

Collaborative Creation and Implementation of a Michigan Sustainability Case on Urban Farming in Detroit

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ABSTRACT The University of Michigan School for Environment and Sustainability (SEAS) seeks to transform sustainability learning through new curricular tools that incorporate multimedia sources, build both scientific and professional skills, and nurture partnerships with practitioners for extended engaged learning beyond the classroom. The Michigan Sustainability Cases (MSCs) bring case-based teaching to the sustainability field and redefine cases by making them more immersive and multimodal, for traction with diverse kinds of learners. MSCs are hosted on an open access, interactive platform called *Gala* that makes case studies accessible both for individual use and to enhance face-to-face experiential learning. This article analyzes one MSC case about urban farming in Detroit, Michigan, as it embodies principles of cocreation, integration into multiple curricula, and digital innovation for enhanced experiential learning. Specifically, we describe how it was collaboratively produced, deployed and iteratively improved in successive SEAS classrooms, incorporated field learning in Detroit for strong user experiences from students, but also for faculty and practitioners. We further note its impact on the lead author's development projects within Detroit's landscape, suggesting cases as catalysts for more ethical, efficient, and inclusive sustainability science and policy in practice.

INTRODUCTION—CASE-BASED LEARNING REIMAGINED FOR IMPACT

If sustainability is best taught through engagement with real-world challenges, then educators and learners alike need to forge alternatives to traditional case-based learning. Cases have long been seen as delivery vehicles for simulated “real-world” skills to train future professionals. We want to replace this view with a new ethos of case cocreation linking professionals, scholars, and students, to catalyze broader engagement that benefits all three of these types of actors. This article describes one instance of pedagogical innovation: creation, iteration, implementation, and early evaluation of an online case that has defied unidirectional learning, nurturing instead an ongoing reciprocal learning relationship among different stakeholders. Anchored in specific sites and social relationships, it more powerfully conveys principles of community engagement, sustainable food systems, and urban (re)development.

That case is nested within a 4-year initiative funded by the University of Michigan's (UM's) Transforming Learning for the Third Century Initiative, implemented by the UM School for Environment and Sustainability (SEAS). The project creates curricular tools, the Michigan Sustainability Cases (MSCs), which bring case-based teaching to the sustainability science field while enhancing cases for engaged learning beyond the classroom. An open access, interactive platform called *Gala*¹ hosts these cases (and others from faculty at UM and a few other partner institutions). According to Hardin et al. ([1]: 59), the project aims not only to flip the classroom but also to “flip the curriculum” through participation by practitioners,

1. The open-access *Gala* platform was created not only to host content for the MSC initiative but also hosts teaching cases from other sources. The platform displays embedded media content alongside the narrative text of a teaching case, and features use data and assessment tools as well as fora for communities of users to annotate and discuss the cases.

alongside “progressive and continuing inclusion of students in the creation of [educational] content.”

The case considered “Farming in Motown” is about the Michigan Urban Farming Initiative (MUFI) in Detroit. We show how it has shaped teaching and learning at UM, added value in networks of law and engineering faculty, improved career trajectories of the case’s writers, and engaged the work of MUFI and even a new organization for community support in Detroit. We suggest that enhanced cases can foster creative partnerships across civic, tech, campus, and community sectors for improved integration of sustainability and environmental justice in practice [2].

UNIVERSITY OF MICHIGAN AND DETROIT’S URBAN FARM SECTOR

Contestations over urban land use and food availability are multifaceted and complex throughout the United States [3], but perhaps particularly in Detroit [4]. Detroit is a crucible for racial tensions dating back to the 1960s, when riots, protests, and white flight from the city into the suburbs created both constraints and opportunities for civic governance. Subsequent hits to an automotive industry that had been the engine of the city’s economic development included both competition and innovation in Asian automotive sectors (as early as the 1980s) and two financial crises that hobbled industries in the United States (as recently as 2008). These factors thwarted urban development across the upper Midwest in what came to be known as “the Rust Belt,” including larger cities such as Chicago, Illinois and small ones such as Flint, Michigan. From Toledo, Ohio to Detroit, Michigan and beyond, old ideals of industrial development, education and social progress were being forsaken by the twenty-first century.

Detroit—the original “motor city”—has a vast footprint, poor public transport links to surrounding areas, and many impoverished neighborhoods. Persistent politics of poor governance, limited infrastructure maintenance, and economic crises have meant high rates of vacancy and crime. In many neighborhoods, this affects residents’ quality of life, especially with respect to food access. Indeed, throughout the wider area, community-scale efforts at “rust belt to green belt” gardening and maintenance of infrastructure have sprung up.

One parallel example is the small city of Ypsilanti, Michigan, historical base for many automotive labor and management families, where UM graduate Amanda Edmonds founded Growing Hope in 2003 to address food insecurity

through a raised bed extension program and community greenhouse project.² Ypsilanti residents elected Edwards as Mayor in 2014. As in Detroit, where race relations undergird ambivalence about returning urban neighborhoods to farming [5], researchers have noted complicated historical effects of race and class in Ypsilanti’s sometimes reluctant uptake of urban farming [6]. These two examples, Detroit and Ypsilanti, reveal social tensions throughout the region around largely white-led formal initiatives for urban gardening and farming, some of which seem to exacerbate “gentrification” or even appropriation of land and infrastructure under mixed use by communities of color battling urban decay through combinations of arts, faith, gardening, and more. These trends are ironic, and important, given emerging understandings of American urban history that problematize the vision of American Landscape Architect Frederick Law Olmsted which looms large in many cities where he oversaw urban parks that embodied naturalist aesthetics of green space, often displacing the more chaotic but productive and popular “victory gardens” and community gardens of various immigrant urban communities [7]. In sum, this case contributes to much broader questions of who gets to claim and control resources for “sustainability” interventions like urban agriculture, and how the scale or social complexion of such efforts may play into the answers to those questions.

In Detroit, efforts to improve neighborhood food security vie with city-scale redevelopment plans for land and contestation is rife [8]. Those who would create a sustainable urban future in the Motor City, even—or perhaps especially—those from the comfortable, privileged college town of Ann Arbor, must contend with distinct scales of intervention and the human dimensions of those scales. They must consider their responsibility for—and response to—negative effects from their sustainability efforts as city residents demand accountability and wrestle with the roles they play in contributing to what some Detroiters term the “white savior” narrative, especially when impositions of agrarian initiatives can evoke, for some residents, dynamics of slavery or plantation life (whereas aspirations of industrial progress may have lured them to this part of the country before economic downturns). In other words, layered beneath the specifics of zoning, revenues, infrastructure, property, and demography are cultural politics.

2. UM student radio shows “It’s Hot in Here” has archived interviews about that project here.

This can be hard to convey to UM Ann Arbor students,³ of which a small group first created the MUFI farm in Detroit in 2012, based on a desire to address the vacancy and crime issues while implementing strong social media managed ethos of group volunteering from throughout the region [32]. For many of them whose families struggle to afford the rising cost of a UM education, that cost seems worthwhile for the way it confers an ability to lead in making positive changes in the world, and claiming that leadership role as young professionals on volatile job markets. But how can pedagogies foster leadership through listening, through critical engagement and consideration of these very ironies about how vulnerable populations interact with aspiring experts from our colleges and universities? Below, we argue that answers to this challenge can be found in tools that foster experiential learning across cohorts of students, in ways that not only create insights about the case in question but also offer critical tools that can be applied to other cases or projects, and considered by cohorts of faculty as well as professionals and students.

In 2016–2017, MUFI welcomed another group of UM students to produce the MSC case. The intervening half decade had brought change to the MUFI mandate, from an initial emphasis on successful food production to a “three pillar” plan for MUFI’s value and growth in the community. First, MUFI produces food (mostly vegetables, tracked for varietal performance, donated or paid for on sliding scales and studied for technical and nutritional data). Second, it serves as a pilot for green tech solutions for wastewater management, building renovation and energy generation, and land restoration. Third, MUFI as a whole is a natural experiment in the productivity and feasibility of agrihoods [9] as an antidote to challenges with more regional scale sustainability planning [10].

But the debates about these models do not happen in a vacuum. Reopening of MUFI to student engagement also revealed the aforementioned underlying concerns about race, place, and the politics of food and

land use in today’s Detroit.⁴ Documenting them is proving constructive not only for aspiring students of social and environmental change but also for their professors, for Detroit community members, for staff and leaders at urban farm organizations, and, we hope, for zoners, planners, and key decision-makers in cities struggling with economic constraints.

FROM CLASSROOM TO FIELD: EDUCATIONAL IMPACT

A multidisciplinary team of UM students and faculty researched and drafted the initial *Farming in Motown*, in Professor Arun Agrawal’s Nonprofit Management graduate course. The case focused on providing strategic advice for growth that would challenge future students to think critically about the organizational decisions nonprofits must make, introducing MUFI’s experience in a troubled postindustrial urban economy through a short text and podcast. These explored decision challenges for MUFI’s executive board about whether to assert permanence in their North End neighborhood or instead acquiesce to a suggestion from the Detroit City Council that they relocate the farm to vacant land elsewhere in the city. The text invited students to consider that decision in light of other stakeholders: “What would be best for the community, the neighborhood, and for the city as a whole?”

Through edgenotes (multimedia elements featured alongside the narrative text of a case) and assigned peer-reviewed articles, learners could explore Detroit history on one hand, and the role of urban farms in a sustainable city on the other. This approach attends to the possibility of farms fostering exclusion or alienation in contemporary neighborhoods [13]. Specifically, the case considers how farming often constitutes a temporary “first step” toward more permanent land uses like retail or transport that are more privileged in redevelopment narratives, or toward “gentrification” in ways that privilege some social groups over others.

One strong appeal of MSCs lies in their educational value at each step of the process, from case drafting to piloting and revision. Here, we refer to the current version (case text and podcast) of the continually evolving *Farming in Motown* case. The case had further iterations when it was adopted

3. UM Ann Arbor is one of three UM campuses in Michigan. It is the most suburban of these and has the more affluent student body—the other two being located in Dearborn and Flint, Michigan. The distance from Ann Arbor to Detroit is 42 miles, and the cities differ greatly in terms of socioeconomic/racial composition, city infrastructure, and history. Though there is no UM campus in Detroit, there is a relatively new center where UM Ann Arbor students can experience “immersion” in Detroit. Other colleges and universities with campuses in Detroit include Marygrove College, Wayne State University, and the University of Detroit Mercy to name a few.

4. Some student radio and blog discussions describe how such dynamics in Detroit link with or parallel those encountered by UM School of Public Health students working abroad [11, 12]. The artifacts constituted by the iTunes podcasts or online blogcasts help us document nuances of student learning from cohort to cohort, over the years.



FIGURE 1. Above right, a view of the MUFI plot. Above left and middle, Dr. Joshua Newell, of University of Michigan's School for Environment and Sustainability, and his students on their field trip in October 2016.

(and adapted) for a graduate-level course on urban sustainability at SEAS (see Supplemental Material). Associate Professor Josh Newell and PhD candidate K. Arthur Endsley revised the case to focus on urban land use dynamics and equity, land tenure challenges, and questions surrounding the environmental and socioeconomic sustainability of urban agriculture. The student learning objectives for the case in that instance were to:

- Understand the potential role of non-governmental organizations in city-scale sustainable development
- Explain the application of urban agriculture as a temporary or permanent land use in sustainable cities
- Practice multistakeholder decision-making

Pairing the case with assigned readings helped the course appeal to students with different learning styles [14] and provided vivid context for theoretical concepts. In total, the *Farming in Motown* case took three class sessions of 90 min and one longer field trip (see Figure 1). Table 1 outlines the progression of the case through those sessions.

In this sequence, students built their understanding of urban farming from the theoretical, to the practical, to the experiential. When they discussed the *Farming in Motown* case (Session 3 above), students had already had their peek “behind the curtains” (Session 2) and could immediately connect their specific case experience to a more general understanding of case development. Throughout the last month of the course, case teams presented their work and led the class in pilot engaged learning activities, demonstrating the pedagogical value of even early-stage cases.

PODCAST DEVELOPMENT: COMMUNICATION AS IMPACT

As this case moved from Agrawal's course (with his management and political science training) to classroom use under Newell (with his critical geography training), the focus shifted from organizational change to the underlying dynamics of urban land use, with more emphasis on Detroit itself. The instructors and case writing team determined that the focus of original podcast was too broad and did not include critical perspectives. Podcast producer Ed Waisanen and the case development team incorporated additional stakeholder perspectives for a revised version, and in so doing discovered new uses and value for audio.

The podcast originated in live radio conversation on WCBN FM 88.3 between current UM students and MUFI leadership [18]. Waisanen, a host who had shown editing talent, was brought in to edit and record further material to focus and tighten the audio product. This second iteration reached more deeply into themes that impact sustainability efforts in Detroit and beyond, while keeping the voices vernacular and vibrant for varied audiences. Broader applications of the podcast work despite (or perhaps because of) the fact that it was developed in direct response to specific instructors' needs, and with a mandate to draw out perspectives underdeveloped in the case text.

The resulting audio component for the MUFI case features the voices of three guests: a board member of MUFI who reflects a UM student and volunteer perspective; a Detroit resident working at a grassroots level for environmental and food justice; and a long-term resident and professional working for the Sierra Club, watching

TABLE 1. Teaching stages for farming in Motown case in Newell’s urban sustainability class

Session 1	General discussion of urban agriculture, based on academic readings [15–17]
Session 2	Guest lecturer: Michigan Sustainability Cases project lead, describing the purpose of the curriculum initiative and the process of drafting a case Presentation of <i>Farming in Motown</i> case
Session 3	Engaged learning exercise associated with <i>Farming in Motown</i> case: students work in teams to draft a land use proposal for MUFI to submit to the Detroit City Council
Field trip	Visit MUFI in Detroit’s North End. Students meet members of MUFI’s board of directors and experience “Volunteer Day” held every Saturday at the farm

the urban agriculture movement unfold in her hometown. Waisanen’s narration moves among these three perspectives, contextualizing and, as one anonymous student user feedback form noted, “humanizing” the case narrative within the history of racist exclusion and insider/outsider power dynamics that haunt redevelopment efforts in the city, as can so often be the case [19, 20].

While this context could be provided in summary as part of the case text, the weight of these themes seemed to us better communicated as subjective experience, reinforcing learning experiences both within and outside of the classroom. Lonn and Teasley [21] posed a “fundamental question” about podcasting in higher education: whether podcasts are “simply another mechanism for the review of course material”, or if they can “help transform what happens in the classroom where instructors and students meet face-to-face.” Similarly, Drew [22]—analyzing a series of highly successful noninstitutional educational podcasts—suggested that such podcasts provide a model for integrating audio into the curricula rather than “using it as an addendum to learning that takes place elsewhere,” further pointing out that the “versatility, intimacy and ease of production of podcasting make it a logical technology to apply to flexible education contexts.”

Interested in emerging research suggesting that audio sources can enhance retention and reduce stress among many types of learners [23], the *Gala* platform offers both text and audio elements for most modules. In keeping with the MSC initiative’s ethos of cocreation, podcasts that accompany local or international cases on the *Gala* platform are coproduced, featuring input and, often, the voices of faculty, student authors, and practitioners [29]. *Gala*’s audio formats are a natural experiment to understand whether multiple case formats and narrative structures complement the more focused case narrative for improved user experiences and inclusivity (e.g., wider

arrays of learners accessing and understanding the core content).

Not only a complement, audio can also be a shortcut to adequate context for a group of learners with relevant nonlocal knowledge and limited time for engagement. Members of the Association for Law, Property and Society (or ALPS, see, <http://alps.syr.edu/>) visited the MUFI site as the field trip for their 2017 annual conference, and, listened to the podcast on the bus to Detroit from Ann Arbor. The interviewee on the recording described her dismay at primarily white volunteers coming into the city from suburbs to work in urban farms, she also commended MUFI in particular for transparency of its farm labor—that is, not fencing and locking gates around their gardens. As she described the deflating experience of driving by a fenced-in community garden on her commute to work, the bus full of law professors from around the country and world pulled up alongside the MUFI planted beds, and passengers could see for themselves the landscape features they had just heard described. More importantly, they could see it as one instantiation of an urban farm in a highly varied landscape of such efforts, rather than as a single iconic expression of that activity. This enabled them to engage meaningfully with local labor and leadership in the MUFI initiative.

Overall, the MUFI podcast was improved to feature both the organizational history of the initiative and critical perspectives on urban farming and racial or economic privilege in cities. It represents one way that digital media can deepen and broaden case learning experiences. For instance, airing the podcast on a bus brings relevant experts up to speed quickly, focusing on the local context, while airing it on live radio with teachers, students, and stakeholders in studio unpacks techniques for teaching the material, and enables

listeners to ask about wider implications of each case.⁵ It would be naive to expect a teaching tool alone to redress inequalities, but the time when we can teach sustainability issues without at least addressing them is over. The intimacy combined with potential for public engagement offered by creatively curated audio and visual media are powerful tools in this respect.

More directly, developing podcasts enrich the student and wider stakeholder experience and benefit the production team. Producer Waisanen has developed skills to storyboard, coach, record, edit, and revise podcasts. He has related that technical work to research questions and grant writing about how different types or social categories of learners use online features, and how such features can be tethered to hands-on or “makerspace” style learning. These skills have garnered him employment as Media Director at MSC, and leadership roles in mentoring students and faculty alike, both at home and with our international partners in China, India, and Africa, in how to synthesize complex information, and convey it through conversations and stories that have momentum, emotional resonance, and production value.

PROFESSIONAL DEVELOPMENT: ORGANIZATIONAL IMPACT

Writing, too, has unforeseen professional benefits which accrued to the authors of *Farming in Motown*. Lauren Boone’s experience of drafting the *Farming in Motown* case prepared her to develop a pitch for and then manage The Calmplex, an organization geared toward the support of young people in Detroit’s east side, which became a registered 501(c)(3) in Detroit soon after the course ended.

When Boone first took on this project, her priority was to secure a location. With empty lots scattered throughout the east side, purchase of land and development of a structure seemed like an easy undertaking both fiscally and logistically. However, after discussions in the Nonprofit Management class, and in conversations with MUFI’s board members, Boone realized that she needed to consider the conditions of the land she would be purchasing, and what effect a pristine building would have on the neighborhood’s young residents. How would it make them feel, and what would it mean for her own daily

responsibilities and roles? Would local partners feel that it was *their* space?⁶

Developing the *Farming in Motown* case taught Boone the necessity of identifying all stakeholders before beginning a project and actively establishing relationships with them. This became evident on two levels: not only was it important for MUFI to engage stakeholders as they began their initiative to establish a trusted presence in the community but it was also important for her and her fellow authors to engage multiple MUFI leaders to gain a well-rounded view of them as an organization to prepare a comprehensive case.

From these conversations, Boone considered the key interactive roles of the physical and political environments to which she was bringing The Calmplex. Taking the necessity of engaging stakeholders to heart, and bearing in mind the volatility of property relations, zoning and infrastructural change in Detroit as evidenced in the MUFI case, she networked with various community members and leaders. She found that she did not need to buy a facility, but could partner with another local youth-serving agency, embodying an ethic of respect for existing institutions, and of efficiency in use and maintenance of infrastructure (Figure 2).

As a School of Public Health student, SEAS seemed to Boone a bastion of environmental sciences, and an unlikely home for a nonprofit management course, at first. By the end of the course and case work, however, it seemed more fitting. The school’s mission no longer seemed to her synonymous with “being green.” Instead, “sustainability” and “environment” grew to invoke social processes and individual consciousness, both strengthened by social justice considerations. These ideas have shaped the architecture (social and material) of The Calmplex project—a next-generation intervention shaped by Boone’s engagement with creating the case. Through work on MUFI’s challenge in embracing residents as full partners and not just targets or recipients, Boone’s own strategic thinking evolved. She came to understand nonprofits’ roles in society as guardians of the environment which included involvement from all stakeholders affected by a given

5. These “podcast conversations” on the student run live broadcast It’s Hot in Here include cases on smartgrid use by Baltimore utilities, pros and cons of a nuclear plant in Michigan, and this one, MUFI.

6. Boone’s concerns reflect insights from work on property acquisition by Fagundes [24] as they relate to work on justice challenges for urban renewal in the legacy cities of the midwest [25], and to economic and cultural inequality more broadly [26]. In these ways, this case can be said to serve as a catalyst or convener of thoughtful expertise on thorny social challenges, over time, and across the divides between campus bastions of academic theory and the city sites where people live and work on these issues.



FIGURE 2. Above right, self-portrait of youth in The Calmplex pilot program at SAY Detroit Play Center in the summer of 2017. Above middle, SAY Detroit Play Center, the organization The Calmplex has partnered with for their pilot program. Above left, The Calmplex logo.

issue. The pursuits could be environmental (i.e., “green”) or civil, but all were the foundations on which members of society could most effectively build better systems if they enjoy equity and a sense of worth for their work.

“PROFESSORIAL DEVELOPMENT”: PEDAGOGICAL IMPACT

Another application of cases, through conferences, suggests their potential as an adaptive pedagogical tool, including for professional development of both practitioners and professors. Not only did the MUFI case structure the aforementioned afternoon field trip for 35 property law professors from the annual meeting of ALPS in May 2017 but it also figured in a workshop at the conference of the Association of Engineering and Environmental Science Professors in June 2017. Each of these was an experiment in use of cases to help foster new cultures of engaged teaching, with slightly different emphases.

Recall the law professors who heard the case podcast on their bus ride to Detroit. On arrival at the MUFI site they met a team of corporate lawyers from Procter & Gamble who had been volunteering in the gardens that afternoon. MUFI founder Tyson Gersh addressed the two groups of lawyers at length about the fragility of property rights and land tenure for the farm in that part of Detroit. He outlined his vision of moving beyond farm plots to integrated “agrihoods” where distributed energy, water recycling and treatment, and other inputs could be coordinated and at scale for energy conservation and efficiency of food production. Gersh spoke urgently and passionately, pointing out existing buildings and water catchment facilities in

play, and explaining various challenges to this vision from the city’s political leadership.

After this presentation, the corporate lawyers left, and the property lawyers divided into two groups, one volunteering with wheelbarrows and watering cans, while the other sat to talk and think out loud with Gersh and several neighbors and residents who gathered at the end of their work day to enjoy the warm weather and exchange ideas. Those conversations focused in part on a proposed transit zone for the several city blocks currently farmed and managed by MUFI, a proposal that previous student research at UM has suggested might destroy rather than support the area’s fragile but growing residential and ecosystem services base [27].

The property law faculty suggested key precedents from other parts of the country for MUFI staff and allies to consider, as they struggle to gain control over the land and secure their infrastructural experiments within the landscape of gradually reemerging Detroit economies. Suggestions included provisions for legal mechanisms that could also help protect the interests of long-term residents. MUFI has subsequently reached out to MSC for more information and interaction, and we are entering a new stage of integrated legal, landscape architecture, and digital innovation expertise in our engagement with them, which will be reflected in adaptations and updates to the existing case (Figure 3).

A few weeks after the ALPS conference, Engineering faculty at the AEESP (or Association of Environmental Engineering and Science Professors, see <https://www.aeesp.org/>) meetings in Ann Arbor attended a workshop run collaboratively by MSC at UM and colleagues from four



FIGURE 3. Above left, from right to left, Professor of Community Development and Housing Law Lisa Alexander, of Texas A&M University, Maine Law Professor and Princeton Program in Law and Public Affairs (LAPA) fellow Sarah Schindler, and University of Houston Law Center Professor David Fagundes talking with MUFI founder and former UM student Tyson Gersh during the Association for Law Property and Society Conference field trip on May 18, 2017. Above right, Property Law Professor and Legal Historian Douglas Harris, the Alfred A. Nemetz Chair at University of British Columbia, watering the MUFI plots.

other universities conducting research on experiential learning in engineering and sustainability fields. We presented elements of multimodal and experiential learning, and considered how digital innovations can be incorporated into classrooms, professional practice, and research, and summarized MSC adoption to date, in UM classrooms ranging from Nursing Policy to Environmental History, across graduate and undergraduate curricula. Engineer Jeremiah Johnson presented data from his use of MSCs in classrooms revealing that benefits of case-based teaching accrue most markedly to students in engineering or sustainability science who, unlike those in law, business, policy, or medicine, do not have exposure to case-based learning in their conventional curricula [31, 35]. Participants interrogated the capacity of cases to build analytical and professional skills or even certifications in applied fields such as landscape architecture or urban planning. They also expressed hope that enhanced cases could “move the needle” beyond campuses on actual nutrition, participation, infrastructure, or education issues within featured communities.

These combinations of digital innovation with teacher training and an experiential learning approach appeal to the varied audiences for which Freire [28] calls in his for-

mative *Pedagogy of the Oppressed*. These range from academic specialists to concerned publics to the vulnerable target communities of health, sustainability or development interventions who may have little formal education [30]. Whether such inclusivity can suffuse sustainability teaching remains to be seen. Indications across professional schools on the UM campus are heartening. One example is the UM Law School which has not only implemented new “problem driven” classes offered in partnership with other professional schools across campus but also incorporated clinic-based work into year 1 law education [36]. For us at SEAS such collaborative, cross cutting approaches are best anchored with cases for maximal coherence and scholarly rigor, even as they seek to transform both pedagogy and professional practice.

CONCLUSIONS/RECOMMENDATIONS: SUSTAINABILITY IMPACT

Farming in Motown has conferred benefits on many who have collaborated on its iterations. We summarize them in this conclusion and revisit our concept of linked curricular, technical, and professional innovation which is summarized in Figure 4, below. First, producing the case

pushed the authors to convey—through development of multimedia content, text, and class activities—the key concepts of nonprofit management they had learned in the classroom. It challenged them as future nonprofit and communications professionals to immerse themselves in the social and ecological landscapes surrounding any project or nonprofit purporting to “help” locals [33]. Second, that writing and audio editing experience enhanced communication and strategic skills for student authors, enabling professional next steps. They also fed into and then were replicated in Professor Newell’s Urban Sustainability course (see Supplemental Material), where students used *Farming in Motown* to generate their own cases based on issues they read about or experienced firsthand. Some of those are now pending in the formal proposal stage as funded MSCs.⁷ Third, case use in successive classrooms has shaped teaching and learning at SEAS and UM, fostering deeper reflection on urban sustainability in the areas beyond campus, and enabling iterations of this case. For example, an SEAS Landscape Architect faculty member who works in Detroit is exploring 3D and visualization tools that might be added to the existing online case, enabling learners to envision competing land use options. As debates rage in Detroit about land acquisition, zoning, and infrastructure, this new direction excites MUFI board members and offers tools for consultation and scenario planning with property lawyers, computing experts, public officials, and community members in new ways. Finally, featuring the case in conferences for faculty (ALPS and AEESP) has illustrated the benefits of problem-driven partnerships for putting sustainability education principles into practice. It has also extended this case’s use to other campuses, including college and high school classrooms, where it has proven scaleable to various levels of learners [34].

“Case alumni” like our lead author, Lauren Boone, can also see “ripple effects” beyond the classroom that are at once local and larger. The MUFI case fed into Boone’s next-generation sustainability project, The Calmplex, to augment the capacity of Detroit’s youth to be skilled and powerful participants in building the city’s future infrastructure and economies. Indeed, the impetus behind this

7. The original Third Century grant was for 4 years; the MSC project is in year 3 at the time of this writing, continuing to fund case production, but also building out partnerships for a broader platform that can host content for NGO, University, or Corporate partners seeking training in sustainability fields.

publication was to convey Boone’s unexpected learning outcomes from involvement with this case. Her takeaways for project-based interventions can be summarized in the form of four key internalized principles for an ethics of community interaction including:

1. Start small: while eventually you may seek to transform a neighborhood or even entire area of city, beginning at the scale of a single block can offer a platform for building through conferral and collaboration with changing communities over time.
2. Start simple: while you may see glaring infrastructural needs, you may be missing existing informal institutions that support families, structure resource sharing, or ensure security in resource constrained environments.
3. Seek social context: community, civic, and even state governance can shape the constraints and possibilities for development in ways that are not initially apparent in urban areas experiencing blight, food security challenges, crime, or other stressors.
4. Step back or step up: you may be passionate about a project or see a need in a community, but if you are an outsider, recognize that there may be someone else within the community better qualified to do it who just needs some support. Conversely, your outsider perspective may position you to do something novel in a community. Including input from residents and established community organizations is essential when determining which action to take.

For those teaching the “Farming in Motown” case outside of Detroit, Michigan or its surrounding areas, we recommend the following:

1. Contextualize the case, providing a brief history of Detroit and detailing its current landscape; the edgenotes provide supplementary background information on Detroit, and the podcast brings the case to life for those without sensory experience of Detroit.
2. Identify a community-based organization (urban farm or other) in your area and arrange for a tour and/or a presentation for your class. Have your

students pay attention to how the organization interacts within the larger ecosystem of your city or town, i.e., its relationship with community members, government, philanthropic organizations, zoning and planning agencies, conservancies, corporations, etc.

3. Draw comparisons between Detroit and your city or town's organization. Identify similarities and differences and consider how these help or hinder the positive development of the organization in your area. This can be done, as in Professor Newell's class, with recourse to demographic/census data and/or even simple spatial analysis tools. What are the relationships between income, residential location, and infrastructure? We are working to provide in future 3D and visualization tools for a more immersive experience.

To end this article is to begin broader dialog with users beyond our region and campus. Here, we honed in on the MSC MUFI case to reveal the potential for inclusivity and impact of enhanced cases—personal, pedagogical, organizational, and more broadly societal—both within and beyond classrooms. This potential is best realized, we argue, when cases are reimagined for (a) *collaborative creation* by a combination of faculty, students, and practitioners (with thorough review from multiple experts), (b) *integrative use* in and beyond classrooms, drawing on applied and basic concepts from various disciplines, and (c) *digital innovation* that enables iterative improvement of cases as living documents with real voices and recent information. These three pedagogical principles invite new users to become coproducers of an updated case or creators of new cases. When built thus over time, these enhanced cases can create demonstrable educational and social/environmental impacts [35]. They also nuance our ideas of digital innovation and “edtech,” as not merely online learning at vast scales, but as “craft tech” products that enable effective face-to-face and site-specific engagement with sustainability challenges, while fostering learning across distant sites with comparable challenges.

For readers interested in the broader pedagogical innovation project of which the *Farming in Motown* is one token, we suggest contacting the MSC team at msccontact@umich.edu about our annual Sustainability

Learning Summit, Galaxy, the first of which unfolded in June 2018.⁸ It also launched the first open access, entirely free Citizen Sustainability Certificate⁹ conferred jointly by SEAS and the City of Ann Arbor, using three curated cases on water issues. Such creative responses, we argue, when monitored for reach as continuing education tools, and relevance to lived sustainability challenges, can serve as concrete examples of “engaged” curricular approaches for the 21st century. We hope here to have conveyed the iterative workings of an anchor point for such innovation and research—an individual case, evolving over time with positive outcomes in both classrooms and communities.

AUTHOR CONTRIBUTIONS

Lauren Boone: conceptualization (equal) writing—original draft (lead); writing—reviewing/editing (equal). Lizz Ultee: conceptualization (equal) writing—original draft (supporting); writing—reviewing/editing (equal). Ed Waisanen: data curation (equal); writing—original draft (supporting); writing—reviewing/editing (equal). Joshua Newell: conceptualization (equal); writing—reviewing/editing (equal). Rebecca Hardin: conceptualization (equal); writing—reviewing/editing (equal). Joshua A. Thorne: data curation (equal); writing—reviewing/editing (supporting).

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8. Held in partnership with the City of Ann Arbor (the Mayor's Green Fair, the Cinetopia Film Festival, and the A2 Summer Festival), it linked arts and sciences, intensive case workshops with much wider events. For instance, it featured a Charrette on water contamination issues with local business, local government, university expert, and state agency partners.

9. For more information or to participate in this certification, see <https://csc.learnkala.com> (accessed June 12, 2018).

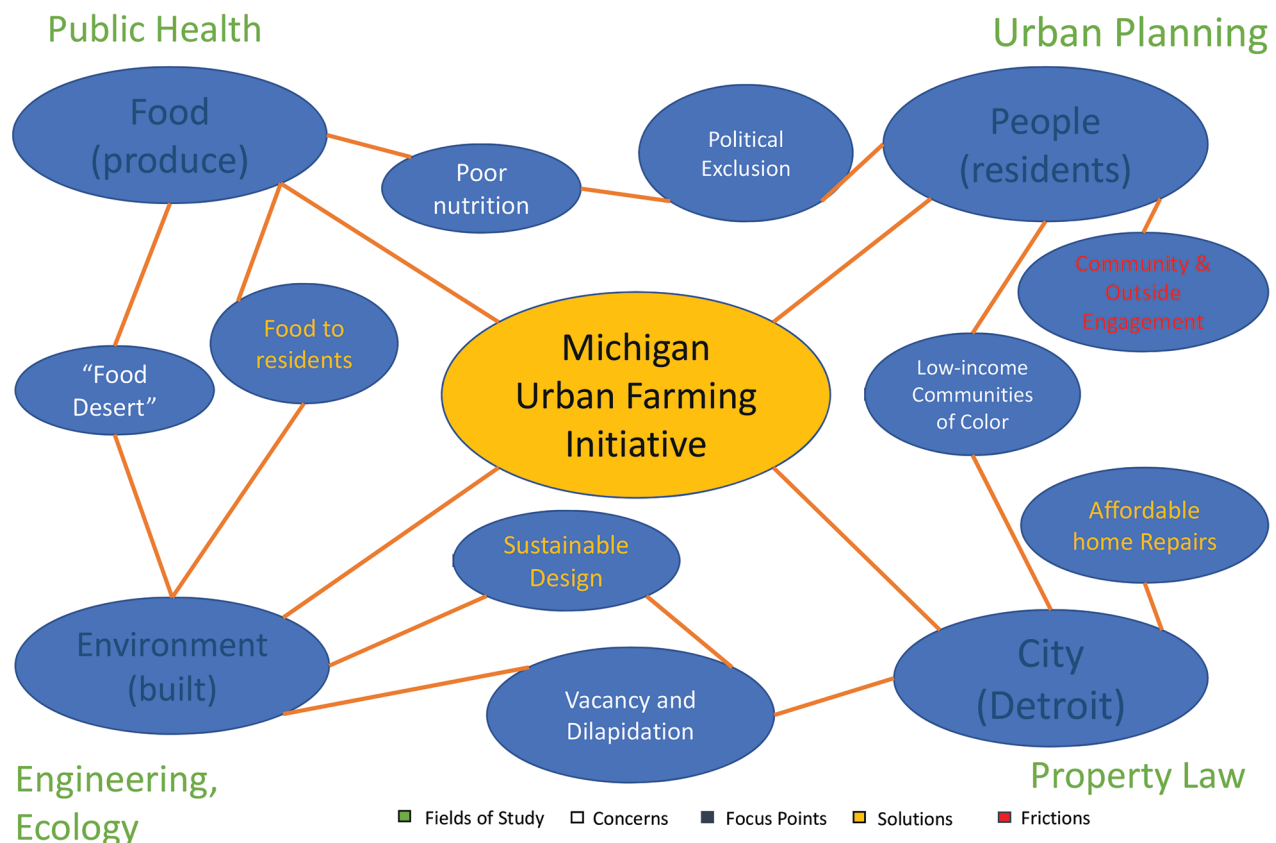


FIGURE 4. Joshua Thorne’s concept map of the *Farming in Motown* case, showing the intersection of concerns, solutions, and actors; as well as the relevance of these issues to multiple fields of study.

and Treaver Boyer (ASU), Amy Landis and Claire Danscz (Clemson), and Melissa Bilec (Pittsburgh). We thank Beatriz Canas, Sonia Joshi, and Dorceta Taylor at UM for making it possible for Joshua Thorne to engage with this research as a Doris Duke Conservation Scholar. Arun Agrawal initiated this case in his course and served as its catalyst. K. Arthur Endsley’s work on adapting it in Newell’s course was indispensable, and Meg Daupan (UM) and Sally Brown Richardson (Tulane) masterminded many aspects of the Association for Law Property and Society (ALPS) Field trip to the MUFI site. Ann Arbor City Environmental Coordinator Matthew Naud and Mayor Christopher Taylor have catalyzed better civic/campus collaboration through Galaxy 2018 and the Citizen Sustainability Certificate on Water. Ann Arbor’s student radio station, WCBN FM, enabled our team to convene expert conversations, record and edit iterations of the podcast.

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COMPETING INTERESTS

The authors have declared that no competing interests exist.

SUPPORTING INFORMATION

Text S1. Urban sustainability NRE 537: syllabus.

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