

Engaged Practices: A Meditation on Design-Build Pedagogy and Public Health

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Abstract

This paper presents an experiment in design-build pedagogy performed in a Directed Research course that examines the relationship between architecture, public health, and upward mobility. It argues for the grounding of design-build work in this milieu of public health research and community impact, the prioritizing social impact over technical learning objectives, and that developing projects through multidisciplinary teams that bring together infrastructure, professionals, academics, and civic or community partners creates viable, fundable, realizable projects that can help reduce barriers to opportunity in low-budget contexts.

Introduction

Engaged Practices is a research-intensive design-build capstone studio I offered in the Spring of 2024 at Syracuse Architecture. The confluence of three simultaneous but unrelated events made this studio experiment possible.

First was the planned launch of Syracuse Architecture's Directed Research program in the spring of 2024. This Directed Research (DR) capstone replaced the previous thesis program and is, as in many other schools of architecture, a one-semester studio in which students petition to participate in faculty-led research projects in areas of their interest.

Second, in November 2023, while Syracuse Architecture was preparing to launch the DR program, another

development took place: a multidisciplinary team of architects, engineers, academics, and civic partners led by Hydronic Shell Technologies and working out of the Syracuse Center of Excellence in Environmental and Energy Systems (SyracuseCOE), a research and business incubator, won a \$3 million grant in the Housing Affordability Breakthrough Challenge.¹ This grant would enable them to pilot a deep energy retrofit project on the façade of an aging 10-story multifamily building with significant indoor air quality problems in the Syracuse Housing Authority's James Geddes Development. This significance of this project to the course presented in this paper lies in its convening of patented technological innovation from Hydronic Shell Technologies, the professional architectural retrofit experience of Cycle Architecture + Planning, the academic resources of the Syracuse University Architecture and Engineering programs, and a commitment from the Syracuse Housing Authority to improve the performance of their housing stock, develop a viable, fundable project in the area of public housing, where funding for capital improvements is often in short supply, and address critical public health issues within this public housing community.

Finally, at the same time that Hydronic Shell was awarded funding for their pilot project, the Lender Center for Social Justice at Syracuse University was calling for grant proposals for research into the racial wealth gap. Along with 4 other research teams I was awarded a \$100,000 grant to investigate the relationship between architecture, public health, and upward mobility.²

These three developments informed the core of Engaged Practices, my part in the rollout of Syracuse Architecture's Directed Research Program. In this course I leveraged the content (but not the funding) of my Lender Center grant to prompt students to investigate the potential for co-design to positively impact public health and opportunity in low-income communities following the multidisciplinary approach modeled by the Hydronic Shell team.³

Engaged Practices

I designed Engaged Practices as a semester-long, community-engaged research and design studio in which conventional design-build theory and pedagogy are attuned to the production of architecture and design from the bottom up, and the work done is in service of public health in struggling communities in such a way as to potentially open access to opportunity and subsequently enable upward mobility. This six-credit course was originally designed around collaboration with a veteran's service organization and design-build research that would fit out mobile medical vehicles for veterans living in remote communities. 17 students balloted for this experience: 16 fifth-year undergraduates and one third-year graduate student. In preparation for the course, they also independently applied for and received \$5,000 of support via a Syracuse University Office of Undergraduate Research and Creative Engagement grant.

However, for reasons outside of my control and unrelated to the work, our original community partner had to pull out of our collaboration on short notice. This left me with a choice: stay the course, knowing that without a partner the outcome would only be speculative, or pivot days before the class started and try to find a community design-build project that could be completed within one semester. Since the premise of the course the students originally balloted for promised to complete a build in the community, and not a purely speculative endeavor, I

decided to pivot. I made this choice transparent to the students, presenting the situation as an opportunity rather than a limitation. The first schedule I provided for the class was mostly blank. I told them that we would fill in the schedule as the semester progressed, and that after an intense period of research into the relationship between architecture, public health, and opportunity within Syracuse, New York, I would invite them to propose their own potential partners and related projects. This was intended both as a test of their research findings and as a way to give the students additional agency in their work. Thus, the course was divided into two seven-week phases: a preliminary intensive research phase and a secondary intensive design-build phase.

Phase I: Research

The focus of our research was to contextualize community-engaged design-build and design-build research as a model that has the capacity to support public health, and in so doing help to remove barriers to opportunity. Throughout the course, we used opportunity to refer to access to upward mobility, as defined by Opportunity Insights, a Harvard University economic think tank that studies gaps in economic mobility.⁴ Opportunity Insights studies opportunity in order to propose policy on the state and national level designed to reduce poverty and remove barriers to opportunity. We were interested in whether their policies could be translated into local, small-scale, actionable architecture projects in our Syracuse community.

To unpack the relationship between architecture, public health, and opportunity in Syracuse in a large group setting, it was important to ensure that broad understanding of a wide range of material was shared equally across the entire studio in a relatively short period of time. To accomplish this, I experimented with organizing students into dynamic, overlapping teams. First, they were split into three thematic research areas: 1) Opportunity Insights and how they define elements of

and avenues to opportunity; 2) the history of Syracuse, New York, which we would rearticulate through the lens of opportunity; and 3) public health issues in Syracuse and central New York State, particularly in the areas of food security and aging. At the same time, the students were divided into two documentation teams, one for the layout of our research book and one for data analysis and Geographic Information Systems (GIS) mapping. Both documentation groups had members from each of the thematic research groups. This overlapping of research areas ensured that when organizing our research for presentation or documenting findings through maps, diagrams, or other graphic means, all areas of research would be included. This model also enabled the even distribution of knowledge; as new information was uncovered throughout the course, its place in the larger context was better understood by all involved. Through weekly presentations students demonstrated – both individually and as a collective – their increasing command of a broad, complex, and interwoven research context.



Fig. 1. Students presenting their research and preliminary design work to a panel of public health studies faculty at mid review.

While the students were engaging in this literature review process, I invited a number of experts to visit the class to share their knowledge and work in the non-architectural fields we were investigating. Guest speakers included those who research food security and food sovereignty, nutrition studies, farm labor, public health, data analysis and GIS mapping, and community-engaged design. Professionals from the Syracuse Housing Authority discussed local public housing issues with the group, and the director of Brady Farm, a local urban farm (that would ultimately become our design-build collaborator) discussed philanthropic farming. We were also joined by the team from Hydronic Shell, who discussed the origin of their multidisciplinary collaboration at the SyracuseCoE and how it helped them to develop their project and win seed money to pilot a massive energy retrofit project with the Syracuse Housing Authority.

Building on their research and in-class discussions, students then hypothesized a catalog of co-design projects that followed this same multidisciplinary structure. Each project convened infrastructure, professionals, academics, and civic or community partners to respond to specific community needs revealed through student research. The projects were imagined to support ongoing efforts (rather than leverage architecture to start new ones), facilitate grants or other funding through collaboration, and allow ample space for partners to make their needs heard. From this list of speculative projects, students selected two that both resonated strongly with them and that they felt were the most viable.

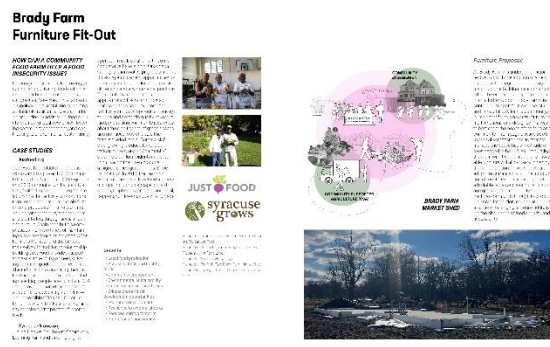


Fig. 2. Preliminary concept proposal for Brady Farm build out. Proposal includes speculative collaboration between community, professional, and academic partners.

The first project proposed the construction of Wi-Fi-enabled public outdoor furniture in the James Geddes Housing Development community. Our research showed that 30% of residents in that community's zip code did not have internet access, so we approached a university Wi-Fi provider to discuss a possible collaboration. While they were very open to working with us, it quickly became clear that the best we could accomplish in a semester would be a temporary Wi-Fi-enabled furniture demonstration project on campus, but not in the area that it was actually needed. Again, since the learning objectives stated in Engaged Practices included engaging the public directly in some capacity through this work, this project option was not selected.

The other idea that captured the students' attention was to collaborate with Brady Farm to design and install permanent, flexible, multifunctional, built-in furniture in their newly constructed Market Shed building.⁵ This furniture would help to fit out Brady Farm's new dedicated community room, support their nutrition education and workforce development programming, and provide a welcoming space in the Southside Syracuse community. Once the farm confirmed their intent to collaborate with us, the students and I chose unanimously to move forward with this option.

The preliminary research phase concluded with a presentation of the students' work to two distinct panels: one made up of educators in public health, community engagement, and community design, who offered their expertise in non-architectural areas to provide feedback on our foundational research; and the other including both the director of Brady Farm and Syracuse Architecture design faculty, who provided preliminary feedback on the scope of work of the developing design-build effort.

Phase II: Design

Once the students had identified Brady Farm as their community collaborator and defined their scope of work, the course followed a more typical design-build pedagogical structure. The students made multiple site visits to the under-construction Market Shed building to get a feel for the space and measure the as-built conditions. They met with the director of Brady Farm several times to present their design work and gain feedback. After multiple rounds of feedback and revision, Brady Farm approved a final design, and the students got to work developing shop drawings and fabricating the millwork.

Prototyping

We started with a full-scale mock-up—necessary in any project, but even more so in our case, as only five of the 17 students had any significant prior woodshop experience. This mock-up was vital to evaluate our fabrication strategy and to build confidence in the classroom. The prototype revealed problematic issues in a few key areas, which students were able to recognize and revise before we approved the mock-up and moved on to the final fabrication phase.



Fig. 3. Students assembling and testing full scale mock-ups.

Fabrication

As two of the students were minoring in Construction Management, I delegated the management of the fabrication process to them. Management experience developed in a studio setting with a flat hierarchy enabled these students to develop strong collaborative leaderships skills while contributing to the larger organization of the construction process. While others developed detailed, dimensioned shop drawings, these two students organized a complex-but-clear fabrication manual that proved to be a vital document for the success of the build. The manual coded all the parts and pieces, enabling any student to cut, stain, or assemble any piece at any time without working at cross purposes. This approach added a clear value to the student experience: working together using documents that they developed themselves – rather than instructions provided by their instructor – gave the students a clear sense that this was their project, and they were responsible to Brady Farm for completing it.

Installation

At the conclusion of the semester, the Market Shed building—the permanent home for the students' work—

was not yet complete. So, instead of installing the millwork on site, the full installation was assembled in the visiting critic studios on the main floor of the architecture building at Syracuse University. This was their pre-installation mockup. Both a chance to present their final work to the director of Brady Farm and to make sure there would be no surprises when the final install took place.⁶

Results

The culmination of the students' work was twofold: 30 linear feet of millwork designed to meet the specific needs of Brady Farm and a 200-page research book written, designed, and edited by the students that contextualizes their work within a larger sociological-theoretical framework. The site-specific millwork includes storage space for tables and chairs for 40 people, two folding “murphy” tables, two chalkboards and a TV for presentations, space for a reach-in cooler for produce on market days, and a significant amount of additional storage and display space. The research book positions the technical learning outcomes of the design-build as secondary to the potential for public health impact through design. It draws connections between the expanded capacity of Brady Farm to distribute fresh produce to a community in a food desert and the potential for improvements to individual health to connections between improved health and improved performance in education, which ultimately contributes to better access to opportunity.⁷ Thus the students present how a relatively small design-build project can have an outsized impact on the community in which it is situated.



Fig. 4. *Engaged Practices: Opportunity Design*. Research book written, edited, and designed by Engaged Practices students.

Discussion

Having completed this Engaged Practices experiment, I wish to reflect on the challenges and successes encountered in this research-intensive design-build format and the potential for co-design architecture in the context of public health.

Starting a one-semester design-build course without a partner, site, or program, I think most would agree, is not an ideal situation to find yourself in as an instructor. I chose to take that risk with my students knowing that we needed time to build a strong foundation of contextual research for our work and hoping that I would be able to leverage existing personal or university relationships to find a community project to pursue. Students initially expressed doubt and even some incredulity, but to their credit pursued their work with aplomb. I believe that being transparent about the unexpected exit of our initial partner and framing the entire studio prompt as something in which these final-year students could take part both intimidated and inspired the students to keep moving forward. Their belief in their own agency really became clear when they began to propose and argue for

different projects they developed from their own research efforts. In the end, although we could only choose a single project to build, all the students were personally invested in the final work.

Even as the students were developing their proposals, a lot of behind-the-scenes work, and no small amount of luck, went into securing a partnership mid-semester in order to complete this community project. It was fortunate that we were able to identify a build opportunity with a tightly defined scope of work and limited program—had we opted for a new building rather than an interior fit-out, for example, the parameters of the project would have far exceeded the limitations of this studio. It also helped to be able to leverage existing relationships I had built previously through university work—leveraging the power, wealth, and status of universities in service of organizations and communities “otherwise lacking in self-determination in consumer society,” is a vital role of the academics in the multidisciplinary team structure we explored.⁸



Fig. 5. Presenting public health research, construction manual, and shop drawings in front of pre-installation mock-up.



Fig. 6. Final installation on site. © Devon Banks Photography

While the research and design-build phases of this project could easily have been split into two different courses, which would expand the capacity of both, it would create a disconnect between the students and their work as each cohort would only participate in one phase of the work. At the same time, while compressing both phases into one semester provided students with a deeper connection to their work, it also increased the intensity of work, stress, and uncertainty, for both students and faculty. There are benefits to both approaches but moving forward I will strive to ground all my design-build courses in some type of research context that positions the why of the build above technical learning objectives. Any build experience will provide hands-on learning to students, but contextualizing the build in a broader research context gives value to the work that extends beyond construction knowledge alone.

Which brings us to the potential for co-design approaches in the design-build and the academic studio. As I said, it is expected that hands-on technical learning is an integral part of any design-build experience. Foregrounding an element of co-design in design-build context has the potential to give students a new appreciation for the capacity of architecture to contribute to positive change and the question of who then gets to participate in that change. Working directly with community members and community organizations invites students to view the built environment in a new way, share personal experiences with individuals from different backgrounds, and see the direct impact their work can have, for example, on issues related to public health, education, aging, and opportunity.

This was the primary intent of Engaged Practices. The innovation and value of the course was in the research and contextualization of design-build as a social practice in support of public health and opportunity, rather than necessarily in the design and development of a novel or envelope-pushing design project. Though it was not in the end, strictly speaking, a co-designed project, students had the opportunity to visit, learn from, and engage with a new context in Brady Farm. The students worked closely with Brady Farm leadership throughout the design process, including multiple visits to the farm and long conversations with its director, but we also relied on their experience with the community as a stand in for insight and desires individual community members may have expressed. This was primarily due to the desire, on behalf of myself, the students, and the farm, to not to rush or shortchange community feedback during what amounted to a shortened, seven-week design-fabrication-installation schedule, and partially a result of the relative uncertainty introduced into the entire studio with the unexpected exit of our initial partner.

Finally, I return to our inspirational model for the multidisciplinary approach to co-design implemented in both the Engaged Practices research and build efforts. The Hydronic Shell team brought together experts in infrastructure technology, the professions, academics, and public housing, and their initial \$3 million grant is evidence that teams structured in this multidisciplinary capacity convey feasibility to granting agencies, increasing the likelihood of funding, which in turn helps overcome the barrier of cost.

Encouraging students to approach co-design using this interdisciplinary model will introduce them to new contexts, new communities, professionals and academics in other fields and industries, and has the potential to add diverse skills and experience to their research teams, increase the perception of project express feasibility, allow them to win more funding, and

create better opportunities to realize design-build projects in low-income contexts.



Fig. 7. Final installation on site. © Devon Banks Photography

Conclusion

The research and design-build work performed by students in my Engaged Practices directed-research studio was informed by and, in turn, informed the way in which I am now pursuing research and design in my work for the Lender Center grant—the grant on which this studio was originally based. That research will conclude in spring 2025 with a community-engaged construction project completed in partnership with the Syracuse Housing Authority and residents of the James Geddes Housing Development: a permanent shade structure to provide relief for elderly residents during the hot summer months when indoor air temperatures are unbearable and while residents are waiting for the Hydronic Shell retrofit project to be completed. As a public health project, this pavilion will not only provide comfort for aging residents, but opportunities for socializing within a population that is increasingly isolated. A major goal of this project—to support the physical and mental health of the residents—also has the potential to reduce stress on the residents' family members, enabling them to focus

their attention elsewhere—their own work, childcare, continuing educations, etc. — and improve even more life outcomes.

Not only did my students help to develop a model that positions local and co-design work in service of public health and opportunity, but they also tested that model in the design and construction of a permanent installation at a local urban farm. Their work has made a valuable contribution to a larger framework of ongoing community-design research that will continue to have a positive impact on these practices in the long term.

Notes:

1 Emma Ertinger, “\$3M Awarded to Hydronic Shell Technologies to Pilot New Building Technology in Syracuse,” *Syracuse University News*, November 30, 2023. <https://news.syr.edu/blog/2023/11/30/3m-awarded-to-hydronic-shell-technologies-to-pilot-new-building-technology-in-syracuse/>

2 Diane Sterling, “Lender Center for Social Justice Awards 5 Grants for Racial Wealth Gap Studies,” *Syracuse University News*, September 6, 2023. <https://news.syr.edu/blog/2023/09/06/lender-center-for-social-justice-awards-5-grants-for-racial-wealth-gap-studies/>

3 All funding for the course was sourced independently of the Lender Center Grant, the stipulations of which do not allow for funding of coursework.

4 “Policy Solutions to the American Dream.” Opportunity Insights, July 25, 2024. <https://opportunityinsights.org/>.

5 The author of this piece is also the designer and Architect of Record for this Market Shed project. While the building was under construction at the start of this course, the opportunity for the students to get involved in developing furniture for the interior was not discussed until it emerged through the work developed in this course.

6 As all of the students in the course graduated before the Market Shed building was completed, they were not involved in the installation of the millwork at Brady Farm. Instead, it was

done at the end of the summer by me with assistance from paid student-research interns.

7 “Education.” Opportunity Insights, November 10, 2021. <https://opportunityinsights.org/education/>.

8 Iturbe, Elisa. “Doubt, Rapture, Power, and Knowledge: A Four-Part Reflection on Architectural Education.” Essay. In *Pedagogical Experiments in Architecture for a Changing Climate*, 247. London: Routledge, 2024.