor campus, the Biological Station is poised to provide a new generation of students wide breadths of understanding across and beyond their particular disciplines, empowering them to become better informed and more effective environmental professionals.

Michigan Engaging Community Through the Classroom (MECC) Initiative

The Michigan Engaging Community Through the Classroom (MECC) Initiative intends to foster interdisciplinary collaboration amongst students in the public-oriented professional disciplines through real-world public projects that engage community stakeholders. MECC is an interdisciplinary initiative, including the Taubman College of Architecture and Urban Planning, the School of Public Health, the Ford School, and the College of Engineering. A significant achievement for MECC was the successful implementation of a cross-disciplinary project focused on revitalizing a Detroit neighborhood that housed a vacant coal plant. As of July 2016, thirty-one students engaged in this project, which spanned three courses including Urban Planning, Architecture, and Industrial and Operational Engineering. In addition, MECC has begun assessing student learning outcomes, finding that students who engage in this initiative gain skills in communication, collaboration and teamwork, coming to appreciate the role synergistic efforts can have in improving community outcomes.

Citizen Interaction Design

Out of the School of Information, Citizen Interaction Design (CID) has an overarching goal of developing a network of city governments that utilize civic technology, and the primary strategies for meeting this goal are to (1) frame design learning at U-M in the context of civic engagement, (2) develop a pedagogical structure that maximizes mutual benefit for students and communities engaged with CID, (3) develop a process for forming long-term partnerships with local governments in Michigan, (4) have a mechanism for giving students and faculty flexible funding to build learning opportunities and (5) develop a network of colleges and universities in Michigan who are interested in partnering with CID. Considerable achievements during the first year include the development of partnerships with two new Michigan cities – Ferndale and Traverse City – and a new Master's level course in the School of Information. As of July 2016, a total of 148 students were involved with CID, and several student evaluations indicate that they had a positive engaged learning experience.

Students discuss their team project as part of the Citizen Interaction Design program.

Changing the Way We Teach the Ancient World

The goal of the Changing the Way We Teach the Ancient World project is to bring history to life via active learning opportunities in which students engage with artifacts housed in the U-M Kelsey Museum of Archeology, and experience virtual travel with partners at Moscow State University and Tel Aviv University. Accomplishments in the first year of the project included piloting a joint course with Moscow State University with participation by eight U-M students, in addition to exploring a web-based infrastructure for making archeological artifacts accessible to students across campus. The *Land of Israel/Palestine Through the Ages* course has been using this infrastructure and working with artifacts through multiple visits of around 100 students each offering.

DIFFUSION OF ENGAGED LEARNING VALUES

With the TLTC initiative concluding, a preliminary study of cultural change can help gauge early indicators of success. To explore this complex construct, we drew from a variety of theoretical models.

Our approach recognizes the distinction between latent and manifest components of culture (Peterson & Spencer, 1990). Latent elements include values and assumptions among stakeholders, while manifest elements include outward behaviors and language. For the purpose of this study, manifest components lend themselves more readily to observation. Thus, we infer that faculty members using engaged learning pedagogies in the classroom (behavior) or academic units describing goals or projects using the terminology developed and espoused in the engaged-learning community (language) are indicative of a culture in which engaged learning is valued.

Cultural change, or diffusion of ideals, can be described in terms of scope, direction, and rate of adoption. A common dichotomous model of cultural diffusion indicates adoption of new values and behaviors spreading in either a "top-down" or "bottom-up" fashion (Carr Jr., 1999). Similarly, Holland's (1997) Matrix of Institutional Commitment to Service, which can be broadened to include a commitment to engaged learning in general, describes various levels of organizational commitment in which full integration is evidenced by "widespread faculty and student participation" (p.33). Given that the TLTC initiative was launched by the provost, we expect the diffusion mechanism to be in a top-down direction, and we expect to see indicators of faculty adoption of engaged learning values increasing over time. Furthermore, Rogers' (1995) rate of adoption theory suggests that diffusion begins with slow, incremental growth, followed by more exponential growth that plateaus and eventually declines. Following this model, we would expect to see evidence of an increasing rate of diffusion during the five active years of the initiative.

How Do We Document Cultural Change?

In an effort to explore the extent to which the practices and language of engaged learning have taken root across the university since the inception of the TLTC initiative, we examined the presence of references to engaged learning in University of Michigan websites and the timing of their origins as manifested evidence of change.

To begin, we used the Google search engine to identify U-M-specific websites using the phrase "umich" concurrently with 26 pre-determined words or phrases that reflect the language of engaged learning, high-impact teaching practices (e.g. "learning communities", "service-learning"), and student outcomes that were consistent with those identified by the TLTC initiative (e.g. "social responsibility", "teamwork"). We checked each website for relevance and recorded those that met the following criteria: 1) was a U-M website, and 2) represented a center, program, initiative, event, or course at U-M dedicated to one or more of these concepts (as opposed to being a word used in passing). We terminated our search for each word or phrase once a full page of the list of websites resulting from the Google search no longer returned websites meeting these criteria.

The search resulted in a sample of 184 websites. Using an online Internet-archive program (https://archive.org/web/), we then determined the approximate date each website was created, organizing them by year. Thirty-three websites were not found in the Internet-archive program, and were not included in the final analysis. With the exception of a small dip in 2016, each year since 2012 there has been a steady increase in the number of websites representing various centers, programs, initiatives, events or courses dedicated to engaged learning at U-M.

Number of U-M Engaged Learning Websites Created Each Year
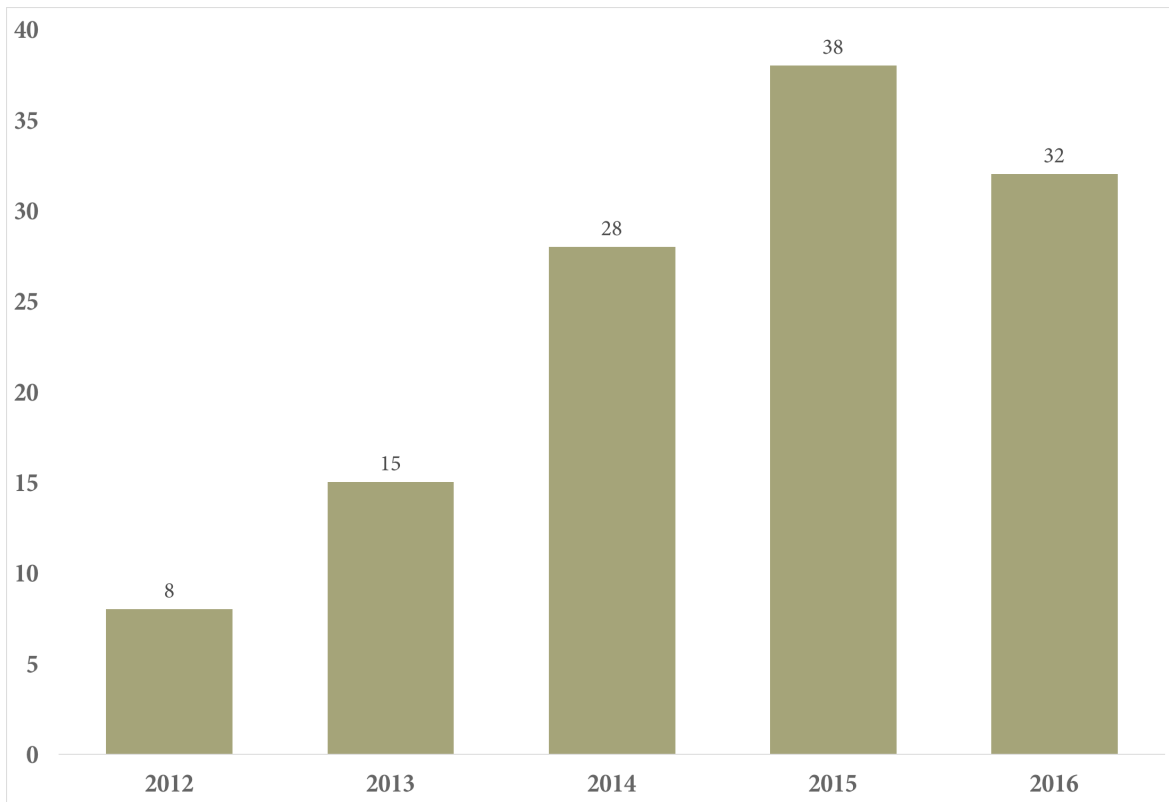
To better understand the scope of adoption of engaged learning practices and language across U-M, we then coded the websites to reflect the "level" of institutional culture that was represented, recognizing a nested relationship that corresponds to the university's organizational structure. The first was university-wide or cross-school initiatives, programs or resources (Level 1 – e.g. the Ginsberg Center). The second was a school-wide initiative, program, or resource (Level 2 – e.g. The Ford School of Public Policy Engaged Learning Opportunities), the third was a departmental initiative, program or resource (Level 3 – e.g. Undergraduate Research Opportunities in the Department of History). The fourth was a course-specific website (Level 4 – e.g. Capstone course in Stamps School of Art & Design in which students engage in self-directed projects).
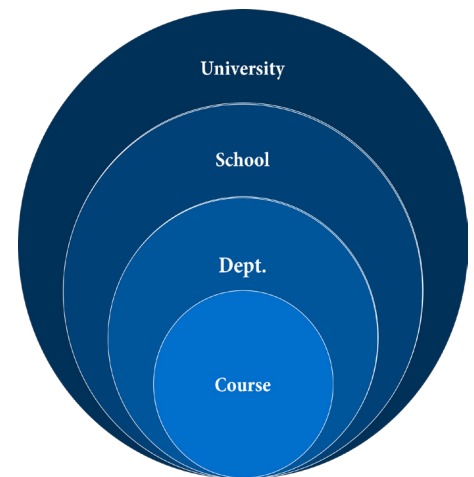
To explore how adoption of engaged learning language and concepts may have diffused over time, we then examined the proportion of each level represented by year. In 2012, when the TLTC initiative was launched, a substantial proportion of the engaged learning websites represented programs and initiatives at the university- and school/college-wide levels, with comparatively few websites representing either departmental or course foci on engaged learning. In the years that follow, there was a general trend of proportionately decreasing university-wide initiatives and programs, and proportionately increasing department and course-level foci on engaged learning. These trends are consistent with a narrative of "top-down" cultural diffusion, in which a strong commitment to and emphasis on engaged learning among university leaders may have diffused down through school/colleges, departments and individuals teaching their own courses.

Proportion of Websites at Each Level of Institution by Year Created
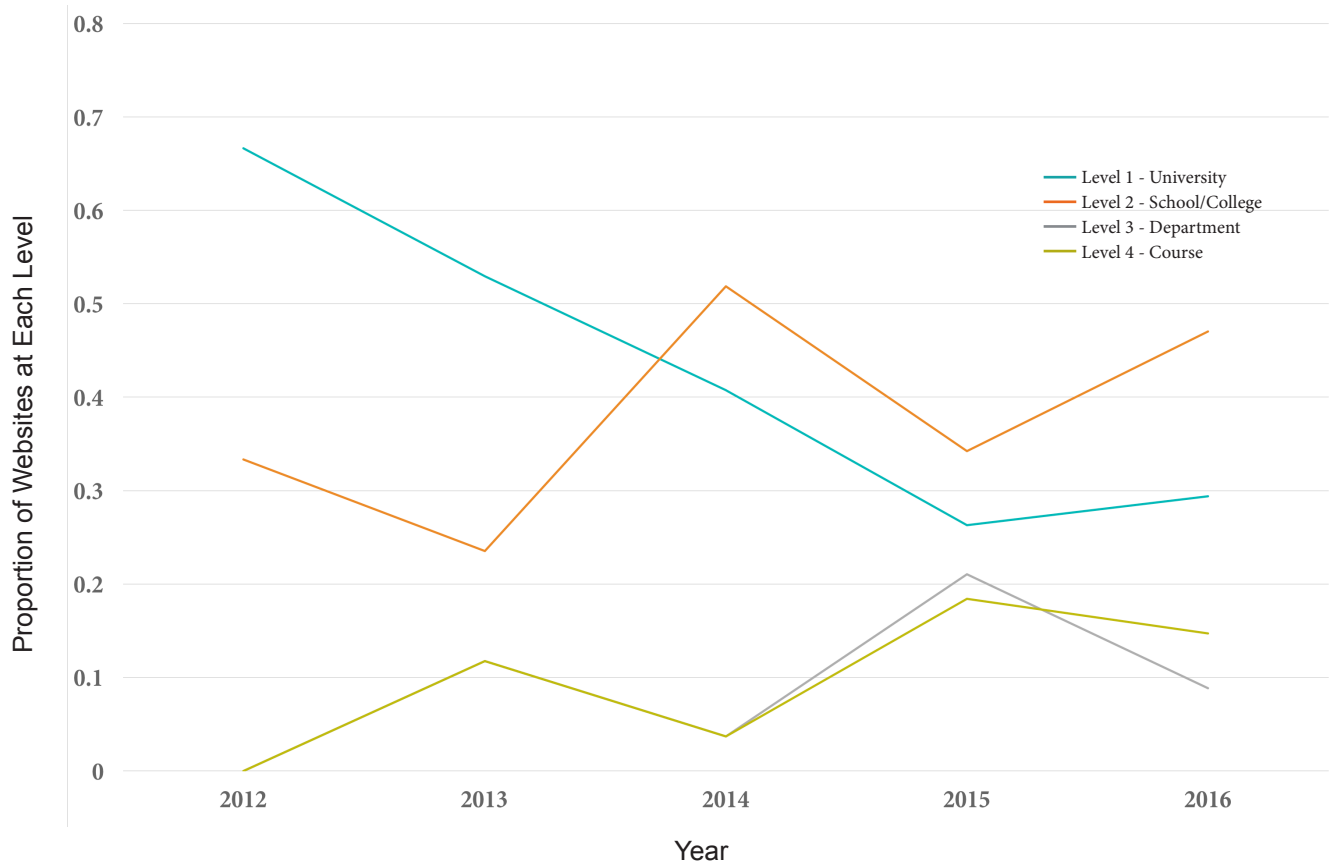
ADMINISTRATOR PERCEPTIONS OF CULTURAL SHIFTS IN ENGAGED LEARNING METHOD

In April and May of 2017, we conducted a series of 19 semi-structured interviews with deans and associate deans from all of the schools and colleges on campus, with the exception of Rackham, to learn about their perceptions of cultural shifts in engaged learning particularly within the context of the TLTC initiative. Specifically, we sought to answer the following questions:

- Have you seen shifts in the ways faculty talk about teaching and learning, particularly involving 'engaged learning', since 2012? If so, can you describe what some of those shifts have looked like?
- What are some barriers to promotion of engaged learning and how have you tried to respond to those barriers?
- Some faculty - particularly junior faculty - describe research obligations for tenure and promotion as barriers to pursuing engaged learning strategies in their courses. Do you hear this in your school/college? What ideas has your school/college considered to address these barriers?

Deans of each of the schools and colleges were recruited via e-mail, and were given the option of referring us to other administrators who could also address our questions. The majority of interviews were conducted individually, however in some instances they were conducted with pairs of representatives with knowledge about engaged learning in their units. The final sample can be found on the Acknowledgements page.

Results

Several themes emerged from the interviews. The results fall into three broad themes that roughly correspond to the questions: 1) Perceptions of shifts in teaching and engaged learning since 2012, 2) Perceptions of barriers to engaged learning, and 3) Incentivizing engaged learning.

Perceptions of Shifts in Teaching and Engaged Learning Since 2012

Virtually all of the deans and associate deans identified changes in, and examples of, engaged learning within their respective schools and colleges. That said, many deans and associate deans emphasized that engaged learning practices had already been in place and on the rise prior to the TLTC initiative. This is particularly true for the professional schools, where practice-based skills and competencies have historically demanded the kinds of experiences provided by engaged learning pedagogies. The following statements reflect these sentiments:

- That's in the space of the historic definition of the school going back to 1927 as a library school. The orientation to public librarianship, in particular, has an inevitable engaged quality to it. It can't be a public library and not be engaged, or at least not be a good public library. Those elements are always present in the mission and the curriculum of the school. (Information)
- All of the educational work we do in a professional school like Ford, especially at the graduate level, has an engaged learning element. All of our students are interacting with people from outside of the university in a wide variety of ways, both in the classroom and outside of the classroom. It's in our DNA. We probably do more of it now because there are more resources are available. (Public Policy)
- Architectural education is historically engaged. …When I read definitions of engaged learning, the studio model, which is at the core of our curriculum, often seems to be what is being described. What I lean toward is how I think even that studio environment is changing but I would say that 10 to 12 hours a week of studio encounters with faculty at no more than a 12 to 1 ratio and typically less, working on problems. Some of which are invented but a number of which are actually taken from and therefore, a form of simulated project or from the real world, or actual real-world projects, which has been a model. (Architecture & Urban Planning)
- For us, that's what we do, essentially, form our courses on experiential, all of them activity-based, problem-based, open-ended… Art and Design has shifted more and more towards what we call social practice in the arts, where artists see themselves as wanting to work, fundamentally, in communities and be relevant as artists in communities as opposed to making works that will be shown in galleries, but actually, working directly with the communities as opposed to being mediated by the galleries and the museums. Then, a greater shift towards socially engaged design, what is called socially engaged design, where again, design is as a methodology, as a framework, as a way of doing things is mobilized in relation to looking at real-world problems that are— that require the designers to understand and work in communities. (Art & Design)
- Engaged learning has existed in medical education for a century. We've always had 2 years in the clinical/ experiential setting that's been a part of medical school. Now that component is growing even more, specially over the past 5- to 6-years. (Medicine)
- All of our faculty have been doing some elements

> Engaged learning has existed in medical education for a century. We've always had 2 years in the clinical/experiential setting that's been a part of medical school. Now that component is growing even more, specially over the past 5- to 6-years. (Medicine)

of engaged learning for a number of years because we do have our field placements which are highly supervised with educational agreements, learning competencies that students must demonstrate, so there's a lot of activity through our field office where students spend one-third of their curriculum. The other thing is in all of our classes, I think that the nature of the work that we're doing requires people to have more active engagement and problem solving and challenges that they have to deal with. (Social Work)

In short, the deans and associate deans made clear that although they were not necessarily using the same terminology, shifts in how faculty talk about teaching and learning began well before 2012, as an increasing awareness of the principles of engaged learning gained traction. This influence came primarily from external sources, particularly among professional programs that require engaged learning techniques that prepare students for applied careers.

The discussions then shifted to examples of engaged learning developed within the past five years. Several participants acknowledged that while activity was happening in their units before the start of this initiative, TLTC was useful in expediting growth in engaged learning initiatives. TLTC not only provided crucial funding, but also university-level communication around engaged learning values and visibility for efforts within individual schools and colleges. Examples of these shifts range from small, subtle changes in individual faculty engaged learning pedagogies, to large, highly-visible school- and college-wide programs, centers and initiatives. While the categories are not mutually exclusive, the following examples highlight changes in the culture of engaged learning.

Shifts in Faculty Development and Support

Several deans and associate deans discussed school/college efforts to support faculty development around engaged learning in the past few years. This support ranges from creating permanent centers to aid faculty in specific engaged learning pedagogies, to fostering learning communities in which faculty can share challenges and ideas regarding engaged learning. This top-down approach has the benefit of both getting interested faculty the support that they need, in addition to communicating the value of improving teaching skills. These efforts work in concert with centralized efforts of CRLT to provide connections, resources, and ideas for implementing new learning approaches.

- There's been a real uptick in trying to get people the sorts of resources that they need to design more courses that are within engaged learning. We've certainly provided more resources for them to do it, and we created CEAL – Center for Engaged Academic Learning – really, to be able to do that…. [Engaged learning is] becoming more coherent. (Literature, Science, and the Arts)
- We've created an engaged learning club… we had about 10 to 15 faculty involved in engaged learning club who came to some or all of those sessions and so the talking about engaged learning and about active learning has increased because of that…We're about to launch a new faculty development program, a comprehensive faculty development program that's been approved by our strategic planning committee—and the leadership of the school. (Dentistry)
- We have started a series of faculty-centered events to start these conversations about engaged learning and active learning, so that's been going on for at least three years. In response to that, we have seen more of an uptake in these practices. (Kinesiology)

Shifts in Faculty Recognition of and Interest in Using Engaged Learning Pedagogies

Several schools and colleges are now actively cultivating and supporting a culture of engaged teaching. A common theme is more intentionality among faculty members in incorporating engaged learning in their

classrooms. In some cases, this has already materialized through experimentation with engaged learning, while in others there has been evidence of piqued interests that may materialize in the near future.

> What I've seen different in the classrooms is that faculty now have a name for what they're doing and they are thinking strategically about how they're using different types of activities, different types of learning models within their classroom. So I think the change has been not so much that we hadn't been doing it before, but now it's much more deliberate, and I think that faculty are able to talk more about the change they see in the work that they're doing with students. (Social Work)

- The presence of that project [Michigan Sustainability Cases] in the school has motivated, I think, some people to engage the case method in ways they might not have. It has motivated, to some extent, as was intended, I think, the reconsideration of what a case is, and the interactivity of cases, and the value of online portal/platforms for enlivening the case method. We've had both some faculty who have done cases, having their interest piqued, at least, by the potential of a platform, and also, faculty who may have been on the cusp, or interested in engaging with cases getting very deliberately involved in the case method. (Environment and Sustainability)
- Engaged learning pedagogies have been the foundation of the Law School's clinical program for many years, but more recently, engagement by doctrinal faculty has increased with the launch of our new interdisciplinary Problem Solving Initiative (PSI). The PSI provides a platform for the development of innovative solutions to difficult societal challenges. The Initiative's classes require an entirely new type of teaching as they bring together small groups of graduate and professional students from several of U-M's schools and colleges. In PSI classes, faculty team-teach across disciplines and focus on helping students learn problem solving skills and how to collaborate with those from different disciplines. In addition, because the students are focused on solving real-world problems and make real-time decisions regarding next steps as new information is obtained, the classes require continual evaluation and adjustment throughout the semester by faculty. (Law)
- What I've seen different in the classrooms is that faculty now have a name for what they're doing and they are thinking strategically about how they're using different types of activities, different types of learning models within their classroom, so I think the change has been not so much that we hadn't been doing it before, but now it's much more deliberate and I think that faculty are able to talk more about the change they see in the work that they're doing with students. (Social Work)

Shifts in Existing Curricula and Course Structures

While many of the previously described shifts in engaged learning pedagogy are specific to individual faculty members making small changes in their courses and activities, broader shifts in pedagogy have also taken place at the school/college level through revised curricula and changes to standardized course structures.

- Some of our other courses are also case-based courses that aren't quite structured as strictly as team-based learning. One of the courses I teach is kind of a clinical skills course. It's in the first year, where students learn how to do a drug therapy assessment, write a care plan and then write a note that would go into a medical chart. They learn from the beginning how to read this case, how to pull out what they need to get out of it. Then they learn a little bit about the drugs and how they can assess whether there are drug interactions, wrong doses, side effects going on, all kinds of things like that. [Students do that]

again in kind of a team format. The students…work together on cases. We teach it, they try it, then they have to do it for a…graded assignment and take it home. (Pharmacy)

- Now, increasingly, in the revision of the curriculum, the second-year experience for master's students culminates in a capstone course that's explicitly oriented to a sponsoring client. It's a little bit like the MAP (Multidisciplinary Action Projects) courses at the business school. The students would really be quite independent in terms of addressing the needs of the client, and the faculty member is there really to be a coach, not a guide. We have the same structure in our undergraduate curriculum. At the culmination of the two-year degree, the students do a capstone experience that is similarly engaged with an external client of one kind or another, for-profit, non-profit, government. In the course of meeting the needs of those clients, they are exercising all of the skills and techniques that they've learned elsewhere in the curriculum. (Information)
- We've embarked on a complete transformation of curriculum where students spend time in the engaged setting from day 1 through year-4, and they have more active learning in the classroom setting from day 1 through year-4. Rather than 2 (classroom) plus 2 (clinical), we've now developed a blended approach where you have more emphasis on the classroom early on, but it is more active and engaged, and keeps going throughout the 4 years. Similarly, clinically engaged experiences start early on, and then keep growing. It's become a different kind of model than had existed for 100 years. (Medicine)

Creation of New Courses, Centers, Programs and Initiatives

In addition to revamping existing courses and curricula to align with engaged learning ideals, several deans and associate deans described new opportunities for student engagement that aligned with TLTC. Many of the newly established engaged learning opportunities were aimed toward community collaboration and engaging with stakeholders outside of the university.

> We've created the Center for Experiential Learning and Assessment, which includes 30 patient examination rooms where medical students gain experience using standardized patients and simulation exercises. (Medicine).

- New engaged learning opportunities at the Law School include The Detroit Litigation Advocacy Workshop, supervised jointly by Professor Julian Mortenson and adjunct faculty member Eli Savat, who also serves as senior advisor and counsel to the Mayor of Detroit. This project allows students to explore affirmative litigation opportunities for the City on behalf of its citizens. In this instance, the project affords an opportunity for faculty members to more actively engage in the practical experience that is closely connected to (or an extension of) their research and doctrinal teaching. Similarly, Professor Michael Barr, in a project spawned from a grant he received from the J.P. Morgan Chase Foundation, brought together multidisciplinary teams of law, business, and art and design students to work with entrepreneurs in the City of Detroit. (Law)
- We have some new areas that we've developed curriculum in, and in those areas, lots of engaged learning, especially EXCEL which is Excellence in Entrepreneurship Career Empowerment and Leadership. In that area, we're delving into entrepreneurship, where you think that innovation and where students are out in the community doing things…The one other area, I would say, is our Michigan Artist Citizen Program. Where you have students out in the community, learning to be artist citizens. (Music, Theatre & Dance)
- Certainly in the College of Engineering, I think our Multidisciplinary Design Program is a really good example of that, where we have projects that are either sponsored by industry or—and now, in the last few years, we've actually had faculty members sponsor projects based on their research needs—- so a piece of instrumentation that needs to be built or something to conduct research, why go outside and build it—have it built by a vendor? Why not have our own students work on it? We've expanded

to include teams of undergraduates who work with master's students. The point is that when there's a sponsor, it's not just in terms of the idea. There's actually an individual who is essentially a liaison between our student teams and the sponsoring organization—again, be it internal or external. I think our students get a really great learning environment. (Engineering)

- Also, the other thing that we have a very large growth in over this because of the new building is simulation…We have a center for learning in our school which is the whole bottom floor. It is simulation that's used at every level, but hugely for our undergraduates. Remember, nursing is a clinical discipline. All of our students have courses which engage psychomotor skills as well as cognitive skills, and so where simulation is particularly useful is training and evaluating and deepening all those psychomotor skills, whether that's learning to deliver a baby, or give an injection, or CPR, etc. (Nursing)

- We've created the Center for Experiential Learning and Assessment, which includes 30 patient examination rooms where medical students gain experience using standardized patients and simulation exercises. (Medicine).

This Team-Based Clinical Decision Making course brings together more than 300 students from Pharmacy, Dentistry, Medicine, Nursing and Social Work.

Perceptions of Barriers to Engaged Learning

While schools and colleges have made great strides in advancing engaged learning practices, the deans and associate deans identified several interrelated barriers to this work. A core theme that emerged was the labor-intensive nature of engaged learning – both in terms of time and money. The deans and associate deans perceived engaged learning as more expensive and demanding for faculty than teaching methods such as traditional lecturing. The most commonly cited barrier is the perception that instructors lack confidence or knowledge about implementing engaged learning practices. Faculty members do not receive substantial training on how to implement engaged learning pedagogies. This contrasts with the faculty's extensive preparation to conduct research. Another frequently cited barrier is the logistical burden associated with engaged learning, such as off-campus travel and partnership management. Piloting new projects and managing student learning in uncharted territory strain faculty time and could potentially be mitigated with funding for dedicated staff positions. Finally, the role of research obligations – particularly prior to achieving tenure – were frequently noted as influencing faculty members' ability to spend more time developing their capacity to use engaged learning techniques. The following examples illustrate key perceptions of barriers to engaged learning.

Time and Money

There was broad agreement that increased resources could support faculty involvement in engaged learning.

- Well, the principal ones [barriers] are financial because usually these programs are quite intensive in

terms of their support expectations. The faculty are not going to call up the clients and negotiate all the placements, for example. Somebody has to do that. We have been paying for that, and of course, that comes out of our general funds, that's out of our operating. One could do many things with that money, and I don't think it's a bad thing to do this… I'd say that the second barrier is it's difficult to raise funds. (Information)

- One of the biggest barriers is time. Time for faculty to learn how to do it—time for to then develop or change the pedagogy and existing courses and then the clear and explicit rewards for them to spend the time on that instead of something else. Those are the biggest issues, and so time can be addressed using money but also finding someone else to cover functions that they have to do, that they would normally have to do to allow them, free up the time for them to be able to engage in this. (Dentistry)
- Depending on which level of engaged learning we're talking about, we're always pursuing better connections for the students, especially the community connections and also connections for our faculty. The faculty are often the ones who are developing those relationships in order to then bring students into those situations. Whether it's a local kind of engagement or an international kind of engagement, we're always trying to stay just a little bit ahead of the need so that we can set some opportunities in hopes—if we have ten opportunities out there, hopefully, five will get picked up and run with. That takes time. It takes some financial support. (Art & Design)

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Faculty Socialization, Knowledge, and Confidence in Using Engaged Learning Pedagogy

The deans and associate deans noted that faculty who are recruited to a research university such as U-M frequently arrive with little or no exposure to teaching practices beyond what they previously experienced as students. For many faculty, this may result simply in a lack of awareness of new approaches and benefits. Other faculty may have awareness of new approaches without the support needed to do them well. A corresponding fear of failure can also contribute to avoidance of adopting new practices.

- A lot of people have a lot of trepidation about doing it. They feel like they don't know how to do it. I don't think we're trained very well to be able to do it right, so I think it's really a resource and capacity question. (Literature, Science, and Arts)
- There are many different forms of engaged learning. The Law School's clinical faculty members have been deeply reliant on the pedagogy for many years, and our doctrinal faculty have used the Socratic Method since its inception as a common teaching practice in law schools. But one issue for moving to different engaged learning pedagogies, such as that in Problem Solving Initiative classes, is mindset. It's challenging for a faculty member who has successfully achieved positive learning outcomes by teaching in a particular way for many years to say, "Let's go teach in a completely different way!" (Law)
- We all know how to give a lecture because that's what was done to us. Particularly, in order to get a job

here, we do research. We don't have the training, typically, and so sometimes even just release time won't address this issue of, what are the best practices? (Kinesiology)

- When you change your way of teaching, you need to develop new skills, and so it's more around it looked like it would be something easy to do and they get caught in the fact that, while I may understand how to do the steps, I may not know necessarily how to handle the discussion or the conversations or when there's splitting that goes on, when there are challenges that surface in the classroom. (Social Work)
- Getting people to think out of the box. The ability to make courageous decisions and sometimes living with failure and just coming back and picking yourself up and doing it. For each of these signature learning experiences, the first time we offered it, it was difficult. (Business)

Logistics – Planning, Travel and Partnership Management

There are significant logistical challenges to creating engaged learning opportunities, including managing partnerships across departments and within stakeholder communities and making travel to off-campus sites accessible to all students.

- There's challenges, additionally, I think, in—and this is related to time, but just logistics of it. For example, getting students out into the field, if we want to incorporate field learning into the classroom. You've got to have vans. You've got to have licensed drivers. You have to have certain sort of training, driver training, and things that just take a lot of effort. We have had continuous use of that method in the school, so there's experience with it, at least, but it's a bit of a barrier (Environment and Sustainability)
- I'd say that for us, distance is always an issue. Architecture is focused on the built-in environment and we're typically trying to work on or in particular sites. The difficulty in getting to Detroit is just a major hindrance for any studio or course-work that's done there. For students or faculty. I mean, plenty of our students have cars, it's just there's a distance and it's not around the corner. (Architecture & Urban Planning)
- The biggest thing is transportation to sites and particularly our tertiary partner schools. Our interns have to drive there themselves. Whether they're undergraduates, master's, master's in the academic program, PhD students, they all have to get there on their own. It's very costly. I just actually read a memo…from our student advisory board, saying these costs are prohibitive. (Education)

Tenure Requirements and Value of High-Quality Teaching at U-M

The tenure process at a research university such as U-M weighs in the cost-benefit analysis individual instructors make when deciding if and how to pursue engaged learning strategies. Several deans and associate deans noted that the increasing U-M emphasis on teaching is positive for students, but demanding for new faculty and potentially at odds with research standards and tenure decisions. These challenges may influence the types of faculty and staff who pursue engaged learning at U-M.

Increasing Emphasis on Teaching

- We have faculty members who really care about being good advisors of graduate students, but also being good classroom teachers for undergraduates and graduate students. What I see is that we also shield them as leaders—especially the department chairs—so that they can focus more—especially when they're pre-tenure—on research and teaching. (Engineering)
- We do value teaching excellence very highly at the Ford School. (Public Policy)
- Teaching is very highly regarded in the school. We have people who have gone up for promotion and tenure who have pretty good research trajectories, but their teaching evaluations are not good, and they did not move forward with the promotion. (Nursing)

- I will say that I think that over the last few years, there has been a higher value placed on teaching. We have this process where we review all faculty. The dean and a couple of us are on the salary committee, and look at each faculty member individually and look at their performance, and rate them, and all that, after the department chair submits their report, to kind of look at the college overall as a whole. …. I have watched a higher emphasis on teaching happen. Teaching quality, basically, is paid attention to maybe more than in the past. I think there is this emphasis of trying, in those kinds of a merit situation or evaluation situation, trying to weigh and value teaching more equally with the other things. (Pharmacy)
- It does take lots of time, yet at the same time we have a culture that also values teaching excellence. (Business)

Research Obligations for Pre-Tenure Faculty Remain High

We do make research a priority here for our tenure track faculty, and so many of the engaged learning experiences that we have are staffed with a combination of senior tenure track faculty, junior tenure track faculty, and lecturers, and so that the time and energy and resources needed can be spread across people with the lecturers and the senior faculty taking the lead. (Business)

- There are many demands on time. For our junior faculty, they view research productivity as their key obligation, at that point. That said, in some cases, junior faculty have been the most open to innovation, seeing the value—a) having not necessarily established their teaching portfolio, such that they are comfortable with the way things are going, and b) seeing the value in innovating, and trying out new things, to see what actually works. (Environment and Sustainability)
- Broadly speaking, the increased expectation around teaching, which in some sense, is testimony to the success of CRLT and the Provost's Office in promulgating a belief that teaching is an important thing. They didn't reduce the level in anything else… Research pressure, we're not giving anybody any breaks. We didn't say "you should do more engaged learning, and by the way, you can publish one less paper a year." We never said that. It's sort of like the pre-tenure faculty were at "DEFCON 1" on research already. Then we gave them an out in the old days, where we said, well, the only thing that's really important is that you get the research done, and teaching, there's kind of a satisfaction level that you need to meet. Now, starting about 15, 20 years ago, we said teaching has to be at DEFCON 1 too. (Information)
- For people to spend the time to go over and above to learn about new styles, new techniques, to get trained in new methods really would be an investment of their time that could be viewed, I suppose, as going against their research, and could compromise things a little bit. I could imagine—I've not been a department chair, so I don't want to put words in their mouth. I could imagine a department chair and a faculty members' early years saying, "You're doing okay. I'd rather have you focus on your research program now." You know, and I think that's sort of where we are at the university, and probably as a whole. (Pharmacy)
- My take on it right now is that the people who are doing it fall into three buckets: already tenured, not on the tenure track, and confident enough in their research that—they're up for tenure in the next year or two, and they're feeling, really, good about it. That would solve it.

They can afford a little—A little wiggle room. (Kinesiology)

- We do make research a priority here for our tenure track faculty, and so many of the engaged learning experiences that we have are staffed with a combination of senior tenure track faculty, junior tenure track faculty, and lecturers, and so that the time and energy and resources needed can be spread across people with the lecturers and the senior faculty taking the lead. (Business)

Incentivizing Engaged Learning

The deans and associate deans described a variety of incentives for engaged learning. Several noted the influence of student expectations on faculty members' intrinsic motivation, which has been a particularly strong influence among early adopters. Others discussed ideas such as breaking down barriers to engaged learning via accommodations to course loads, persuading faculty to make changes incrementally, recognizing and awarding strong teaching, encouraging scholarship of teaching to align with research productivity, hiring expert staff, implementing formal structures to help navigate logistics, and fostering a climate in which faculty can take risks in teaching without fearing failure. The following examples illustrate the scope of these ideas:

Intrinsic Motivation and Meeting Student Expectations

Several deans and associate deans noted that, while not formally incentivized, adoption of engaged learning pedagogy in the classroom is often driven by the personal gratification that instructors attain, particularly when their students' learning outcomes and feedback positively affirm the value of their work.

A laboratory extension at the Biological Station gives students hands-on experience with population and community ecology, molecular evolution and insect-plant chemical interactions.

- The more interesting you make the classroom experience, the better the teaching goes for all of us. We all want that. But it's a struggle to justify investing in classroom innovation. None of us is going to give up our research agendas - not just because of promotion and tenure, but because our research is important to us. It's important to the university. I think we all want to make this the best teaching experience, both for us as faculty and for our students, because there are all these positive externalities. You have a good class, and everybody leaves happy. Then the rest of your day goes better. (Public Policy)
- To the extent it's happened, it's been because of the initiative of faculty and it's probably happening with faculty who are more inclined to want it, for whatever reason, in their own personal experience or their interest. They're willing to be adventuresome. The reward I can offer them is it will be a better learning experience for your students. (Architecture & Urban Planning)

Course Load Reduction

A few deans and associate deans mentioned departmental strategies aimed toward reducing the amount of time spent on faculty teaching and preparation so as to free up more time for development of engaged learning pedagogies.

28

- We have a portion of our teaching requirements, teaching load requirement, that includes engagement with the master's projects, our engaged learning projects. We have said that if faculty engaged with the case studies at a minimum level they can fulfill that course requirement. We set specific parameters. They have to develop a new case. It can't be based on an existing one. They have to use the case in the classroom. They have to evaluate the case— If they do those things, they can count it as part of their instructional load. (Environment and Sustainability)
- Some departments have been very good if a faculty member is spending time to revamp part of the curriculum to change the pedagogy, they will give them release time for that—- and we can hire adjuncts in to cover clinic and they come in a much lower cost. (Dentistry)
- We try to assign them courses that they can teach more than once so that they're not having to have new course preps all the time. We also try to provide a faculty mentor who is teaching similar courses as the new faculty would be doing so that they have someone that they can relate to around their instruction or teaching. (Social Work)

Encouraging Incremental Changes

Another strategy for breaking down barriers is encouraging instructors to incorporate small, manageable changes within their classrooms rather than taking an all-or-nothing approach.

> Working with people to make it more possible to be able to do this, to say, "Look, this doesn't have to take up every bit of free time that you have. You can make small shifts. There are different things that you can do to at least introduce some of these techniques into courses." We try and take that seriously, and acknowledge [engaged learning]. (Literature, Science and the Arts)

- Working with people to make it more possible to be able to do this, to say, "Look, this doesn't have to take up every bit of free time that you have. You can make small shifts. There are different things that you can do to at least introduce some of these techniques into courses." We try and take that seriously, and acknowledge [engaged learning]. (Literature, Science and the Arts)
- Another way of lowering costs is providing information and just sending social signals about, "This is a cool thing to do. It's really fun. It's worth the risk. It's worth the time. You should try this." We did have several lunches that were trying to do exactly that. Just introduce people to these smaller, more manageable ideas. (Public Policy)
- We've begun advocating a little bit more for faculty to do just an assignment. It might just be a couple weeks within a longer course that somehow takes advantage of connection with the community somewhere. It's a lower bar that needs to be reached in order to just get some of that flavor into a course that might not otherwise have any of it. Also, to make sure that we're not relegating that all to certain courses, but not other courses. (Art & Design)

Combining Research with Teaching

Another method for incentivizing engaged learning was to encourage faculty members to contribute to the scholarship on learning and teaching so that engaged learning techniques could be documented and published as research, thus mitigating the research/teaching tension barrier by efficiently doing both in tandem.

- Our research and our practice are kind of intertwined in some ways. A lot of our faculty study learning to teach. Their research is actually interrelated with what they are teaching. It can be really synchronized in a way that probably isn't true for a physicist. (Education)
- We're fortunate in urban planning that the urban or regional planning profession has a strong sense of civic engagement. I'm a big proponent of the idea of public scholarship. Find ways to integrate your research and your teaching and your public service so that you're double counting, if you will. If you can get students working on projects that help the community do a plan that's useful to them, you've now linked student learning with public service. At the same time, you've learned something from that that you can feed into your research agenda. You've triple counted all of those things. (Architecture & Urban Planning)
- It's really important for us to also value engaged learning scholarship and if we do that, it makes it not so separate. While they may have a knowledge area that they're building and they're becoming the experts on, they also have an instructional knowledge piece that they can also add. I think if we value that more in the ways that we look at promotion and tenure, the more likely people will see that it's worth spending that time to learn a new technology or to do something different. (Social Work)

A general chemistry lab is transformed through an environmental focus at the U-M Biological Station.

Hiring Staff Assistance and Implementing Formal Structures

A final method for incentivizing engaged learning was creating a centralized mechanism or point-person aimed toward offloading time-consuming logistical tasks from faculty.

- The PSI has a small staff that, along with me, handles all the logistics around managing the student application and registration processes; organizing capstone presentations (including travel and organizing prep material for judges); structuring and scheduling student training sessions in problem solving, program evaluation, and communication; coordinating team-teaching, student team building, and student evaluation support with our CRLT consultants; and, in conjunction with the Law School's communications team, advertising upcoming class offerings to students. These are the sorts of things that could take up a lot of an individual faculty member's time, and we want to avoid that. (Law)
- The Ross Integrative Semester has a person who that's all their job is to coordinate all the faculty work, the learning experience with the faculty. That's been one of the things, the costs associated with it, is that traditional staffing and secretarial support was not trained for this engaged learning and what the faculty needed. (Business)

Summary

As a whole, the deans and associate deans noted that while engaged learning pedagogies existed within their units and curricula, the TLTC initiative stimulated the more rapid development of new programs, courses and centers aimed at increasing student opportunities for engaged learning since 2012. Barriers to adopting

engaged learning practices include balancing the palpable increase in the value of teaching with faculty research obligations. Additional barriers include a lack of knowledge and training in engaged learning techniques, as well as logistical hurdles involved in planning and sustaining campus and external partnerships. A common thread was the role that both money and time play in mitigating these obstacles. Despite these barriers, the deans and associate deans also described a variety of creative ways in which they are actively shifting the culture in the direction of engaged learning.

INSTITUTIONALIZATION OF ENGAGED LEARNING IDEALS, ADDITIONAL EVIDENCE

Looking beyond School/College initiatives, we found further evidence of the spread of engaged learning language and ideals in how data on learning outcomes are being collected, how the U-M advertises its strengths to prospective students and peers, and how funding allocations are being prioritized within various units. The following examples highlight this trend and indicate that a number of offices outside of the purview of the initiative are adapting similar goals and language for engaged learning:

- In 2017, the University of Michigan About You (UMAY) survey, which is administered biannually by the Office of Budget and Planning, started asking students six questions about experience with "high-impact practices" and five questions about their personal growth in the learning outcomes identified by the TLTC initiative, including creativity; intercultural engagement; social/civic responsibility and ethical reasoning; communication, collaboration and teamwork; and self-agency, and the ability to innovate and take risks.
- The Victors for Michigan fundraising campaign, which aims to raise $4 billion, has identified three priorities for funding, one of which is engaged learning. Specifically, their mission states a goal to "Transform the Michigan education by extending academic excellence from the classroom into real-world experiences that develop students' global purview and creative, entrepreneurial mindset".
- The World Class campaign initiated by the President's Office, which aims to highlight some of the best teaching and learning that is going on at U-M, has identified five key areas that overlap with the learning outcomes identified by the TLTC initiative, including collaboration, civic engagement, innovation, global reach, and creativity.
- Engaged Michigan has become a prominent feature of the university, particularly as a focus on scholarship and service for society. The university highlights the effort towards providing graduates with the capacities they need to address contemporary societal problems, and faculty with the support they need to engage in cutting-edge interdisciplinary scholarship that creates both ideas and action that improve human communities from the local to the global.
- The U-M bicentennial identified several themes in celebrating its history and looking forward to future goals. Among those themes is a focus on Teaching Powerfully, which highlights the importance of engaged learning, stating, "From early, experimental curricula in the 19th century to 1960s teach-ins, and more recently field courses, unique research opportunities, engaged learning and international experiences, the University values itself as a place where students can "burrow in" and "broaden out" — a vital combination."
- The Teaching Evaluation Question Catalog is overseen by the Registrar's Office and includes a number of pre-written evaluation questions that instructors across campus can include on their own teaching evaluations. As of winter 2017, it now includes 18 additional questions that instructors can use to assess learning outcomes specific to the engaged learning goals of the TLTC initiative, including, among others, the extent to which the course:

  - "…increased creative abilities"
  - "…increased ability to innovate"

- "…increased ability to effectively collaborate with others"
- "…increased ability to engage in intercultural settings" and
- "…increased ability to consider ethical implications of complex issues"

- Grants programs that have been administered by the Center for Research on Learning and Teaching (CRLT), including the Investigating Student Learning (ISL) grants and the Gilbert Whitaker Fund, focused their funding priorities on improving and assessing engaged learning outcomes during the 2016/2017 academic year. More generally, units across campus working with CRLT on curricular design, pedagogical skill development, and assessment to foster adoption of engaged learning pedagogies.
- In 2015, the U-M Library System implemented the Student Engagement Program, which emphasizes that, "As an academic hub for all disciplines, the U-M Library is committed to actively engaging with the campus community to extend learning beyond the classroom. The Student Engagement Program provides and supports transformative student experiences, enabling practical opportunities for students to explore, experiment, create, lead, and reflect — capacities and skills that are critical to addressing 21st century problems in any field."
- Beginning with students graduating in the Fall 2016 semester, all graduating seniors are required to complete a Graduate Exit Census, which asks students about their exposure to a variety of high-impact learning experiences, including research, creative work, international experiences, civic engagement, internships or projects, and entrepreneurship. In Winter 2017, a subset of students also received a set of deeper probing questions in the Engaged Learning Feedback (ELF) survey, which prompted students to more fully explain the nature of their engaged learning experiences and aims to identify potential barriers students face in pursuing them. Following Winter 2017, the ELF questions are now rolled into the broader UMAY survey.

Student Level Data

A diverse group of U-M students participated in TLTC funded experiences. More than 10,000 (48% female, 52% male) students were impacted by TLTC-funded programs, 27% of those students experienced more than one of these funded opportunities. Here, we examine information from the 44 TLTC grant funded projects that provided student data in their 2015-2016 year end reports.

Assessing Change in Learning Outcomes

In addition to looking at data provided by 44 of the TLTC projects, we also looked at several secondary sources of data in an effort to capture student learning outcomes related to the TLTC initiative. The primary theory of change driving the Transforming Learning for a Third Century Initiative is that it will have shifted the teaching culture at U-M such that students across campus would see gains in the five student learning outcomes associated with engaged learning. The previously documented challenges associated with assessing culture are similar to those associated with assessing student outcomes. Ideally, the goal of the study would be to ascertain whether there have been changes over time in student learning outcomes that are consistent with the TLTC initiative implementation timeline, however efforts to pinpoint causal mechanisms are complicated given the size, scope and decentralization of both the U-M student population as well as the implementation of the initiative itself.

The TLTC initiative did not set out to directly collect data on student outcomes, nor were there common requirements for grantees to collect data on their individual projects. As a result, we decided to leverage existing secondary data sources that were previously available at U-M. We originally intended to use data from the U-M Asks You (UMAY) undergraduate survey. However, UMAY is collected only biannually and did not align with the implementation of many TLTC funded projects. Instead, we collaborated with The Division of Student Life,

which has been collecting data on assessing U-M students' integrative learning outcomes since 2010. Integrative learning concepts stem from the same theoretical background and thus overlap substantially with engaged learning, which allowed us to leverage this data as a way to understand possible influences of the TLTC initiative on engaged learning outcomes. We worked with Student Life to conduct secondary data analyses to explore whether there have been changes across cohorts over time. As we will discuss later in this section, these survey data seem to indicate that there was a large jump in pre-post gains among students in the 2016 cohort – the second year in which TLTC-funded opportunities were being implemented – as compared to students in the cohorts in the previous five years.

Proportion of Students by Academic Level

- Freshman — 18%
- Sophomore — 34%
- Junior — 23%
- Senior — 14%
- Graduate — 9%
- Unknown — 2%
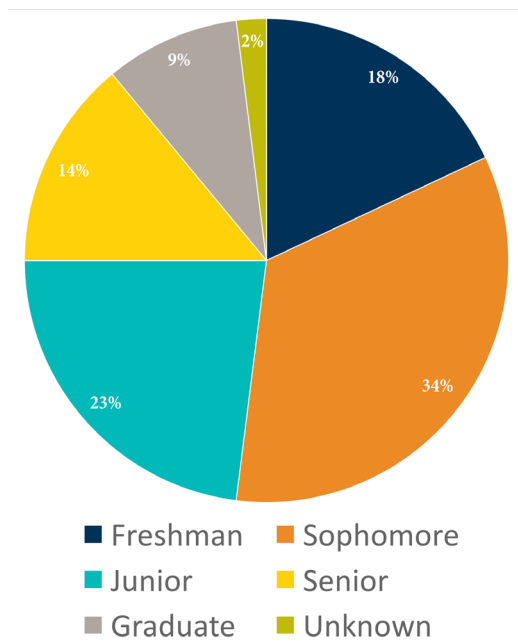
Proportion of Students by Ethnicity

- White — 60%
- Asian — 20%
- Unknown — 8%
- Hispanic — 5%
- Black — 4%
- Other — 3%
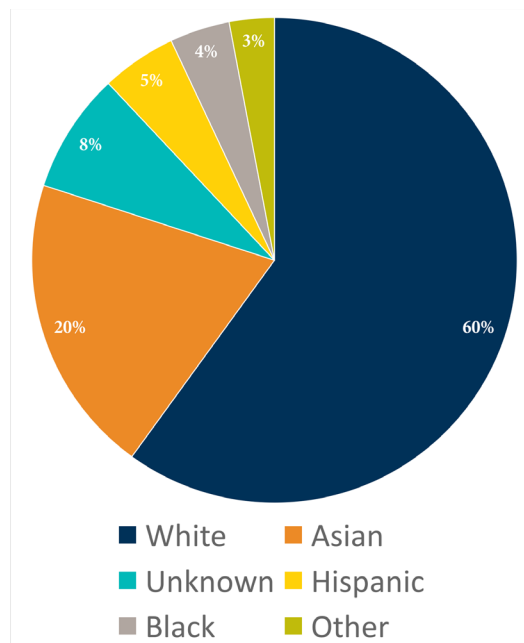
BACKGROUND OF THE STUDENT LIFE INTEGRATIVE LEARNING MODEL AND DATASET
BY DR. AMANDA KAREL AND MATTHEW DEMONBRUN

Prior to the implementation of the Third Century Initiative, Student Life engaged in significant work around integrative learning including the development of an integrative learning pedagogy, student learning outcomes, and a pre- and post-test methodology for assessing impact. Since the 2009-2010 Academic Year, with the launch of a proof-of-concept inquiry, the integrative learning initiative that utilizes reflective pedagogy and ePortfolio tools has reached over 4,000 students and has been offered at 22 University of Michigan sites, ranging from specific courses to cross-curricular programs. In addition to sites and courses within Student Life (e.g, ALA 171), the Student Life Integrative Learning Research Team has collaborated with six other areas outside of Student Life (Academic Affairs, Ross School of Business, School of Education, College of Engineering, LSA, and School of Social Work) to develop 18 integrative learning sites reaching over 2,500 learners (2016-2017 End of the Year Status Report).

Integrative learning, which is founded on theories of student development (self-authorship, Kegan, 1982, 1994, Baxter Magolda, 1998; reflective practice, Schön, 1983; adaptive expertise, Holyoak, 1991), is an integral part of how students develop and change during the college years. It involves students making sense of and integrating what they are learning across classrooms, co-curricular activities, community work, research, and informal peer interactions. Through the integrative learning process, students increasingly take responsibility for their

own learning, apply academic knowledge to real world problems, and contribute to the larger society – learning outcomes that clearly correspond to those identified by the TLTC initiative, such as social/civic responsibility and self-agency.

Integrating learning across contexts and time is not an automatic process (Taylor, 2011; Huber & Hutchings, 2004). Rather, students need to be given opportunities to develop and practice this skill by creating intentional opportunities for students to reflect on and give meaning to what they are learning across their educational experience – inside the classroom, during co-curricular activities, through research experiences and service to the community, as well as informal peer interactions.

To this end, U-M's Student Life has developed an integrative learning pedagogical tool that uses reflective pedagogy and e-portfolio technology (i.e., the Mportofolio) as a tool for reflective learning. AAC&U has identified e-portfolios as a high-impact practice. As part of this pedagogy, students complete six core activities that are designed to teach students "the tools of reflection" (Taylor, 2011) by guiding them through: the identification of and reflection on key learning experiences; an examination of how learning experiences have affected their overall development; the articulation and documentation of their tacit knowledge; the exploration of their values, beliefs, and motivations; the synthesis of their learning into key themes; and the development of connections to and growth on specific student learning outcomes. This reflective and generative process is documented within their Mportfolios, which includes descriptions and evidence of their learning, meaning-making, abilities, and accomplishments (Peet, et. al.).

## Descriptive Data for Participants by Academic Year

To assess students' progress on integrative learning, over the last eight years Student Life has developed measures and refined a pre-post survey instrument with 24 items for which students are asked to indicate their level of agreement. Originally a 36-item measure, it has been reduced, based on factor analysis, to 24 items that comprise six reliable scales. The six dimensions of integrative learning, as well as a brief description and the measures in each dimension are as follows:

1. Collaboration across difference – Students are able to work with and learn from others, whose identities may differ from their own, to accomplish goals and solve problems.
2. Demonstrate knowledge – Students are able to discuss their learning, integrate new information, and apply learning across contexts.
3. Identity and perspectives – Students can explain how their social identities and experiences shape meaning-making and ethical decision-making practices.
4. Motivation and purpose – Students can identify and discuss their values and beliefs that shape their learning, behavior, and professional goals.
5. Reflective and relational learner – Students reflect on their personal expectations and the expectations of others for their learning and growth. (2014-2015 End of the Year Status Report)
6. Digital Professional Identity – Students understand the need to develop an appropriate digital identity and to share it with particular audiences.

Based on data collected from approximately 4,100 students since the start of the 2009-10 academic year, students who have participated in the integrative learning process through the meaning-making pedagogy and MPortfolio tool have experienced significant gains in all six aspects of integrative learning (i.e., collaboration across differences; demonstrate knowledge; digital professional identity; identity and perspectives; motivation and purpose; reflective and relational learner). The following figure presents the mean score for each dimension on the pre-survey and the post-survey, collapsed across eight years, illustrating the significant changes students experience.

Change From Pre-Survey to Post-Survey
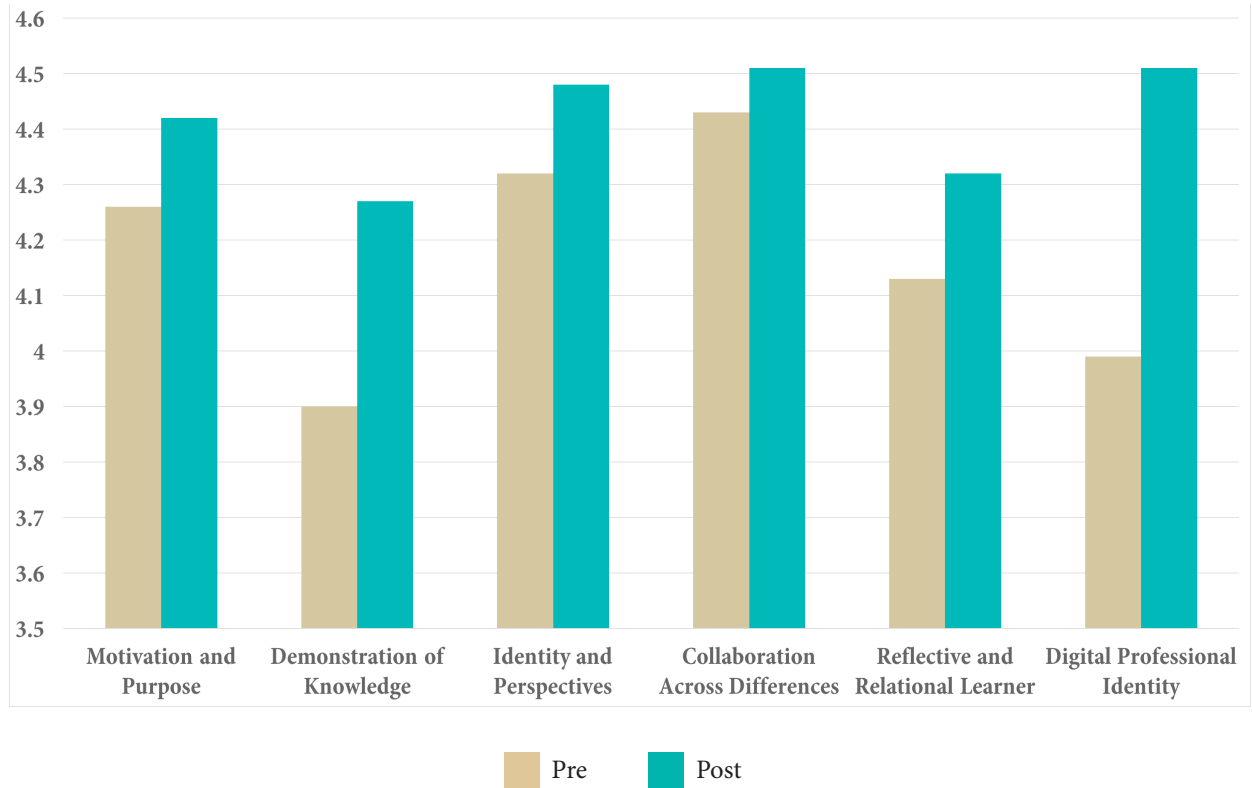
Lasting Gains One Year After Completion of Integrative Learning Intervention
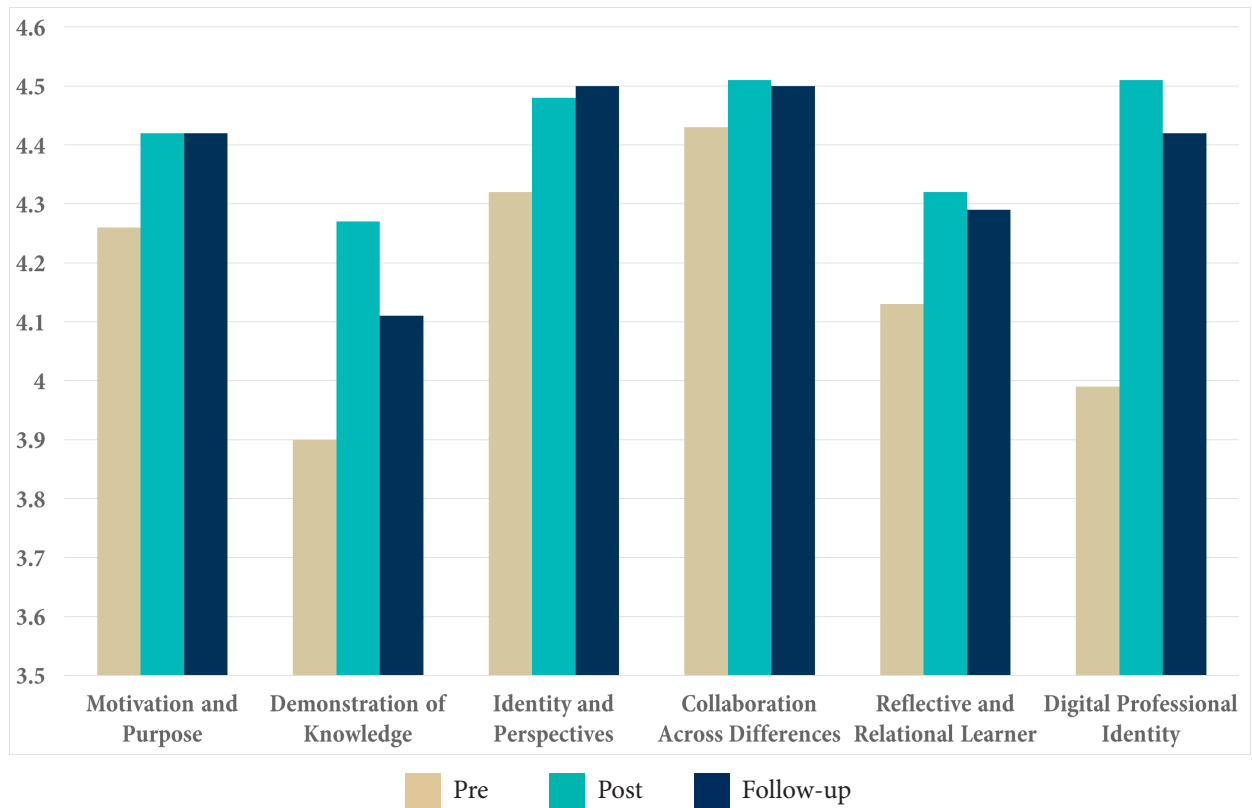
These gains in the dimensions of integrative learning are not simply the result of maturation. In Fall 2014, a quasi-experimental study compared the gains made from a group of students who participated in the pedagogy and a control group comprised of matched students on in/out-state residency, residence hall, gender and race. This study found that students who participated in the integrative learning pedagogy made statistically significant gains across all six dimensions of integrative learning. In contrast, the control group did not have statistically significant gains in any of the dimensions (2014-2015 End of the Year Status Report). Furthermore, a follow-up study was conducted with the 2012-13 and 2013-14 cohorts one year after completing their portfolio experience, which found that these gains persisted beyond their experience (see Figure 2; 2014-2015 End of the Year Status Report).

Additional research exploring how specific components of the broader integrative learning model may impact student outcomes suggest that the inclusion of two components in particular – the full use of the integrative learning pedagogy and the Mportfolio, which occurs in Student Life sites, and peer facilitation– correspond to improved outcomes (2016-2017 End of the Year Status Report).

In sum, the integrative learning pedagogy implemented by Student Life has been a successful model for improving student outcomes that are highly valued at U-M. These gains both short- and long-term occur because "students learn best that which they discover for themselves. When learning occurs cognitively, affectively, experientially, and with reflection, it is more likely to become truly integrated" (Taylor, 2011, p. 17).
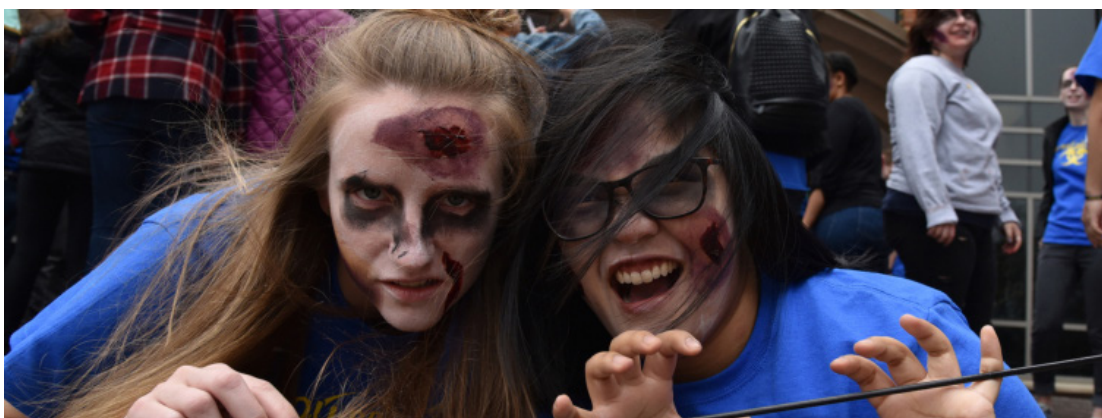

A zombie-themed biopreparedness drill included students from public health, medicine, nursing, dentistry, pharmacy and social work as well as partners from Michigan health agencies.

Exploring Student Life Integrative Learning Data for Evidence of Student Learning Gains Attributable to the TLTC Initiative

Given the clear overlap between these learning outcomes and those identified by the TLTC initiative, we used these data to explore how pre-post changes across years may correspond to the implementation phase of the TLTC initiative. As described above, students participating in the Student Life Integrative Learning intervention have consistently displayed pre-post changes – primarily gains – within each academic year. Given that the implementation of the Integrative Learning intervention has remained consistent over the years, to the extent that pre-post gains change across years corresponding to TLTC project implementation, one can infer the possibility that broader university-wide changes such as those catalyzed by the TLTC initiative may be conferring an additional impact on students above and beyond the Integrative Learning intervention.

Indeed, the following graph, which explores pre-post changes in each of the learning outcomes each year, indicates that there was a large jump in pre-post gains among students in the 2016 cohort – the second year in which TLTC-funded Transformation opportunities were being implemented – compared to students in the cohorts in the previous five years. While we must be careful to avoid attributing cause to the TLTC initiative

given the methodological limitations of this type of analysis and the increase in gains that could potentially be attributed to the greater stability in the administration of the integrative learning pedagogy and MPortfolio tool across sites. These findings are nonetheless consistent with what we might expect to see given the broad scope of the initiative, where students are increasingly exposed to engaged learning ideals across a wide swath of experiences on campus. Future studies that continue to examine the stability of this increase in gains will help to further understand whether this substantial increase is indicative of a consistent pattern.

Average Pre-Post Gains by Academic Year
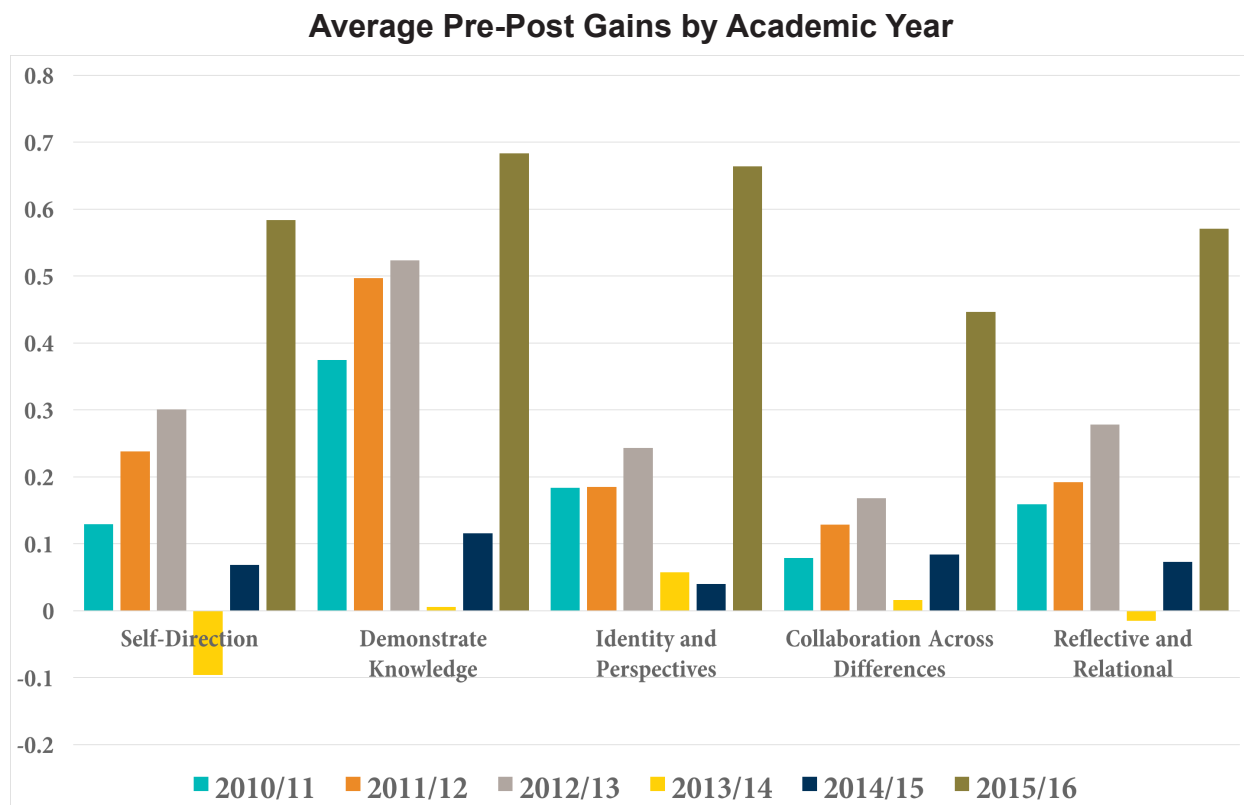
LESSONS LEARNED

The Teaching and Learning for the Third Century program was an expansive educational initiative that helped the university rapidly accelerate and scale up engaged learning and create common language and validation for this work throughout our campus community. Several success stories and lessons learned about cultural change at a large decentralized institution can inform future educational initiatives.

1. Pre-launch assessment plans

We recommend creating a general assessment plan during the early phases of planning large university initiatives. This will more effectively frame questions of initiative outcomes and impact that are typically asked. Examples of topics to be discussed early should include:

- Overall goals of the initiative, as well as processes for assessing the achievement of identified goals
- General timeline of the initiative, and corresponding assessment milestones
- Identification of potential initiative stakeholders
- Identification of individuals/units who will be responsible for assessment implementation, data collection, data analysis, and reporting
- Preliminary ideas of the types of data that will be needed to comprehensively assess the large initiative

2. Common reporting requirements

To help us understand the impact and outcomes of university initiatives, we recommend that any recipient of funds from a large initiative be obligated to submit a standardized report regarding annual progress, as well as a final reporting of outcomes. A standardized report, which would be communicated to recipients at time of receiving awarded funds, might include categories such as:

- General description of how funds were used
- Descriptions of participants, stakeholders, or other involved individuals or groups that were somehow impacted by the funds
- Identification of goals
- An analysis of how goals are being achieved
- Identification of challenges that might be addressed through university support

A standardized reporting structure would improve our ability to directly assess institutional impact.

3. Collaboration with Peer Institutions & External Experts

We recommend engaging with other universities implementing similar initiatives, wherever this may possible. This could lead to potential national-level study collaborations, or symposia to exchange ideas. It can also help the university understand how it stands among peer institutions.

4. Coordinated outreach and marketing plan

We attribute part of the success of this program to the marketing and communication surrounding the initiative, particularly the branding referencing the university's bicentennial. We recommend that future university initiatives also focus on having strong marketing, particularly during the early phases of project launch. This should include budgeting funds for communicating, workshops, and other community building events.

5. Robust support structures, resources and on-campus expertise

The success of this initiative was in large part due to the significant amount of funding and human resources that supported the work. Available resources included consultations and workshops hosted by the Center for Research on Learning and Teaching, as well as support from Academic Innovation (formerly known as Digital Education and Innovation).

6. Nurturing sustainability and institutionalization of successful practices by including regular check-ins with project leaders

Following the end of project funding, we met with projects leaders from the twelve Transformation projects. These meetings have helped us articulate the successes of the projects, but has also helped us understand the remaining challenges in terms of sustainability and institutionalization. We recommend that future university initiatives maintain similar ongoing relationships and conversations.

These recommendations are based on the assessment of the TLTC program at this particular snapshot in time, recognizing that there remains ongoing activity at the project-level of this initiative. For example, several TLTC projects are active educational programs with ongoing assessment work that will further inform the collective influence of the TLTC initiative. We recognize that the full

The full impact of this initiative will take years to completely unfold and understand.

impact of this initiative will take years to completely unfold and understand. Future studies will help us explore critical questions regarding the student experience, faculty attention to teaching, and student learning outcomes across the institution. These questions remain critical to truly understanding the value of a residential university experience and the U-M's role in preparing students for the complex experiences and crucial societal challenges they will address after graduation.

A U-M student participating in The Quito Project (thequitoproject.com) reads to children during a trip to Pifo, Ecuador. The Quick Wins project titled "Bridging Practice to Theory" designed new models of instruction to support project-based learning initiated by student organizations in international contexts, such as The Quito Project.

APPENDIX A: TLTC INDIVIDUAL GRANTEE-LEVEL DATA

A total of 797 individual applicants were included on the 325 grant proposals. We were unable to obtain demographic data for ten individuals, so our reporting includes data on 787 applicants. The applicant pool included 594 (75.5%) faculty and 193 (24.5%) staff. Gender was represented fairly equally, with 376 (47.8%) females and 411 (52.2%) males. However, given the overall percentages of females (61.8%) compared to males (38.2%) employed at the University, females are under-represented while males are over-represented in the applicant pool. This aligns with the fact that a substantial number of the applicants were faculty rather than staff members, and males are over-represented among faculty members while females are over-represented among staff members employed at U-M. Within the applicant pool, the number of female faculty applicants is comparatively high, and is nearly equal to the number of male faculty applicants. Similarly, there is comparatively more parity between female and male staff members in the applicant pool than university-wide. Finally, it is important to note that funding among applicants displays gender parity, as around half of both female and male faculty applicants and around a third of both female and male staff were funded[4].

In terms of race and ethnicity, the vast majority of applicants were white, not of Hispanic origin. This disproportionate representation reflects university-wide patterns.

The number of applicants varied substantially by school/college[6]. The graph on page 11 displays the number of funded and unfunded applicants by unit. The College of Literature, Science and the Arts had the highest representation, with 184 applicants having appointments in that unit. The College of Engineering and the School of Medicine were a distant second and third, with 104 and 97 applicants with appointments in each unit, respectively. Notably, applicants in some units, such as the School of Music, Theatre, and Dance and the School of Natural Resources and the Environment had a comparatively higher proportion of funded applicants whereas others, such as the Schools of Medicine, Public Health, and Dentistry had a comparatively lower proportion of funded applicants.

Representation of Applicant Compared to Overall U-M Employee Race and Ethnicity

	Applicant Frequency	Applicant Percent	U-M Percent[5]
White, Not of Hispanic Origin	614	78%	72.5%
Asian	61	7.8%	10%
Black/African American	45	5.7%	8.3%
Hispanic/Latino	41	5.2%	3.2%
Two or More Races	13	1.7%	1.6%
Not Indicated	10	1.2%	4.1%
American Indian/Alaskan Native	2	.3%	.2%
Native Hawaiian/Pacific Island	1	.1%	.1%
Total	787	100%	100%

[5]Data from University of Michigan Human Capital Report November 2015.
[6]The number of applicants by school/college is not mutually exclusive. Individuals with appointments across units were counted for each unit, thus the total number is higher than the 787 applicants.

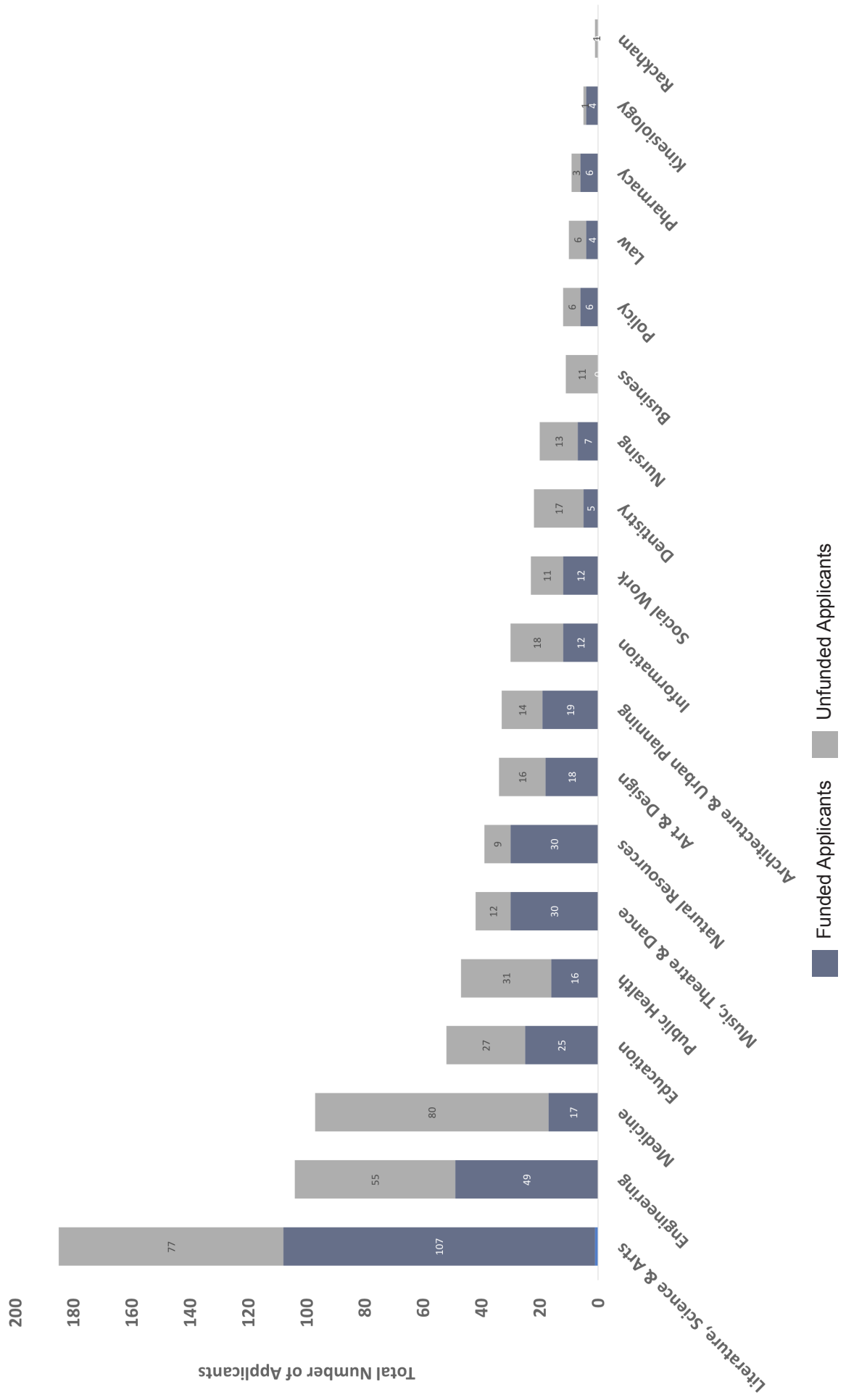Given that the Colleges of LSA, the College of Engineering and the School of Medicine are the three largest units on campus in terms of the number of individuals they employ, it is not surprising that there were a significant number of applicants from these units. In addition to exploring absolute numbers of applicants representing each unit, another way to examine application behavior is to compare the number of applicants from each unit to the overall size of the unit. The graph on page 11 displays the proportion of funded and unfunded applicants in comparison to the overall unit size, where each unit is represented by a colored block and proportionately sized for comparison across units. The proportion of individuals within each unit who applied and were funded (denoted by a $) is further compared to those who were not funded (denoted by a Ø). As one can see, several of the smaller units, including Music, Theatre & Dance; Architecture and Urban Planning; Education; Art and Design; Natural Resources and Environment; and Information had a larger proportion of employees submit a grant proposal than the larger units.

Ratios of Female and Male Faculty and Staff Employed at U-M [3]

	Faculty	Staff
Female	3391 (8.4%)	22925 (57.1%)
Male	4495 (11.2%)	9363 (23.3%)
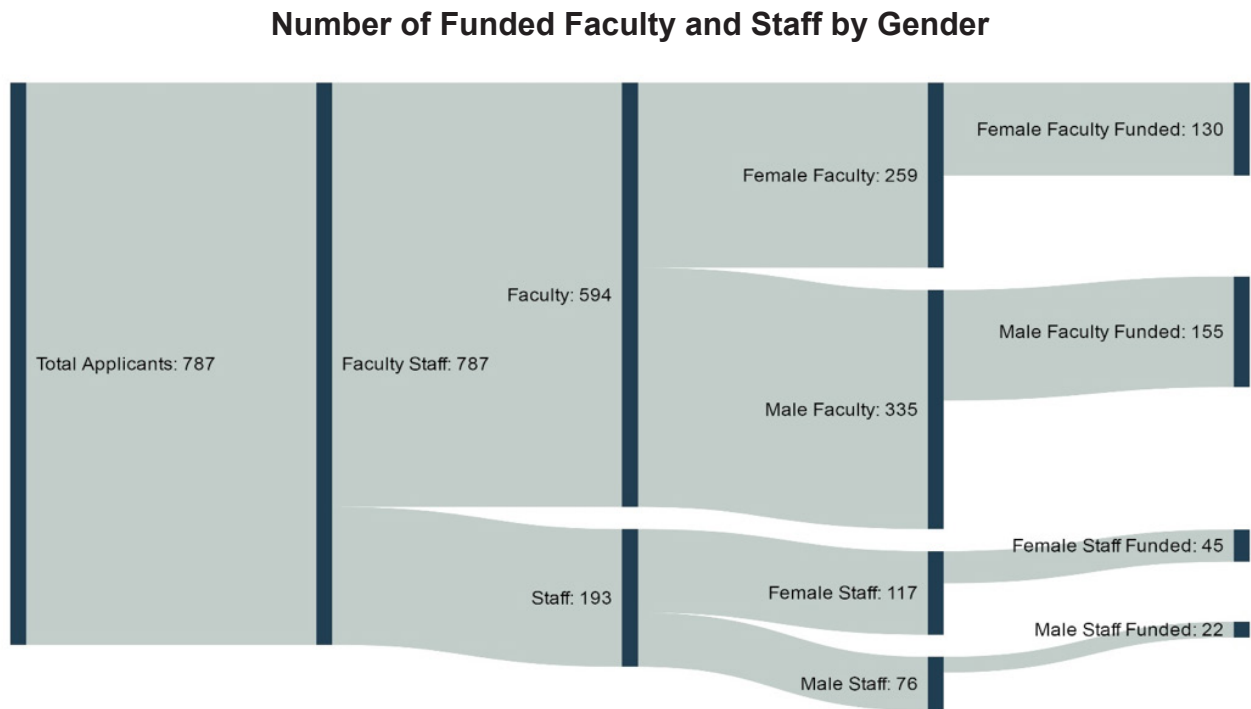
Number of Funded Faculty and Staff by Gender

Total Applicants: 787
Faculty Staff: 787
Faculty: 594
Staff: 193
Female Faculty: 259
Male Faculty: 335
Female Staff: 117
Male Staff: 76
Female Faculty Funded: 130
Male Faculty Funded: 155
Female Staff Funded: 45
Male Staff Funded: 22

Proportion of Funded Versus Unfunded Applicants by School/College

Legend: Funded Applicants, Unfunded Applicants

Total Number of Applicants

School/College	Funded Applicants	Unfunded Applicants
Literature, Science & Arts	107	77
Engineering	49	55
Medicine	17	80
Education	25	27
Public Health	16	31
Music, Theatre & Dance	30	12
Natural Resources	30	9
Art & Design	18	16
Architecture & Urban Planning	19	14
Information	12	18
Social Work	12	11
Dentistry	5	17
Nursing	7	13
Business	0	11
Policy	6	6
Law	4	6
Pharmacy	6	3
Kinesiology	4	1
Rackham	1	1

Funded Versus Non-Funded Applicants by School/College Compared to Total Size of Unit[7]

Literature, Science & Arts · Engineering · $ · ø · Dentistry · Public Health · Business · ø · $ · Nursing · Music, Theatre & Dance · Social Work · Natural Resources & Environment · $ · ø · $ · ø · Pharmacy · $ · ø · Architecture & Urban Planning · Art & Design · Kinesiology · Law · $ · ø · Education · $ · ø · $ · ø · Information · Public Policy · Rackham · ø · $ · ø · $
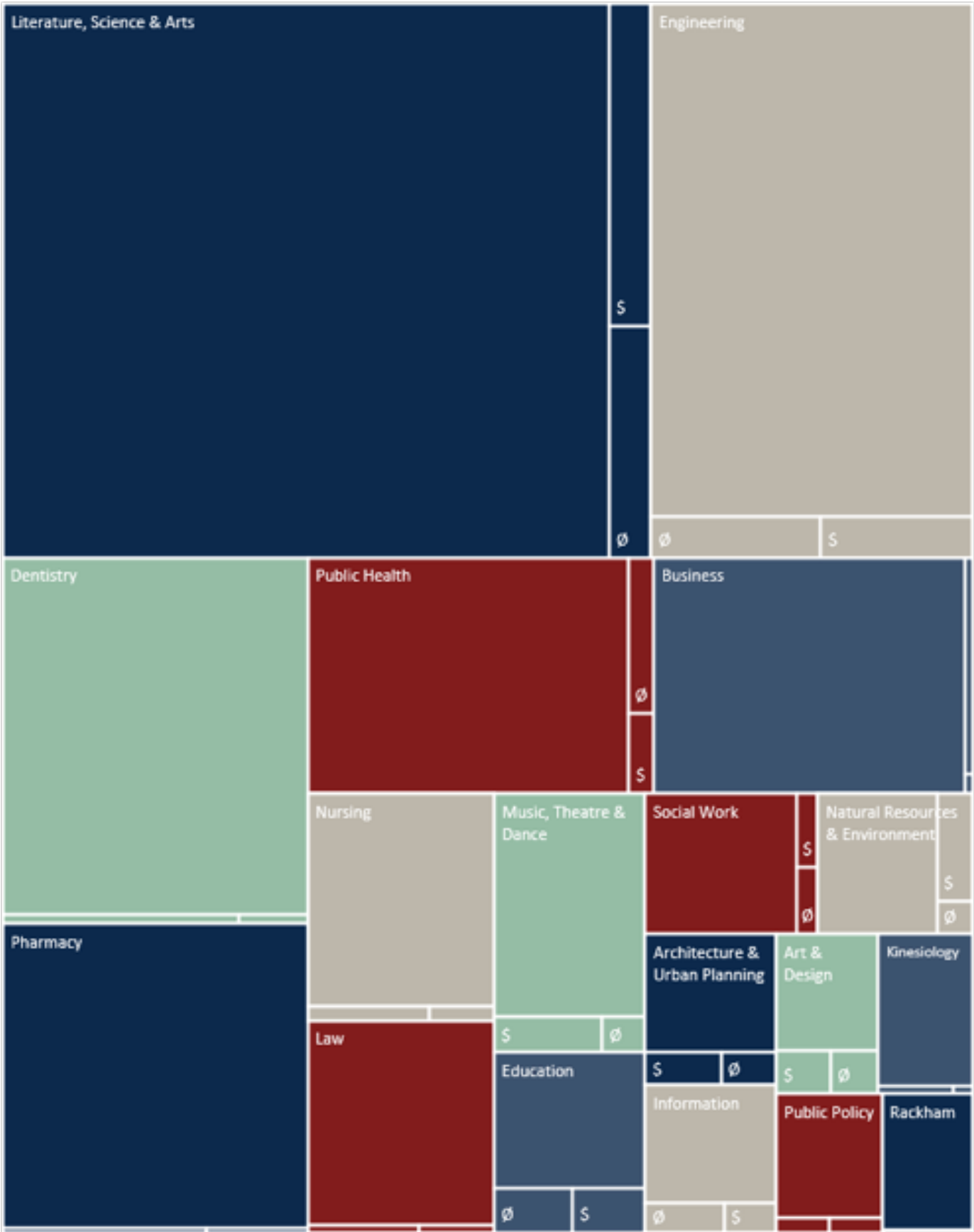
[7]The School of Medicine is not included in the figure due to its size. It has 7509 total employees, 97 of whom applied.

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