

Proposal for Incubating an Experimental Undergraduate Program at the University of Michigan

Version: October 23, 2019

Executive Summary

This document describes a new, Freshman-admit, bachelor's degree-granting program that engages undergraduates in the research, discovery, and social change missions of the U-M as the primary vehicle for their learning. A group of more than 40 faculty, staff, and students from across the campus developed the proposed program with support from the Office of the Provost. This program spans the breadth of U-M, providing deep learning in one or more "wicked problems" facing society. Examples include poverty, access to clean water, or climate change. The program will produce learners prepared to deal productively with ambiguity, and who have a problem-solving orientation and the skills and experience to contribute to and become leaders working on society's most difficult challenges.

The program is built around mastery, with ambitious learning goals tailored to the needs of learners and organizations. The program forges a new model for guiding undergraduate learning within a research university, operating without grades, credit hours, or required courses. It builds upon relationships among U-M researchers and the publics that we serve. It advances the U-M mission of engaged scholarship and advances undergraduate education with learners guided by faculty in multi-level "Forums" that provide common foundational experiences, while students pursue learning goals in the context of faculty-led research projects. The program will cross the campus and be inherently multidisciplinary. Nothing prevents any unit from building on the program's ideas.

This document provides details about: the program's development, the program's learning goals and components, and an overview of the program's assessment model. It also describes a new campus-wide institute that will support cross-disciplinary scholarly engagement for the proposed and other programs. The perspective of employers is provided, showing the need for this program. It concludes with a narrative scenario of two students in the proposed program.

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1.0 Introduction

There are myriad problems in the world, but the most important problems are neither well-defined nor easily resolved. Work on such problems requires thinking across perspectives and disciplines, comfort with ambiguity, resilience in the face of struggle, and the ability to work collaboratively. Throughout its history, the research university—with its focus on discovery, knowledge creation, and broad disciplinary, multidisciplinary, and engaged scholarship—has served as the primary institution dedicated to understanding and finding solutions for such challenges. And the University of Michigan is an *excellent* research university. This document describes a proposal for a new kind of undergraduate program designed from the ground up to prepare undergraduates to be problem solvers and engaged learners, leveraging the core strengths of a great public research university.

The program we imagine takes the power of learning through problem-solving to a new level. Undergraduates would work directly on faculty-led research projects in multi-level, multi-disciplinary teams. Learners would be immersed in complex, ambiguous, real-world problems, and learn how to make meaningful progress on solutions to those problems. The program is designed to support learners in sense-making across their various experiences in both formal and informal learning settings. Readiness for graduation would be marked by the mastery of ambitious learning goals tuned to the needs of the current (and future) world students are being prepared to enter. This program would not use grades, credit hours, or required courses to measure or pace learning. Mastery, agency, and equity are at the core of the program design. This program is possible *because of* the breadth and depth of the U-M. The program can be a lighthouse for innovation in academic programs across U-M and beyond.

We envision a program that makes a large university feel smaller and more connected... for both learners and faculty. Learners will develop close connections to faculty members and peers through multi-level “Forums” and living/learning communities that support students across their undergraduate years. A “Launch Experience” introduces learners to ways of knowing and foundational skills needed to succeed in the program and as contributing members of research teams. We envision a new institute or center to convene U-M scholars around shared multi-disciplinary themes, facilitate scholarly connections to various publics, and connect students to projects that advance their progress towards mastery of the learning goals. As the proposed program works to better connect students to the world around them, it also creates better connections between the U-M and our various publics.

This document provides an overview of the program in its current form. On the following pages, it describes:

2. Background and development of the proposed program to date (p. 4);
3. The learning goals of the proposed program (p. 6; graphic on p. 9);
4. A description of proposed program components and learning activities, including required teaching effort (p. 10);
5. A description of how the assessment of student learning would work (p.14);
6. A new center to support engaged multidisciplinary scholarship called CIRCLE (p. 19);
7. Marketplace need for undergraduates from the proposed program (p. 23);
8. A scenario depicting the pathways of two imaginary students in the program (p. 24).

Appendix A (p. 30) contains a list of faculty, staff, and students involved in the design of this framework.

2.0 Background of the Proposed Program

The framework for the proposed undergraduate program has grown from more than a decade of conversations among faculty and staff across the U-M campus, reflecting on perceived changes in undergraduates including: a growing focus on grades over learning, low tolerance for intellectual risks, lack of resilience in the face of challenges, and a need for explicit guidance in every task and assignment, with less tolerance for ambiguity. These are the natural outgrowth of decades of education policy that focuses on test scores as the key measure of learning, and increasing competition for both access to selective colleges and desirable jobs. For many students, their academic identity *is* their GPA, and there is growing concern that academic performance pressures are a contributing factor to student mental health issues. The implicit “design” of college contributes to all of these issues with “check-list” majors and minors that reduce learner autonomy, and which create siloed knowledge and experiences that limit student exploration. Selective college admissions processes that (at least from the student perspective) emphasize GPA and standardized tests over all other factors also contribute to current academic culture challenges for learners.

What if we could design the undergraduate experience from scratch, taking maximum advantage of the resources of the U-M? An undergraduate education that *truly* leveraged the unique capabilities and resources of the U-M would directly engage students in the core enterprise of the research university: discovery, knowledge creation, and working on solutions to society’s truly pressing challenges. Students would be engaged in this work not as a side benefit of being at the U-M, but as the *core intentional purpose* of their undergraduate studies.

During the 2018-19 academic year, Provost Martin Philbert and Vice Provost for Academic Innovation James Hilton provided encouragement and support to a working group of more than 40 faculty, staff, and students to try to answer the question posted above. (See Appendix A for a list. When the terms “we” or “our” are used in this document, this refers to the initial design group, which worked by consensus.) Could we develop a new kind of academic program “from scratch,” with no preconceptions, not even current norms for academic infrastructure like grades, courses, credit hours or majors? During the year, this effort was referred to as “The Big Idea” (a name that the group of faculty discussing these ideas had used for the past decade). Towards the end of the year, the group chose a new working name for the program: TRUE, or Transforming Residential Undergraduate Education. In this document we refer simply to the “proposed program,” in recognition that a new and permanent name will be needed. A document describing the framework developed was presented to Provost Philbert in spring of 2019, and he encouraged further development and specification. He also emphasized the importance of finding a “business owner” for the program from among one of the existing schools and colleges of the U-M.

Work on the proposed program is continuing in the 2019-20 academic year in the form of a Design Seminar (SI 511) organized by Barry Fishman. Ten students, a mix of graduates and undergraduates from across campus, are engaged in designing detailed specifications for key

elements of the proposed program: a new transcript that doesn't use grades, rubrics for assessing progress towards the learning goals, the curriculum for the "launch experience," and more. Members of the 2018-19 working group regularly attend these design seminars, as well as a range of invited guests from inside and outside the U-M (for example, representatives of the Mastery Transcript Consortium). The design seminar will also be offered in Winter 2019, as design work continues.

The most important next step is to identify a "business owner." This will allow the proposed program to begin the process of moving through other key institutional hurdles on its way to a pilot. These include approval by the Michigan Association of State Universities, and then the U-M Regents. Even though this program is a pilot, it is a program intended to award degrees and thus must go through the same approval process as any other academic program.

If the program moves successfully through each of these stages of the approval process, it would launch with a small initial cohort of no more than 20 students, recruiting from among students who are *already* enrolled in the U-M. As our confidence with these students grows, we would expand the program by enrolling a first freshman-admit cohort. Further growth would be based on our ongoing internal assessments, including gauging our capability for managing the program. The eventual target size of the program is 160 new students/year, for a total of 640 students enrolled. Based on budget modeling, we believe that this is a sustainable size for the program. *However*, the program would be much smaller than this during the proposed incubation phase. Note that a decision on a business owner for the incubation phase is not determinative of the long-term "home" for the program.

One question the Provost asked at the spring 2019 presentation was, "If this is a good idea, why wouldn't you want *all* of undergraduate education to be like this? Why stop at 640 students?" The answer is that we *do* think all undergraduate education should eventually be like the proposed program. However, we also recognize that the program may not be financially sustainable for the U-M if *all* undergrads were educated in this model. We also think that undergraduate education at U-M is *good*, even great, within the constraints of the current system. We believe that change needs to begin in a "protected" space where we are allowed to challenge *all* structures and assumptions. Incremental change, which is what tends to happen when new academic ideas are introduced within larger program contexts, usually results in the change being assimilated back into business-as-usual. The hope with the proposed program is that we can provide a working demonstration that, for instance, it is possible to assess student learning without grades, and that these students are still competitive for desirable jobs or graduate school. With such evidence and an infrastructure to support mastery assessment in hand, other units are more likely to adopt such a change within their own programs.

3.0 Learning Goals

Students who graduate with a degree from this program have *demonstrable competency* and the *capacity for continuous growth* in the following areas:

Principal Objective:

To Develop Capacities for Problem Identification and Problem Solving

The ability to translate ambiguity into action by identifying productive frames, defining constituent problems within those frames, and defining tasks that allow for progress on those problems.

Ways of Knowing (Epistemologies)

Epistemological Fluency - Fluency with a Range of Methods for Thinking/Reasoning

The ability to think in and with tools representing a broad range of different thought traditions, including: Logical, empirical, statistical, computational, historical, critical (analytic, evaluative), creative and artistic. This includes fluency with both quantitative and qualitative tools for understanding, interpreting and expressing ideas and information.

Systems Thinking and Complexity

The ability to recognize how individual components exist within larger systems, and to understand how systems interact within themselves and with other systems to produce outcomes, sometimes unexpected outcomes. The ability to reason with models and recognize the difference between what is knowable and unknowable, or predictable and unpredictable.

Communication

The ability to construct a coherent and persuasive narrative in a variety of media (written, oral, visual). The ability to establish meaningful connection with an individual or audience through discussion, presentation, or performance. The ability to engage in respectful and productive debate.

Information Literacy

The ability to process, understand, verify, and interpret information from various sources. The ability to distinguish between accurate and inaccurate information, or information that is processed or presented in biased ways, and to know how to respond to or deal with inaccurate or biased information.

Personal Good

Intentionality and Reflection

The ability to formulate a plan for one's own learning and development in both the short- and long-term. The ability to reflect on progress and outcomes, and make choices about the benefits and costs of different paths.

Resilience

The ability to define and measure progress towards goals, and to understand how effort leads to progress even when short-term efforts are not viewed as successful. The ability to recover from setbacks and failures.

Self-knowledge and Well-being

The ability to monitor one's own physical and mental health, to be self-regulating, and be able to ask for or advocate for support or help when it is needed.

Team Good

Leadership

The ability to organize the work of groups or organizations, to make decisions on behalf of those groups, and to provide supervision and feedback to them. The ability to act as a servant leader.

Teamwork

The ability to follow instructions, to carry out assigned responsibilities, and to negotiate responsibilities.

Collaboration

The ability to partner deliberately with others, to negotiate, challenge, and be challenged on issues of partnership in order to produce something together.

Accountability

The ability to meet or exceed agreed-upon expectations, to take ownership of the results of one's own effort and personal choices.

Public Good

Civic Purpose and Engagement

The ability to understand community, civic, and government structures at local, national, and global scales. The ability to participate in and contribute to the health of these structures.

Intercultural Engagement

The ability to identify cultural patterns including one's own, to respectfully compare and contrast patterns across cultures and communities, to engage in respectful dialogue to develop understanding and empathy across cultures and communities, especially in the case of unfamiliar ways of being. The ability to recognize differences in privilege and power, and act to enhance equity in response.

Ethics

The ability to identify a set of moral principles that govern one's or a group's behavior or conduct, and to make decisions that take account of those moral principles.

Empathy and Altruism

The ability to identify needs felt by individuals or groups, and to act positively to address those needs where one is able to make a contribution to progress.

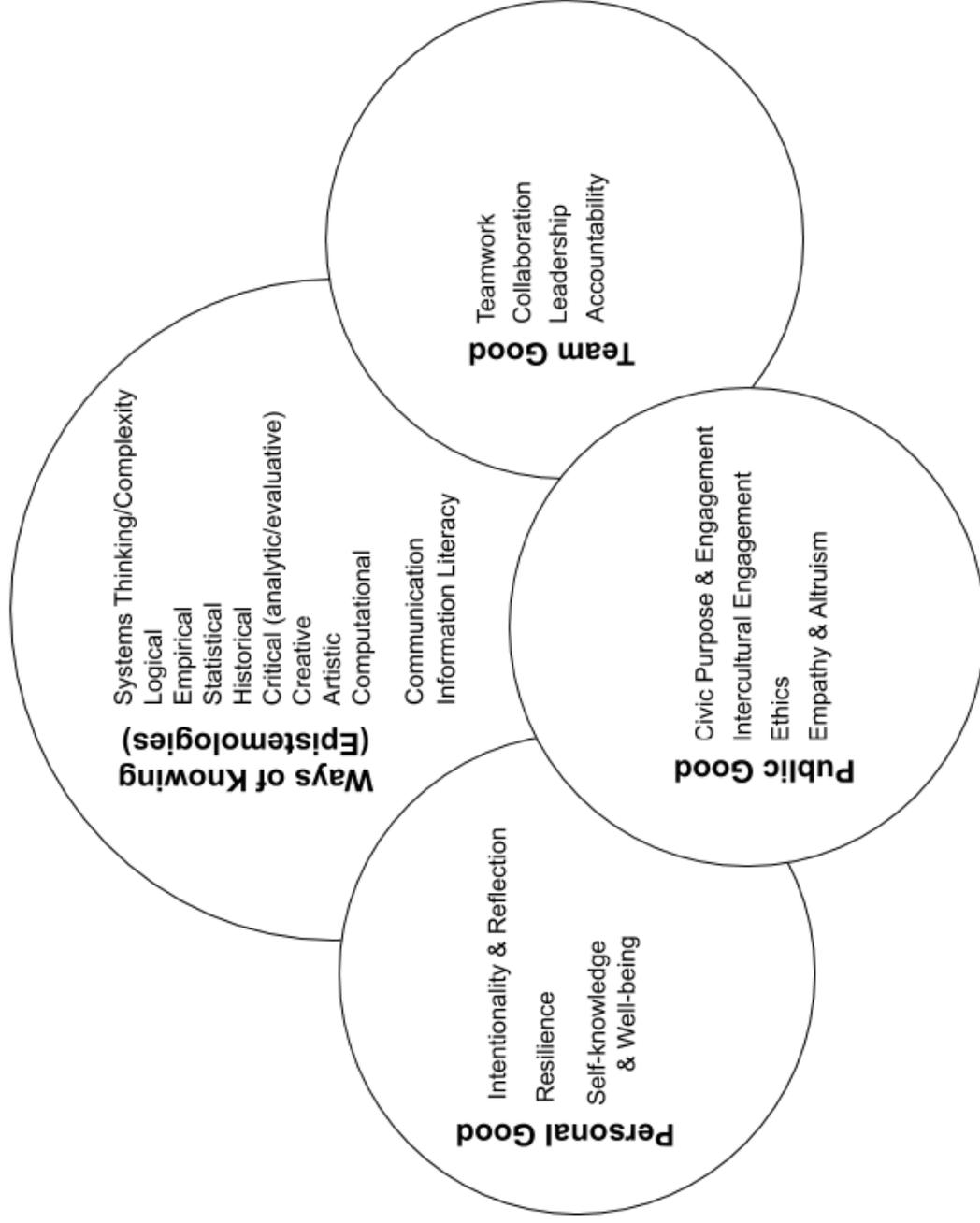
Sources and Inspirations

"Essential Learning Outcomes" from Association of American Colleges & Universities
(<https://aacu.org/leap/essential-learning-outcomes>)

"Big 10 Leadership and Change Competencies" from College Unbound
(<https://www.collegeunbound.org/apps/pages/competencies>)

Report from the Task Force on a Michigan Undergraduate Education in the Third Century.
(March 6, 2019). Office of the Provost, The University of Michigan.

Principal Objective: To Develop Capacities for Problem Identification & Problem Solving



4.0 Learning Experience (Program Design)

The proposed program is designed as a Bachelor's degree-granting program where students enter as first-year college students, admitted out of high school or non-traditional paths to higher education. We are designing the program such that it would take roughly four years to complete, though we resist describing it as a "four-year" program, as we are focused on individualized pathways towards competency and mastery, as opposed to time-based ways of measuring progress. There may be other ways to interact with the program, which we describe towards the end of this document.

We use the concept of "teaching effort" to explain what each element of the proposed program might "cost" in terms of faculty time, or alternatively, what might be contributed to faculty work through new allocations of tuition. We do this because, even though the proposed program is meant to move beyond the unit of a "course," this is still a necessary vocabulary for communicating about allocation of time and resources within the U-M. Note also that for all program activities, instructors are drawn from across campus, not from any single unit. We would implement a program of revenue distribution similar to the one used in the MHI program, sending instructional funds where need in exchange for teaching or mentoring, to be negotiated with each participating unit.

Students in the proposed program enroll in five kinds of learning experiences: Forum (similar to a homeroom), Launch Experience, Project engagement, Focused courses, Elective courses, and a Capstone Project. We describe each of these below.

Forum

Forum, which can be thought of as a college-level analogue to a secondary school "homeroom," is a multi-level experience that students enroll in for *all* terms during their participation in the program. Forum is meant to be an academic home-within-a-home for students on campus.

Each Forum will have a single, consistent faculty member as its organizer. This faculty member serves as an academic advisor to all students in that Forum. Research evidence suggests that a sense of connection, both to peers and to one or more faculty members, is a key element of student success in college. Unfortunately, for many students at Michigan, such connection does not come until their upper-level years, if at all. Forum is designed to address that by providing students with a real connection to a faculty member right from the start of their college experience.

A Forum may enroll up to 80 students, or 20 new students from each incoming cohort. As a multi-level experience, more experienced students can also provide valuable mentoring to less experienced students, both in terms of the proposed program and other aspects of life at the U-M and in Ann Arbor.

The curriculum of Forum focuses on the “Public Good” and “Personal Good” elements of the program learning goals (Civic Purpose and Engagement, Intercultural Engagement, Ethics, Altruism & Empathy; Resilience, Self-Knowledge and Well-Being) and is intended to help students to develop plans and self-regulation skills to engage with the rest of the program.

Forum will also serve as a nexus for other opportunities within the program, including coordination with the CIRCLE Institute and introductions to various project-based learning opportunities in the program.

Teaching Effort Required: Each Forum will have a single senior faculty member as its coordinator. Forum meets year round (or at least during the Fall and Winter terms). We recommend “counting” a full year of Forum coordination as equivalent to one course.

We note that in addition to the faculty member, each Forum would also have a staff member provided by the Office of Student Life. The faculty member provides academic support and advising; the Student Life staff member is there to support students’ personal development.

Launch Experience

During their first academic year in the proposed program (Fall, Winter, and possibly Sp/Summer terms), students engage in a cohorted (first-year students only) set of learning experiences designed to provide a running start towards meeting the learning goals of the program and to prepare students for productive engagement as part of research teams. Though there is the potential for a standard university course to be part of the Launch Experience, we do not want to constrain these learning activities to typical semester-length structures. Launch Experience activities will each have a coordinating faculty member, but engage multiple instructors to deal with different content and material.

All parts of the Launch Experience will emphasize teamwork, and start learners on the “Team Good” learning goals of the program (Leadership, Teamwork, Collaboration, and Accountability).

Teaching Effort Required: We envision the Launch Experience as being the equivalent of six courses in the first year of a students’ program. However, this does not mean that six instructors’ time is required. The Launch Experience will not be organized as “courses,” but rather as short and focused workshops. We might need instructor time at the level of one or several sessions. Or perhaps students might collectively take a MOOC designed by a U-M faculty member, and meet with either that faculty member or their graduate students to dig in further.

Project Engagement

In conjunction with the Launch Experience, after students have some grounding in the program and the U-M, they will start to engage with faculty-led research projects. This engagement will be coordinated by the CIRCLE Institute (in conjunction with the Ginsberg Center). Students will work on one project at a time, but are expected to switch projects periodically both to broaden

their exposure to different modes of scholarship, and also to take advantage of opportunities to make progress on different learning goals, which will vary by project.

CIRCLE will organize projects around a central theme, such as *water quality*. The concept is that there are projects/investigators across the U-M with a focus on water quality. Many of these projects may be unaware of other projects, especially if they are in a different unit. CIRCLE creates opportunities for “productive friction” across projects, and a context in which investigators can benefit from community or public engagement. Students, as they move across projects, will be an important conduit for inter-project communication and learning.

Teaching Effort Required: Engaging with students on your research projects will actually contribute funds *back to faculty*, perhaps using the independent study course as a mechanism.

Focused Courses

These are “regular” courses taught at the University of Michigan, taken by students in response to specific needs of the projects they are working on. For instance, a qualitative data analysis course for a student working on a project that conducts participant interviews, or an advanced data visualization course for a student developing client-focused reports or displays.

As part of Forum activities, faculty will help advise students about courses and course sequences related to their evolving career goals. In this way, we will support students in obtaining depth where it is necessary. Program faculty and staff will work with units across campus to ensure that prerequisite requirements are clearly defined and met for these courses. Students also have the option of taking courses online when available (e.g., the new STATS 250 MOOC series).

Though students may earn grades in regular university courses, we will not record or report those grades in the program.

Teaching Effort Required: No change is required from already established teaching plans. Student tuition would flow to the unit of instruction following already-established procedures.

Elective Courses

While at Michigan, students may wish to participate in some of the “famous” or otherwise well-regarded courses on campus. Such courses form an important touchstone of the Michigan experience, and we encourage students to enroll in them, but with a limit of one/term and none in the first year. Though students may earn grades in regular university courses, we will not record or report those grades in the proposed program.

Teaching Effort Required: No change is required from already established teaching plans. Student tuition would flow to the unit of instruction following already-established procedures.

Capstone Project

The ability to create a substantive, self-organized and self-directed product to represent one's ability to organize, develop, and present a complex argument is often viewed as a valuable part of student learning. That is why the doctoral dissertation is so crucial as a tool to defend one's readiness to enter the academy as a peer. In the proposed program, this capstone project allows students to demonstrate their mastery of both a range of learning goals and how their are integrating their learning across multiple experiences through a final, capstone project. This project may be related to one of the faculty-led research projects the student worked on, or be completely independent within the focus area(s) of the proposed program.

Teaching Effort Required: This would be similar to a thesis project in LSA, and be funded using a thesis course model where the primary reader is the instructor, similar to independent student credit.

Alternative Pathways In/Out of the Program

Though we anticipate options for students to "minor" in the proposed program, and are considering pathways for students to transfer into (or out of) the program, at this time and in this proposal we are focused on the main program as a self-contained college experience for learners. However, thinking ahead, we might explore the ideas proposed here as an alternative to typical "distribution" requirements in the liberal arts or engineering. Spending two years in the program program could be an ideal lead-up to the kinds of focused 2-year (junior-senior) majors pursued by many students across the U-M.

5.0 Assessment: Progress, Resilience, Performance, Mastery

This section provides an overview of assessment for learners in the proposed program. We begin by noting that, as with other elements of the proposed program, the ideas presented here are not necessarily new; similar approaches have existed in different educational contexts in the past, and similar ideas continue to be employed in specialized applications today. However, the use of these practices at the core of a degree-granting undergraduate program within the modern research university *is* unusual.

It is also unusual for a degree-granting program to employ *program-level* assessment of individual student learning as the *qualification for graduation*. Normally, assessment is conducted at the *course-level*, with students being assigned grades based upon their performance within courses, and with those grades being compiled and reported as an average (GPA) across courses. This type of assessment doesn't necessarily record evidence of student learning. If a student takes a predefined set of courses and maintains an acceptable GPA, that student may graduate with a degree in that area. In specialized cases, undergraduates may complete a capstone or summative project, such as a thesis. But for the majority of programs these are optional exercises, and the assessment criteria for summative projects are not usually aligned with any program-wide criteria for learning.

By contrast, the proposed program has defined a set of program-wide learning goals, and has only one criteria for graduation: that a student has *met all the goals* at an acceptable level, as evidenced in his/her "mastery transcript," a document designed to: record accomplishment, provide evidence of accomplishment, and allow for tailoring to meet different student, program, employer, or other needs.¹ There are no required courses,² and no minimum GPA. In fact, we do not intend to record or report grades for students in the program.³ Nor is progress measured by the number of credit-hours completed, which is a metric of time and not learning. What we *are* interested in is the progress a student makes towards mastery of the learning goals.

The proposed approach to assessment is designed to promote personalization of learning pathways, agency, and self-authorship, with an emphasis on developing oneself as a lifelong learner with the ability to identify gaps in necessary skills and acquire them when needed. It is designed to promote resilience and personal growth. It is designed to support learners from diverse backgrounds. Where most current assessment paradigms are geared towards ranking and sorting students, the proposed assessment model is designed for transparency with respect to learning. Below we present our plan for assessing and guiding student learning in the proposed program.

¹ Our conception of a "mastery transcript" is modeled on work by the Mastery Transcript Consortium (<https://mastery.org/>).

² With the exception of the "Forum" and the first-year launch experience.

³ Students might receive grades for specific learning experiences, for example, if they take a "regular" course in the University. The program would not record or report these grades on a student's "mastery transcript."

Assessment for Learning

There are two primary types of assessment: formative and summative. Summative assessment is a report of student knowledge, skill, or accomplishment *at the end* of some defined period or event: a course, high school, etc. Examples of summative assessment include final exams, which are typically used to measure end-of-course understanding and serve as the end of a student's relationship with a course and instructor, and the SAT or ACT tests, which are meant to "sum up" a student's academic potential at the end of secondary school and provide a measure of the student's their readiness for post-secondary education. Formative assessment, on the other hand, is meant to *inform* learning, to give feedback on student progress, or to serve as a milestone towards a larger goal. Assessment in the program is, by design, intended to be almost entirely formative.

Students in the proposed program are expected to always be making progress *towards* the learning goals. Feedback on learning will come from many different places in the program - research supervisors, Forum instructors, faculty across different learning experiences, members of various communities where students conduct research and learning, and members of the CIRCLE Institute. The learning goals themselves are not meant to be a "final" report of a student's potential or accomplishment; rather, they represent a certain level of attainment that can continue to be built upon throughout a learner's life and career.

Paths Towards Competence and Mastery

To emphasize the importance of *progress* and *practice* towards mastering the learning goals (no learning goal is a box to be checked), we describe paths towards mastery as encompassing several levels of proficiency: *Awareness*, *Literacy*, *Competency*, and *Mastery*. These terms are defined as follows in the proposed program:⁴

Awareness

Students who achieve this goal knows that this goal, practice, or skill exists, and they understand how it fits within the larger field or profession.

Literacy

Students who achieve this level are in the middle of learning this goal, practice, or skill, they understand its dimensions, they can apply or demonstrate it in a basic manner, and they are able to learn more about it through additional work. Such a student could play a supporting role in a project that employs the skills or practices inherent in this goal where someone else is leading and would understand what the other person was doing.

Competency

Students who achieve this level are ready to begin professional work requiring this practice or skill. A competent student can do a task requiring this skill on his/her own, he/she knows how to ask well-formed questions in the area or provide sound answers to others' questions, and he/she could advance their understanding through self-study.

⁴ This is adapted from the levels of learning used in the Bachelor of Science in Information program.

Mastery

Students who achieve this level are ready to employ the practices or skills embodied in this learning goal in the real world. Such students could supervise, guide, or teach others with respect to this goal.⁵

Note that while we expect all learners in the program to achieve *competency* in all the learning goals, we expect each learner to achieve *mastery* in only a subset of the overall learning goals. Which goals a learner masters will depend on the learner's particular focus during undergraduate study.

Getting Started (even before the “start”)

We expect that students in the proposed program will arrive with some initial proficiency in many of the learning goals for the program, and we will invite students to present evidence of that learning. That would be a natural outgrowth of the kinds of experiences one might have had in secondary education (including extra-curricular experiences) that might lead a student to be interested in the program in the first place. We note, however, that traditional markers of student “accomplishment,” such as Advanced Placement scores, will not be considered as evidence of learning *by themselves*. We would invite students to present a case for their current level of learning that might include information about courses taken or tests passed, but that also requires demonstration of their actual knowledge or skills.

One of the first formalized activities of the program curriculum, to be conducted as part of the Forum experience, involves helping students become familiar with the learning goals, understand why they were chosen and how they are to be assessed, and gain exposure to a range of examples (perhaps provided by more advanced students in the program). We will also engage learners in a self-assessment activity to allow them to calibrate their current level of proficiency in each of the learning goals.

Demonstrating Achievement

We will develop detailed rubrics for each learning goal, providing descriptions and examples at each level of learning towards each goal. The rubric is meant as a guideline for learning and for assessment, not an “answer key” or template. We expect broad individual variation in the way each learner expresses their current level of learning, to reflect individualized interests, choices, and pathways.

Students will use an electronic portfolio as a tool to record their work and accomplishments, to share/present those accomplishments for evaluation and feedback, and (following graduation) to offer evidence of learning in the future. We intend the portfolio to be a “mastery transcript” as it will serve as a replacement for traditional transcripts, among other uses. Portfolios have long been used as a means to encourage self-authorship by students, allowing them to shape the narrative of their accomplishments, and even customize that narrative for different audiences

⁵ We note that “Mastery” for the purposes of graduation from the proposed program is not necessarily *lifelong* mastery; our rubrics will emphasize areas for ongoing growth even beyond our program goals.

and purposes. Electronic portfolios also allow for the inclusion of many different forms of evidence in support of claims of learning, including links to assessment evidence and they can be assembled in different ways for different needs and audiences. Understanding how to communicate one's own abilities using the portfolio (and underlying data) will be an important component of the program, related to the "Communication" learning goal.

Electronic portfolios are one means of collecting, organizing, and sharing digital badges, also known as micro-credentials. Digital badges have many useful affordances in assessment systems. They can be used to establish pathways towards complex learning, to record progress, and to signal accomplishment (when used in portfolios or other systems). Digital badges can also be used to expand assessment beyond our formal processes by encouraging students to make progress towards (and "count") area of their life, whether part of the formal activities of the proposed program or elsewhere.

In addition to the mastery transcript, which students will produce via the electronic portfolio, assessment in the program will include in-person interviews. The interviews will be personalized to each student, allowing the individual cases demonstrate achievement in individual ways.

Formal (and Formative) Assessment in the Proposed Program

Students will receive feedback on their learning from many different sources in the program - research supervisors, Forum instructors, faculty across different learning experiences, and members of the CIRCLE Institute. Students will be responsible for making an evidence-informed case for their progress towards or accomplishment of learning goals.

There will be two levels of panel review for students to demonstrate achievement, both of which include review of the 'mastery transcript' and an in-person interviews. As part of the overall learning process within the program, these two levels of review allow personalized assessment and feedback at a large scale through a manageable workload. The process is managed by the Forum instructor, who (together with more advanced students in the Forum) can give advice to students about how to assemble their materials for review and when they are ready to start the process.

The first level involves review by a panel comprised of more advanced, "arm's length" students, working under the supervision of a faculty member. This arrangement allows for frequent assessment of student progress at a large scale and is a key part of the learning process for student panelists, as they learn to give constructive feedback to more junior students with respect to each of the learning goals. The goals of this first level review are both to mark progress and, more importantly, to provide feedback to the student. This review level is expected to be employed regularly for students at the awareness and literacy stages of proficiency. While the actual number of reviews might vary for each student according to their needs and pace, we would expect students to engage in this first-level review several times a semester with respect to different learning goals. We also anticipate that not all students will succeed in each review step (though we hope that feedback from Forum instructors and peers helps mitigate this). The proposed program is designed to support progress towards meeting

the learning goals, so we would not necessarily consider this a “failure,” but rather progress towards eventual success.

As an example of how the first level review might work, consider a student who believes she is making good progress on the statistical and computational learning goals (Ways of Knowing) and also the resilience goal (Personal Good), because of various difficulties they encountered towards learning these goals. The student discusses her readiness to be reviewed with her advisor and other students in Forum, collecting input on what evidence to include in her ‘mastery transcript’ and how to assemble it. This evidence could include examples of the work done in statistics and computation, including a computer program that could be used to support and display statistical analyses related to a data set from a public health dataset about water quality (the data set comes from a project the student is working on led by a faculty member in the School of Public Health) and a reflection statement about what was learned and how it represents progress towards achieving competency on those learning goals. To present evidence of resilience, the student could write a narrative discussing various challenges faced as she worked with this data and how she worked through those challenges. The panel would then review the material and provide feedback and question to the student, and the student would be invited to respond in writing. An in-person conversation could be scheduled for the student to meet with the panel for further discussion, if needed. Finally, the panel would issue feedback and a decision about what level of proficiency the student had reached for each learning goal. Students who believe they are ready to be reviewed for competence or mastery in particular learning goals would also use this panel, and the panel would “approve” portfolios for review at the second level.

The second, more advanced level for assessment, involves a panel of faculty, advanced students, community members, alumni etc. who will review and give feedback to students. This panel will primarily hear cases for competency or mastery of learning goals by program students. Students will be encouraged to present cases that combine multiple learning goals (though we do not expect any single case to contain *all* learning goals), and they would be expected to engage in this second level of review for each learning goal, with the expectation that any review should include multiple goals to represent the full range of learning goals. This stage will also include a public presentation and discussion, similar to a doctoral thesis defense. As part of the Forum activities, we would work to prepare students to be proficient in a range of presentation modalities (again, the Communication learning goal), recognizing that this is another area where students will vary. We hope to make these community events. Once the program is operating at scale and the scheduling of such events is difficult, we envision an annual (or semi-annual) public celebration involving a poster fair, talks, and panels of students and others involved in the research.

6.0 The Center for Interdisciplinary Research and Connected Learning Experiences (CIRCLE)

“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.”

— U-M Office of the President

Public engagement is a key strategy for strengthening the trust of the public in the research university. It is also a key to educating students who are ready to make a difference in the world; one of the key objectives of the proposed program. In this document, we present one vehicle for public engagement that builds on the principles and values articulated by the Engaged Michigan⁶ effort: To recognize the expertise and knowledge located within communities; to show respect for individuals, communities, and their resources; and to build equitable partnerships between the U-M and its various communities based that have transparency and accountability. We also argue that public engagement, in the form of *partnership research*, can also enhance the relevance and quality of research and scholarship across the university. Below we describe a plan for a center to help coordinate partnership research across the U-M and its many community partners. This center will both help enhance the perceived (and real) value of the U-M to its communities, and also strengthen cross-campus multidisciplinary collaboration, all while providing a valuable context for students in the proposed undergraduate program to connect with community-based research, develop their knowledge and skills for civic purpose and engagement, intercultural awareness, ethics, altruism and empathy. These are core learning goals for the proposed program.

Partnership Research

Partnership research is just what it sounds like: an approach in which the researcher works in partnership with those who are participating in the research. Working in partnership with people, organizations, and communities makes both the research process and its benefits tangible. Rather than merely reading about the results of research, or working to try and “translate” research into practice, partnership research *engages* different publics in the process of defining, designing, conducting, interpreting, and eventually acting on the results of research. When working in this type of highly collaborative mode, questions about the relevance of the research university and its work fade away, because public stakeholders are engaged in co-creating that work.

Partnership research can take many different forms, and has a long history. For instance, utilization-focused evaluation research employs research findings for program development, and emphasizes stakeholder-engagement in the evaluation process. Community-based participatory research involves university scholars engaging with people outside the academy to

⁶ <https://engaged.umich.edu/about/principles-and-values/>

advance local social change goals. Design-based research focuses on the development of interventions in real-world contexts, and design-based implementation research takes this idea further by emphasizing joint negotiation of the problem space among all partners/stakeholders in order to develop research around problems in which everyone is invested (Fishman, Penuel, Allen, Cheng, & Sabelli, 2013). This helps ensure that the results of the research are of immediate interest to community partners, and that positive results are more likely to be implemented and sustained.

At its heart, partnership research is oriented towards promoting *equity*, both in how research is conducted, and in its results. Partnership research explicitly recognizes that those involved are *not* equal in many ways and seeks to acknowledge and balance differences in power, knowledge, authority, consequences, and so forth, especially when research is conducted in under-resourced communities or contexts. This is a departure from more common academic scholarship, which has a history of treating research participants as, and calling them, “subjects,” which implies a subservient positionality with respect to the elevated status of the researcher.

A key to successful partnership research (and public engagement more generally) is building and sustaining trust between community partners and university personnel. Trust is built over time, as partners learn they can rely on each other. Trust means the local partner believing that the university researcher is invested in their well-being and improvement, and will not cause them harm, either intentionally or unintentionally. All members of the partnership should see benefit from being engaged, even if goals may vary among partners. Partnership requires ongoing presence, which can be difficult given busy schedules or distance.

Partnership requires careful institutional coordination, so that one university researcher does not inadvertently undermine the trust built by another. Timelines are also tricky, as local partners want to know what is being learned while research partners may take a long time to analyze complex data. The needs of partnership, especially in the early phases of relationship building, require financial support that is hard to obtain through most traditional sources of research funding. Funding timelines—often in single or 1-3 year increments—may also present a challenge to the long-term nature of partnership research.

We also recognize that partnership research is not the *only* kind of scholarship the research university is engaged in. In reality, it is likely that partnership research will never be more than a small fraction of the overall scholarship conducted at research universities. But... we believe that the value of partnership research to the research university can far exceed its size.

To overcome the challenges and pitfalls we described above, we believe that the U-M needs an organization that can provide support for building sustained relationships, advocating for equity and inclusion, maintaining trust, connecting researchers across campus who work in areas related to public need, and connecting students to partnership-based research opportunities. In the next section, we describe ways that a center to promote and coordinate partnership

research at U-M could enhance and advance our ability to connect with our various publics *and* advance student engagement in problem-based and project-based research.

CIRCLE: Enhancing and Supporting Partnership (and Multidisciplinary) Research

Many researchers and projects across the U-M campus are already engaged in productive partnership research. At the direction of President Schlissel, U-M is actively seeking ways to enhance the impact of our research through resources such as Engaged Michigan.⁷ There is a long history of support for students to engage with communities through campus resources like the Edward Ginsberg Center, ArtsEngine, the Graham Sustainability Institute, and efforts within schools and colleges. The U-M also has a well-deserved reputation for interdisciplinary research, with a large percentage of its faculty appointed in multiple departments and units, and a strong culture of collaboration. With this proposal, we intend to build upon and amplify those strengths. We propose to do this by establishing a new collaborative hub to coordinate community engagement and partnership research that we call the Center for Interdisciplinary Research and Connected Learning Experiences, or CIRCLE.

The Edward Ginsberg Center is a lead partner in the development and operation of CIRCLE. Ginsberg is a natural fit for this role, because their mission is to “cultivate and steward equitable partnerships between communities and the University of Michigan in order to advance social change for the public good.” Ginsberg has a long history of engaging undergraduates in co-curricular service learning projects (they are part of the Office of Student Life), and partners with academic units to provide curricular and research support services that are coordinated with faculty community-engaged projects.

The most important capacity that the Ginsberg Center brings to CIRCLE is their demonstrated ability to build and maintain relationships with communities. It takes a particular kind of skill to address the challenge of building trust described above, and that skill is *not* often part of most researchers’ training or mindset. This is not meant as a critique of researchers; it is an acknowledgement that successful scholarship requires deep and focused knowledge and skills, and it is unreasonable to expect that any particular researcher would possess *both* the kinds of skills needed to (for instance) design a valid experiment *and* to negotiate roles in a partnership. Additionally, partnership research is premised on enduring relationships between university and community partners, and faculty do not have the time or resources to maintain relationships with a community partner beyond a particular research project. We thus see CIRCLE serving as a valuable “research core,”⁸ providing infrastructure, personnel, and guidance for community-university research partnerships.

We propose that CIRCLE function as a hub for research across campus that is focused on particular problems that have connection to local communities. Some of those projects would be research-practice partnerships, but the majority would not be. As noted above, we do not expect *all* university research to be conducted in community partnerships. But we do believe that all

⁷ <https://engaged.umich.edu/>

⁸ <https://cores.research.umich.edu>

research can *benefit* from connection to various publics. Basic science, for example, may take place in a laboratory. Theoretical work may take place in computer simulations. But both benefit from some grounding or connection to the real worlds of practice and application, even if that connection is indirect. Research related to water quality and access to clean water is an example of this. We imagine that there are faculty in every unit of the U-M working on something related to water quality. Many of these researchers may be in the sciences or engineering. But there are also social scientists, historians, and humanists doing work on how people relate to their environment. There are scholars in art and design, in music and theatre, creating artistic works related to clean water. Policy, law, business, education, and so forth. How often do these researchers come into contact with each other? Are they even aware of each other? By serving as a central point of connection, CIRCLE can create this awareness, and help coordinate multiple projects' connections with local communities to ensure that trust, access, and communication are maintained. The Graham Sustainability Institute has begun this work of campus connection on the topic of water quality with the Water Center and Water@Michigan events. The new "Great Lakes Writers Project" narrative journalism project that the LSA Department of English proposes in conjunction with the Great Lakes Theme Semester offers a point of connection to the humanities. Another example is the way that Poverty Solutions⁹ coordinates and connects research across campus, amplifying the impact of any one project. CIRCLE might start with a single problem area, but expand and connect its focus to other areas as need and interest dictate/allow.

As part of the learning goals for the proposed undergraduate program, we expect students to master a range of "ways of knowing" that include: Logical, empirical, statistical, computational, historical, critical (analytic, evaluative), creative and artistic modes. Mastering these areas includes fluency with both quantitative and qualitative tools for understanding, interpreting and expressing ideas and information. Clearly, no single research project will allow for students to traverse even a fraction of these ways of knowing. Our expectation is that students in the program, working through CIRCLE, will gain access to a range of different projects that enable them to explore these different ways of knowing. By being associated with CIRCLE, a project gains access to these students even if the project is not in any way a research-practice partnership. CIRCLE would work with program students, community partners, and faculty to convene symposia (similar to the Water@Michigan symposia), where students share their own research, and take on a leadership role in increasing multidisciplinary awareness across researchers, campus, and community.

⁹ <https://poverty.umich.edu/>

7.0 Marketplace Demand

One reason to invest energy in new program development is to meet an unserved or underserved need in the marketplace. In the case of the proposed program, the marketplace need is one that is often expressed by corporate leaders, but rarely addressed. According to a recent report from the National Academies, there is “broad agreement” of the need for “writing and oral communication skills, critical thinking and analytical reasoning skills, teamwork skills, ethical decision making, and the ability to apply knowledge in real-world settings” (National Academies of Sciences, Engineering, and Medicine, 2018, pp. 40–41). Nearly all higher education institutions believe that these types of skills are critical for their graduates, but these skills are rarely built into undergraduate curricula in an intentional way.

A survey of employers conducted by the American Association of Colleges and Universities (AAC&U) revealed an interesting trend:

Very few employers indicate that acquiring the knowledge and skills needed primarily for a specific field or position is the best path to long-term success. Employers report that, when hiring, they place the greatest value on demonstrated proficiency in skills and knowledge that cut across all majors. The skills that they rate as most important include the ability to communicate clearly, both in writing and orally, teamwork, ethical decision making, critical thinking, and the ability to apply knowledge in complex, multidimensional, and multidisciplinary settings. (Hart Research Associates, 2014)

These findings are consistent with similar studies by Burning Glass Technologies (2015) and a study of MIT mechanical engineering alumni, which found that even in this highly specialized field, alumni found a greater need for “communication-based skills” as opposed to “technical reasoning knowledge” (Wang, 2015, p. 2). Employers believe that they can teach the needed technical skills to their new employees, so long as those employees possess good general skills around communication and learning. In short, the most productive employees are those who have *learned how to learn*.

To be clear, undergraduate programs at Michigan provide an *excellent* education to our students. Organizations that hire U-M graduates seem satisfied with their new employees, and the proposed new undergraduate program is not intended to cast any current program in a negative light. The proposed new undergraduate program is serving a different, and we argue unmet, need for students who are prepared to deal productively with ambiguity, know how to acquire new skills when needed, how to make the most of the resources available, and are excellent collaborators and communicators.

8.0 Scenarios of Student Pathways Through the Proposed Program

In this section, we share an imagined narrative of two students in the proposed program, to provide a more cohesive illustration of a student's experience with the program. Our two students are Eric, from Chicago, Illinois, and Jasmine, from Flint, Michigan.

How did these learners find out about this new program?

Jasmine has had multiple contacts with the new program as a student in Flint. She first heard about the project through the Wolverine Pathways program, which described a new program at the U-M that is built around problem-solving. Growing up, Jasmine knew that she wanted to be the first in her family to attend a 4-year college (that's why she became involved with Wolverine Pathways), but she had a traditional view of what college was: you took courses, worked hard to keep good grades, and majored in something "practical" to get a good job. In high school, Jasmine encountered the program for a second time, but now as a participant in two different research collaborations with U-M. One was an artistic project related to the water crisis in her town. A professor at the U-M School of Music, Theatre, and Dance (SMTD) was working with Flint community members to write and produce a play about the water crisis. The other was a project to measure water quality in household taps that a U-M professor from the School of Sustainability and the Environment (SEAS) was working on in partnership with the Flint City Council and the science teachers in her high school. Jasmine didn't know it, but both of these projects were connected to her community through CIRCLE, the new center run by the Ginsberg Center to facilitate interdisciplinary and community-focused research. As part of these projects, Jasmine learned a lot more about the new program, because she was working directly with several U-M undergraduates who were in the program. They helped her understand how this program was different than other pathways through the U-M, and encouraged her to apply.

Eric attends public school in Chicago, and has also been a participant in the Chicago City of Learning (CCoL) network since he was in middle school, with a focus on learning how to code computers and engaging in a number of creative coding projects. Eric is also interested in poetry and creative writing, and explored this interest through the Chicago Public Library and Digital Youth Network-- both part of the CCoL network. CCoL is an organization that identifies and links students to informal learning opportunities around Chicago, and provides a digital badging platform to help learners organize and track their experiences and what they are learning. The CCoL platform can also act as an electronic portfolio to help students present their work to various audiences. CCoL has established good relationships with the college counselors in a number of high schools, to help them understand how the CCoL experience might be part of a student's college application. In addition, CCoL staff are familiar with the new program and approach at U-M, and often work to steer learners they think would be a good fit towards the program.

The First Year in the Program

Upon arriving in Ann Arbor, Jasmine and Eric learn that they are assigned to the same Forum—a college-level equivalent to homeroom—along with 18 other students who were admitted in their cohort. They also meet 60 other students who are further along in the program, along with a professor who introduces herself as their advisor and guide for their program experience. Some of the more experienced students introduce themselves, and (only half-jokingly) advise Jasmine and Eric that *their* advice will be more helpful than the professor's. Right away, the Forum gets down to business: some team building exercises and agenda setting for the coming term. What do individuals plan to accomplish? What can the group accomplish? The plan for Jasmine and Eric (and the other first-years) is fairly straightforward. They know that they will be part of the “Launch Experience” workshops, and start the process of getting familiar with the University. And of course, they are looking forward to attending their first home football game, and for learning more about extracurriculars at Festifall. Eric hopes to join the Michigan Daily, and Jasmine would like to learn more about social justice groups, especially ones with a focus on clean water.

One of the main functions of Forum is to get the new students familiar with the learning goals of the new program. As they learn about each learning goal, the more experienced students share the work that they have engaged in to make progress on and generate evidence to support their accomplishment for each goal. In this way, Jasmine, Eric, and the other new students start to get a sense of the “possibility space” within the U-M as their own interests are forming. Later on, after they have identified some areas of focus for their learning, the professor (again with help from more experienced students) will map out some possible courses or course sequences they might pursue to gain some foundational knowledge. Another key activity of Forum is to help students identify areas within the learning goals where they may *already* have some evidence of progress from their pre-college work and engagements. Jasmine and Eric start to document those experiences using the e-portfolio platform. They know that soon, perhaps before the end of their first year, they will be able to present this evidence to a student-led assessment panel as they start to earn digital badges that document their progress on each of learning goals.

In their Launch Experience workshops, Eric and Jasmine are introduced to a range of ideas and start to practice basic-level skills related to the core “ways of knowing” in the program’s learning goals. This includes an introduction to statistical reasoning, communications skills workshops that focus on both writing and oral presentation, a broad introduction to science and scientific thought. Given the range of pre-college experiences across the incoming first-year cohort, different students move through these materials at different paces. One thing they really appreciate about the Launch Experience is the way that they get to meet faculty from across the U-M, each of whom shares perspectives and scholarly opportunities from their own field and area of focus.

The third component of a student’s first year in this new program is getting to know more about research projects with which they might engage. This is coordinated by the CIRCLE center, an extension of the Ginsberg Center. Through CIRCLE, students hear about a range of projects across the U-M that are all focused on a single theme. At the moment, CIRCLE has a single

theme: “water quality.” (In the future, additional themes will be added.) As part of their Launch Experience, students get to know CIRCLE, and visit with each of the projects that are connected through CIRCLE. Jasmine is excited to see that the water-quality-at-the-tap project she was involved with as a high school student is still going on; now she might get to work on it as a college student! (The play she was a part of has already been performed and wrapped up.) There are a range of other projects to sample, too. Water policy investigations led by Ford School faculty, citizen data projects led by UMSI, a project focusing on narrative journalism in the LSA Department of English, several ecosystems-focused projects in SEAS... and so on. Jasmine wants to stretch herself, so she has expressed an interest in working with SEAS faculty on a project that is going to require her to learn about ecosystems and biology (this was not her strong suit in high school, but she knows it is important). CIRCLE also coordinates with the Graham Sustainability Institute and its new water quality center, as well as the LSA theme semester focused on the Great Lakes. Eric is particularly interested in a new long-form journalism project being run by faculty in the LSA Department of English. And in addition, he is interested in a project led by a Computer Science professor that is using machine learning methods to identify high priority neighborhoods and homes for pipe replacement. The project started in Flint (he likes talking with Jasmine about this project, since it is where she grew up), but is moving on to other cities, and might also be applied to other situations, such as the growing problem with PFAS contamination in the state.

By the end of their first academic year, program students have developed relationships with other members of their cohort, the more advanced students in the program through their Forum and through research projects, as well as a range of faculty members through the launch experience and other graduate students and faculty through CIRCLE and getting to know research projects. Being part of this program makes the large research university start to feel smaller, and students quickly start to understand how to navigate the complexity of the U-M and turn it to their advantage... as they focus on making progress towards the program learning goals.

After the First Year

As the Launch Experience wraps up, program students are matched (by CIRCLE) with research projects that align with their interests and with areas they want/need to explore towards their learning goals. They work through the summer on these projects, being mentored by graduate students and faculty as they learn how they can make some kind of useful contribution.

Because Eric is working on the long form journalism project, he has been assigned to a small town in west Michigan on the coast of Lake Michigan. He likes the thought that his home is just on the other side of the lake. He also wants to make himself more useful to the machine learning project in Computer Science, so while he is “embedded” in his new summer home, he is also taking MOOCs (one of them is taught by the professor leading the project) and doing some background reading to beef up his abilities in machine learning. When he returns to campus in the fall, he knows he can start to make useful contributions to that project. Eric also keeps in touch with his Forum instructor by email, and does some Google Hangouts with his Forum-mates to check in while they are apart. He knows his Forum instructor continues to hold meetings through the summer for anyone who is around.

Jasmine is starting work on the SEAS ecosystems project on how water quality affects biodiversity. She'll spend part of her summer at the U-M Biological Station, and part of her summer in Ann Arbor. Her Forum advisor has helped her map out some courses to take to build her biology knowledge, and she's also found some MOOCs that seem on topic (she made a note to run these by her Forum advisor and one of the grad students on the project.)

When the fall term of their second year starts up, Jasmine and Eric spend most of their time working on their respective research projects. But they also are taking courses—chosen in consultation with their Forum advisor—to help deepen their skills towards both the learning goals and their personal interests. And of course some electives, just to be sure they are sampling what U-M has to offer. Jasmine is particularly looking forward to taking the “Video Games and Learning” class she's heard about in the School of Education, as she has always thought of herself as a “gamer.” Eric is doubling down on the writing courses, as he really loved his summer journalism experience, and hopes to pursue a career in journalism. He realizes (and also the more experienced students keep telling him) that the broad research experience he is getting will make him a better journalist (or better *anything*) because he will have delved into a much broader range of subjects in depth than he would have if he was not in this program.

As Eric and Jasmine progress, they continue to gather evidence about their progress towards program learning goals, and document that evidence in their e-portfolios. Working with their Forums, they get feedback on the case they are making for meeting each learning goal. When the Forum thinks they are ready, they present that case to a student assessment panel. (And now that Jasmine and Eric are more advanced in the program, they are also taking their turn as part of student assessment panels, giving feedback to others.)

Ready to Graduate

Even though they have worked on several different research projects by this time, Eric still feels drawn to journalism, and Jasmine still feels drawn to environmental science. After having their learning goal evidence approved by the first-level student panels, they started working on their capstone projects, a key part of preparing to present their case for competency and mastery of the learning goals to the second-level panel. This one is higher stakes, involving faculty from projects they've each worked on, members of the public, alumni who have been involved with CIRCLE, and of course their fellow students. The final presentation takes many different forms. For some students, it is like an oral defense. For others, it is a poster fair with public talks. For some, a public performance of a film or series of films with Q&A. Students might also go through this process several times for different sets of learning goals. But in the end, readiness to graduate from this program and U-M means achieving competency in *all* of the learning goals, and mastery in several that reflect individual students' foci.

Eric and Jasmine have also been working with the program's career development staff, and know what they'll be doing after graduation. Eric has a summer internship at a newspaper in Detroit, and plans to apply to journalism graduate school. Jasmine is going to work for an

environmental policy think tank in Washington, DC, that focuses on clean water. She's not new to this organization, as she got a chance to work with them as part of her project work.

Though Eric and Jasmine are both a little sad to be leaving Ann Arbor, they know that they'll be keeping in close touch with the program. As alumni, they will have the opportunity to participate in CIRCLE projects, and offer their expertise and resources to make new opportunities for new generations of students. And they also know that, wherever they go, they will remain part of the program's family.

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