Embedded and Hopeful: A Curriculum for Change

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The next generation of architects will face unprecedented challenges involving ecological collapse as well as related issues of culturally embedded social and political inequities. Architectural education has a key role to play in addressing this ongoing environmental crisis. Site-specific social and environmental design approaches need to become a core part of our undergraduate architectural curriculum. Students tend not to gain enough experience working within multidisciplinary teams and collaborating with community stakeholders, especially early in their design education, and both of these experiences can offer students an expanded set of skills and understandings that can help them to mediate local social and environmental complexities.

This paper exemplifies a learning approach in which architecture students work with students from a variety of other disciplines to create design proposals for the transformation a failing mall into a local sustainability hub. Students work through concurrent social and ecological goals throughout their design experience, and through cross-disciplinary teamwork, the students learn to examine sustainability and social agendas through different disciplinary lenses.

The students also benefit from an immersive learning approach. Community members and local business groups involve the students in discourses which help students to define project goals to better address local social and environmental issues. This exposure to actual local needs provides a cognitive and ethical foundation for the students' design approach.

As our design settings become increasingly more complex and volatile, with social issues of inequity at the fore of escalating ecological issues, the architects who face these challenges will need to be capable of working within and mediating a myriad of local complexities. Through a critical examination of this course's learning outcomes, this paper demonstrates a potential trajectory for a hopeful architectural design pedagogy, one that can better address a future shadowed by the implications of climate change.

> Ecological design requires not just a set of generic design skills but rather the collective intelligence of a community of people applied to particular problems in a particular place…
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> —David W. Orr, *The Nature of Design: Ecology, Culture, and Human Intention*

INTRODUCTION

The next generation of architects will face unprecedented challenges involving ecological collapse as well as related issues of culturally embedded social and political inequities. Architectural education has a key role to play in addressing this ongoing environmental crisis. Our traditional undergraduate architectural studio learning, however, tends to be somewhat insular and students learn primarily how to talk to and design for other architects. Formal design logic is often used as our shared foundation and in architectural academia our discourses that surround sustainability tend to follow these kinds of formal logics as well, searching for commonalities and ubiquitous solutions. Site-specific social and environmental design approaches also need to become a core part of our undergraduate architectural curriculum. Students tend not to gain enough experience working within multidisciplinary teams and collaborating with community stakeholders, especially early in their design education, and both of these experiences can offer students an expanded set of skills and understandings that can help them to mediate local social and environmental complexities.

The new 2020 NAAB standards have added values and criteria that aim towards these student learning objectives. One is a Shared Value titled "Leadership, Collaboration, and Community Engagement" in which "(a)rchitects practice design as a collaborative, inclusive, creative, and empathetic enterprise with other disciplines, the communities we serve, and the clients for whom we work."[1] Another related NAAB addition is a Program Criteria titled "Leadership and Collaboration" which addresses "(h)ow the program ensures that students understand approaches to leadership in multidisciplinary teams, diverse stakeholder constituents, and dynamic physical and social contexts, and learn how to apply effective collaboration skills to solve complex problems."[2] This paper exemplifies one approach to giving students these experiences through

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an examination of a multidisciplinary, immersive learning design course taught at Ball State University in the 2020-21 academic year.

This design class fulfilled a requirement for the university's sustainability minor, and though the course was housed in the architecture department, students were recruited through campus posters and word-of-mouth from a variety of disciplines and a variety of year levels. It is somewhat common in universities to experience this kind of student mix in seminar-type courses, but not in a project-based design course. This course sought to embed multidisciplinary team work and community stakeholder interactions in all stages of the students' design process learning.

There were a plethora of benefits from the multidisciplinary teamwork and community interactions, demonstrated throughout the semester by the students. This paper overviews three significant learning outcomes that expand on traditional architectural deign studio learning through multidisciplinary teamwork and community partner collaborations.

COURSE ORGANIZATION

In this design class there were 15 students who ranged from their third year through their fifth year in their undergraduate studies—and included students from: architecture (8 students), landscape architecture (1 student), urban planning (1 student), visual communication (1 student), journalism (1 student), natural resources and environmental management (2 students), and biology and conservation (1 student). As expected with a multidisciplinary mix of students, in-class conversations were enriched with students bringing to the table a multitude of disciplinary lenses.

The semester opened with a discussion of what sustainability is through a series of assigned readings.[3] The students discussed what sustainability means to their various disciplines and how sustainability is actionable in their various disciplines. The students also discussed issues of social and environmental justice. The course readings introduced the idea that each discipline approached these topics through distinct disciplinary lenses, and the students then talked through their various discipline-based assumptions and experiences redefining an expanded approach to sustainability issues and social and environmental justice issues. These conversations were revisited throughout the semester as the class continually built interdisciplinary frameworks for their projects in order to imagine and design an ecologically and socially responsible place.

The students worked in teams to create design proposals for repurposing a failing mall into a local sustainability hub—each team choosing an abandoned anchor store as their project site. The students ideated their own project ideas, prioritizing programs that directly addressed local social and environmental issues. Teams were organized through a coordinated class effort in which individual project interests were matched while concurrently ensuring that the students' diverse disciplinary skill sets were dispersed relatively evenly throughout the four teams. This process was resolved in a class workshop where students assessed their own skill sets and interests, each contributing to the team planning discourse. The team projects chosen were a recreation center; an ecological education center; a local food hub; and a recycling / upcycling center. Each of these projects was sited in one of the four abandoned anchor stores of the local failing mall.

Students meet throughout the semester with various community partners. As a whole class, they met with local government officials including the local mayor, representatives of the chamber of commerce, and a representative of the economic development alliance. Student teams met with local business owners, social program directors, and university academics who shared project-specific interests and goals. The student teams each participated in at least four different community partner meetings; and all of the teams presented their projects at an open community forum toward the end of the semester to elicit final general dialogues that helped to define final project work agendas.

STUDENT LEARNING OUTCOMES

Next, this paper delineates three significant student learning outcomes — often lacking in traditional architectural studio learning — that the students in this course gained because of their multidisciplinary teamwork and through their collaboration with local community partners.

First, one of the significant student experiences that this course offered was how to communicate with a variety of people from different disciplines and with various community stakeholders. As described earlier, the students worked in multidisciplinary teams throughout the semester and throughout their design process. They learned new communication skills first from each other. They learned how language can be disciplinary specific and how, as students, they tend to learn primarily how to communicate within their own discipline. Through their multidisciplinary teamwork, the students learned how to talk about and share their design ideas across their various disciplinary boundaries. One example, the students working on the ecological education center used a flow chart as a shared tool for ideating (see Figure 1). Diagramming and charting gave these students a mechanism for sharing ideas and solidifying a shared team language.[4]

The students also learned how design priorities can differ between different disciplines. In another example (see Figure 2) the landscape architecture and natural resource and environmental management students pushed the extent to which different types of gardens and seasonal landscapes influenced the early design thinking of this team's project. This

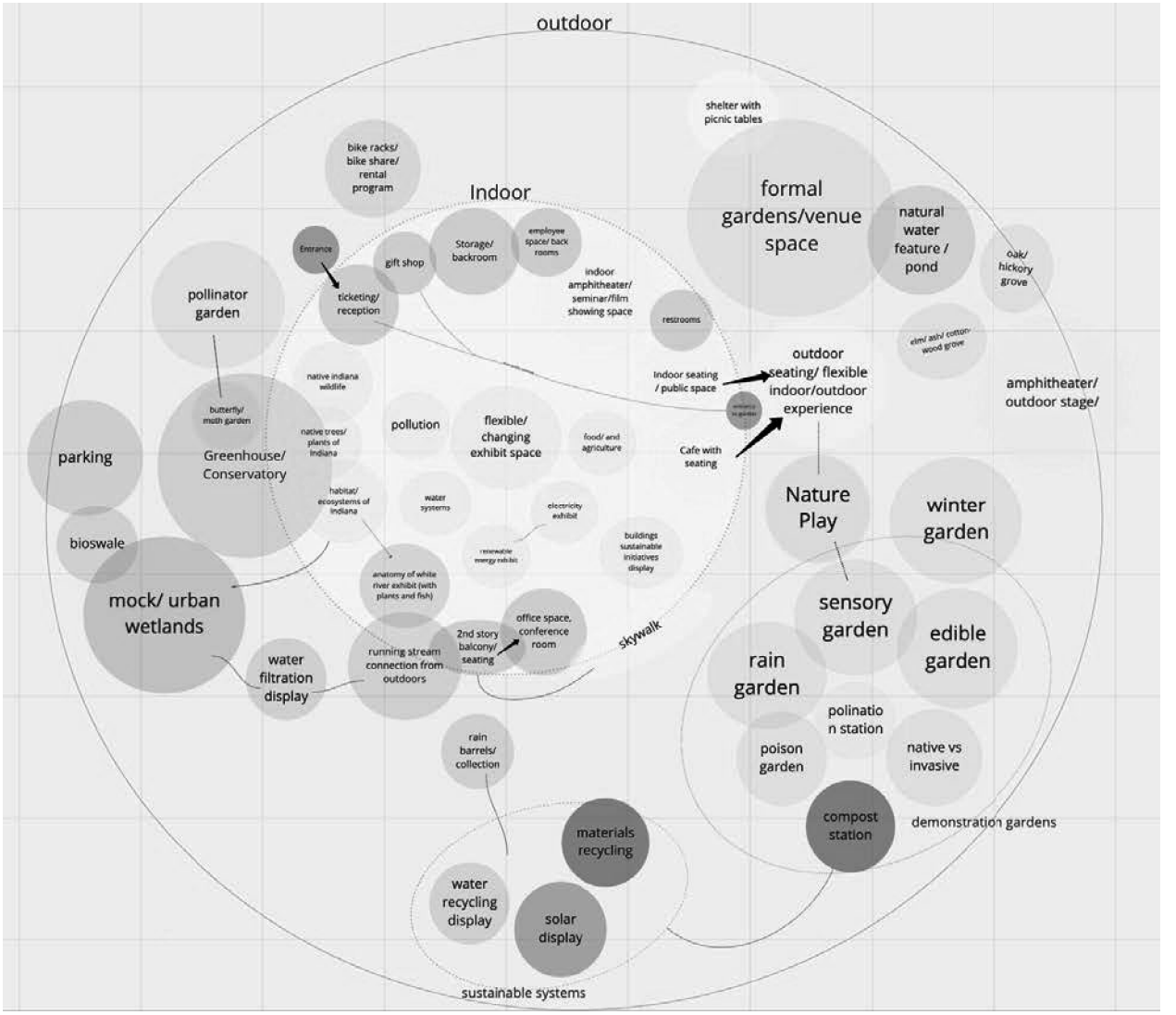

Figure 1. Bubble Thinking. Brittan Brady, Caitlin Osburn, Tim Bridget, Michael Shirley.

illustrates how multidisciplinary prioritizing can enrich design project learning and expand a project's design goals.

Through the meetings with local community stakeholders, the students learned how to present their design ideas to a variety of people with different backgrounds and different interests. The students met with some of the stakeholders as a whole class and met with some stakeholders as a single team. Throughout the semester the students improved their presentation and meeting skills. The student became increasingly adept at meeting preparation, tailoring presentations and talking points to each specific audience. The students learned how to share presentation responsibilities through a requirement that every student in a team had to participate in each of their team's presentations. The students also learned how to help guide the discussions that followed a presentation by preparing a series of tailored questions.

As a part of the students' improved communication skills, the students also demonstrated and improved competency in their listening and questioning skills over the course of the semester. As described above, they met with numerous community stakeholders—as a whole class, and in their teams—and the students learned to take effective notes during their meetings and learned to prepare flexible question sets in order to allow whomever they were meeting with to lead the dialogue with their expertise. These preparations included researching the potential meeting attendees in order to have discussion options with tailored questions depending on who might attend.

Overall, the students improved their multidisciplinary communication skills and learned how to exchange ideas effectively with various community stakeholders—communication learning often left out of traditional design studio experience.

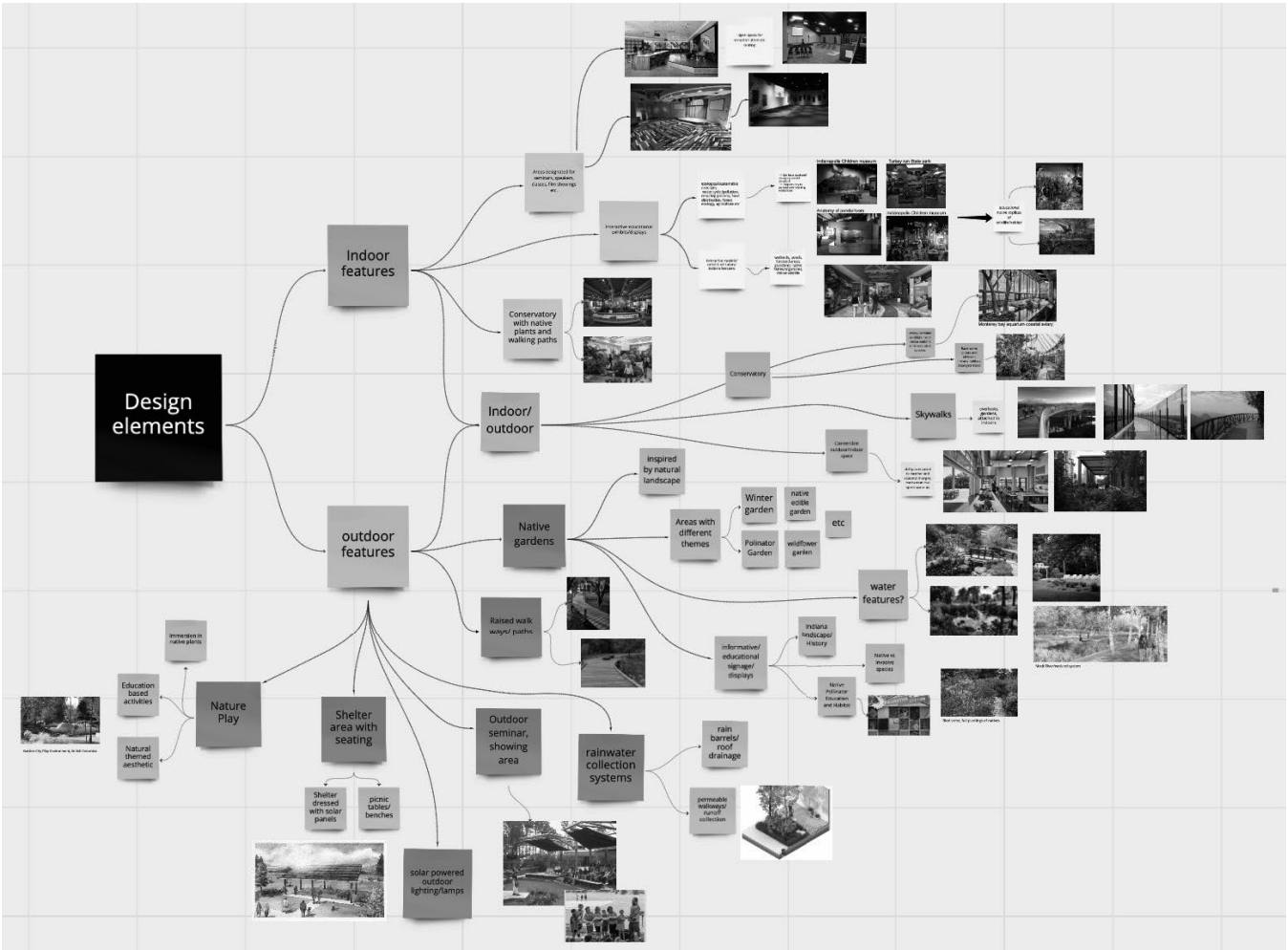

Figure 2. Mind Map. Brittan Brady, Caitlin Osburn, Tim Bridget, Michael Shirley.

A second significant student learning outcome that goes beyond traditional architectural studio learning involves the students gaining an expanded understanding of and experience with project planning. The students in this course garnered a series of experiences that enriched their project planning abilities in a number of ways.

The first is through team work organization. Throughout the semester each team was responsible for coordinating the majority of their own work. As a class, the students shared a number of key deadlines and there was a clear rubric that defined some of the final outcome expectations for the students' project. However, within these frameworks, the student teams defined some of their own final project requirements and were mostly responsible for organizing how to accomplish their goals.

The students teams assessed their own skill sets, delineating the knowledges and skills based in the various students' disciplines. Through these assessments the students defined additional project criteria, they built their own working to do-lists and schedules, they define who was responsible for what, and how in-team critiques happened. The students were given guidance as needed and the class as a whole held critiques every second or third week, but the student teams experienced organizing much of their own project work and prioritizing their own deadlines.[5]

The students also gained an expanded view of project programming, first through their multidisciplinary teammates, and second through their community partner project discussions. Non-architecture teammates often identified project priorities that differed from the architecture students — they identified different starting points in their initial assessments of what was important and offered value priorities that deviated from traditional architectural programming. For example, the biology and conservation student started the project programming study by talking about native plant and animal life; while the visual communication student started by envisioning what would be seen first when approaching the imagined

Figure 3. Muncie Farm Hub Collaborative Rendering. Students: Avery Reiter, Jacob Landini, Kendall Johnson, Sarah Bisch.

project from various directions. The student teams all successfully came together and created a unified team vision for each of their projects, but the process was expanded and enriched through these divergent perspectives.

Also, the project design process echoed a variety of multidisciplinary perspectives that expanded the design work planning in interesting ways. For example the urban planning student pushed their architecture teammates to think about their project at a larger scale, focusing on program connections that reached throughout the city. The environmental management student pushed their team to think about very long term planning—the life span of a tree.

Meetings with community partners also helped to expand the students project planning skills. The various community partners prioritized very different focuses, or on parts of the project proposals in their discussions; each partner offering the students an alternate way of defining project priorities and goals. The meetings with the community partners also forced the students to plan for those meetings, much of which is described in an earlier section of this paper. By the end of the semester the students were adept at creating and speaking through a five minute partner-specific presentation and always had appropriate questions prepared for the following discussion.

The students project planning learning in this course far exceeded what they would learn in a more traditional architecture design studio. The students experienced multidisciplinary teamwork planning, their design project programming goals were expanded through both their multidisciplinary teammates and the community partner collaborations, and they gained experience preparing for project presentations and discussions with outside parties.

The final student learning outcome that the students gained in this multidisciplinary design course is an expanded understanding of project viability. In architecture, we tend to frame viability as a measure of cost. Students often are taught to assess their designs based on calculations derived from the latest RS Means publication in which project square footage is multiplied by variables such as building type, quality of materials, location, etc. But viability does not just involve cost calculations, and the students in this class were explicitly exposed to a number of viewpoints about what matters in a project proposal to make it viable.

Cost does play a significant role, and students were encouraged to push that idea further by a number of community partners who asked the students to identify stages or phases through which their project could be developed and implemented in order to start small and then provide a reasonable growth timeline.

Beyond a staged approach to cost planning, the students were also faced with the question of who their project would serve which required a thorough understanding of the local population and the local existing programs in order to discuss this with local community stakeholders. The students were repeatedly asked to identify how their project would stand apart and offer the community services or spaces that are currently lacking or limited, requiring the students to delve into researching local community programs to a degree that is not often required in design courses where students are not regularly immersed in discussion with local stakeholders.

The students were asked to address how their project would function within the existing urban systems as well as within local ecological systems. Students were forced to assess local infrastructure, local transportation networks, existing related program networks, etc. in order to tie their projects into the local landscapes. Students built assessments of local wildlife, local plant life, and local ecologies in order to relate their project's programs and/or spaces to the local ecological conditions. Because of the community partner interactions, these studies required a thoroughness not usually attained in a traditional architecture studios.

The question of when also became more robust as discussions with community partners highlight the need to define not just a project's near future, but also how the students' projects could specifically adapt to potentially remain viable in 10, 20, 30 years time in the specific city, in the specific social and political context. For example, the recreation center team, through a discussion with the director of the local sports commission, addressed how their project could eventually become a regional center for youth sports tournaments such as soccer, baseball, and basketball; offering an argument for their program's long-term viability.

In this course the students were exposed to broader views about how to argue and demonstrate a project's potential viability. These experiences expand on traditional architecture studio project viability assessments through leveraging each team's multidisciplinary perspectives and through embedding their design process into local stakeholder dialogues and the specificity of the local situations.

CONCLUSION

All of these student learning experiences, having to do with building communication skills, project planning skills, and understandings of project viability, were complicated in a helpful and productive way through the students' multidisciplinary team work and through their experiences discussing their projects with various community partners. Though students in most architectural schools do experience multidisciplinary work and do experience presenting their project work to local interested parties, these experiences are often not embedded as a part of the students' design process—as an integral part of their design learning.

Long term sustainability will require a shift in societal priorities, away from a culture of consumption and assumed affluence, and toward a studied focus on social needs and embedded ecological priorities. This implies a necessary refocusing which can be achieved through a close examination of everyday local conditions, stressing the specificity and nuance of place and setting. From an architectural perspective, these foci are not disparate from our generalized and formal design approaches, but can and must be co-generative.

This paper exemplifies a learning approach in which architecture students work with students from a variety of other disciplines to create design proposals for the transformation a failing mall into a local sustainability hub. Students worked through concurrent social and ecological goals throughout their design experience, and through cross-disciplinary teamwork, the students learned to examine sustainability and social agendas through different disciplinary lenses.

The students also benefited from an immersive learning approach. Community members and local business groups involved the students in discourses which scrutinized initial project assumptions and helped the students to redefine project goals to better address local social and environmental issues. This exposure to actual local needs provided a cognitive and ethical foundation for the students' design approach.

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ENDNOTES

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