

Design-Build Studio Outcomes: Researching Potential vs Practice

"Architectural education, in the traditional setting of the classroom, is limited in its effectiveness. The design build programs offered during my time at Tulane School of Architecture both supplemented and extended the reach of my traditional architecture education. I cannot overstate the positive impact those programs – and the practicing professors who taught them – had on me as a designer" –anonymous alumni survey participant

Academic design-build programs offer a method of teaching that outperforms conventional architecture pedagogy. Design build learning outcomes including those focused on complexity and collaborative problem solving offer transferable lessons that young designers can take with them into the profession. This is a baseline assumption our university's community design center has operated under for fourteen years, an assumption based on academic writings, antidote, and personal experience. With hundreds of alumni now in practice, we used a web-based survey instrument to test these assumptions and assess the outcomes of the design-build mode of education.

BRIEF HISTORY OF DESIGN BUILD IN ARCHITECTURAL EDUCATION

Design-build in American universities has early roots in the late nineteenth century when universities including Tuskegee Institute's architecture program combined design build pedagogy with pragmatic campus facilities needs and expanded that method of learning by doing to create thousands of school buildings across the rural south¹. Decades later (1933-1957) Black Mountain College and their embrace of learning through doing was influenced by Bauhaus emigres who moved to America after the closing of the school in Weimar Germany². After the college's closing those influences reverberated in Yale's School of Architecture and led to the creation of the Yale building project (now the Jim Vlock First Year Building Project) founded in 1967.

Twenty-six years later Auburn's Rural Studio began working in the rural south expanding on the social aims and scale of existing design build programs and in the process inspired a proliferation of design build studios across North American schools of Architecture³. While once viewed derisively by traditional academics as something akin to vocational training⁴, currently there is broader agreement in the value of design build as an educational tool, as evidenced by the explosion of design-build offerings at schools of architecture⁵.

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While these design build programs focused on 'learning through making' vary greatly in their project scales, programs, sites, timeline, methods of delivery, research agendas, and just about any other conceivable category, most of them share core pedagogical aims⁶:

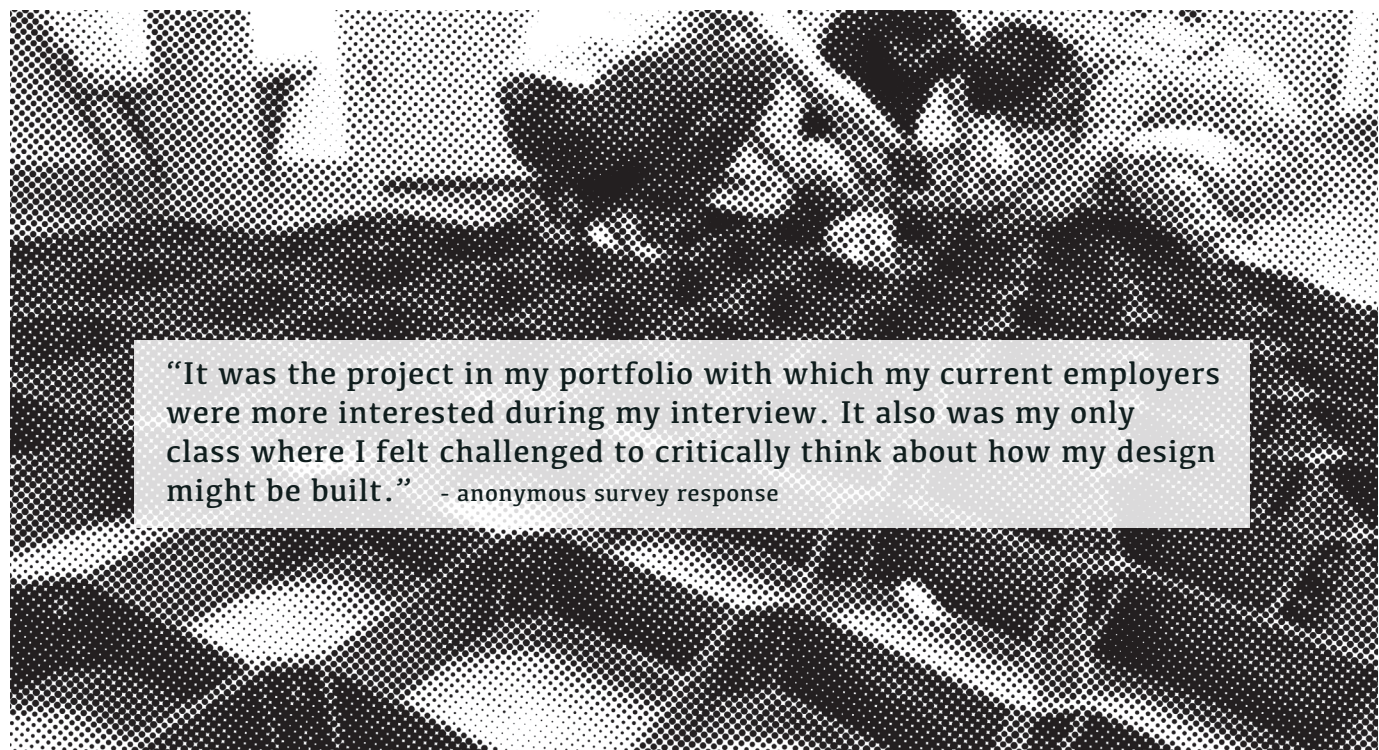
- Inform design through making
- Understand how to execute a project from sketch to reality
- Understand tolerance, material, and connections at a 1:1 scale
- Empower students by broadening their experience and skill set⁷
- Cultivate collaboration and communication in the design process
- Provide an introduction to professional practice issues such as: project planning, funding acquisition, clients, liability, and the physical realization of design products for use by actual users⁸.

Design-build offers a way to shift educational paradigms beyond the Beaux Arts studio based model to expand the classroom out into the world, expose students to the physical and material implications of what they draw and in many programs allows students to engage with topics of social responsibility - expanding the scope and relevance of design. All together design build studios offer a radical break from traditional teaching methods that have caused us to rethink all aspects of the design studio framework and provided the opportunity to be 'subversive leaders and teachers'⁹ in the classroom as we shape the next generation of professionals.

DESIGN BUILD AT TULANE SCHOOL OF ARCHITECTURE

At Tulane's School of Architecture, these student focused aims of the design build studio have been combined with a desire to make design services accessible to those who are underserved by the profession. We live in a city which suffered a large flood following hurricane Katrina in 2005 and endured subsequent years of planning meetings and charrettes which 14 years later have produced few tangible outcomes¹⁰. As frustrated community members and designers we've focused our energies on deeper, more collaborative forms of engagement in the design process, and on built outcomes - goals that we often address through the design build studio model. Our pedagogy is grounded in the belief that design excellence and community engagement are not mutually exclusive.

We believe an engaged design process can serve as a capacity and coalition builder and is essential for students to not only understand broader social, economic and policy issues that shape the built environment, but also the power they have as architects to address them¹¹. This pedagogy also serves as an opportunity for students to understand that the technical design skills they are learning are only one set of expertise and that all parties to a project bring unique skills and expertise to bear. We see design-build studios not as replica of practice¹², but as a messy and ideal way to expose students to the ability of good design to positively shape place and conversations and as a way to expand their own social skills as they understand their agency and role in changing the built environment.



"It was the project in my portfolio with which my current employers were more interested during my interview. It also was my only class where I felt challenged to critically think about how my design might be built." - anonymous survey response

Figure 1. Anonymous survey response.

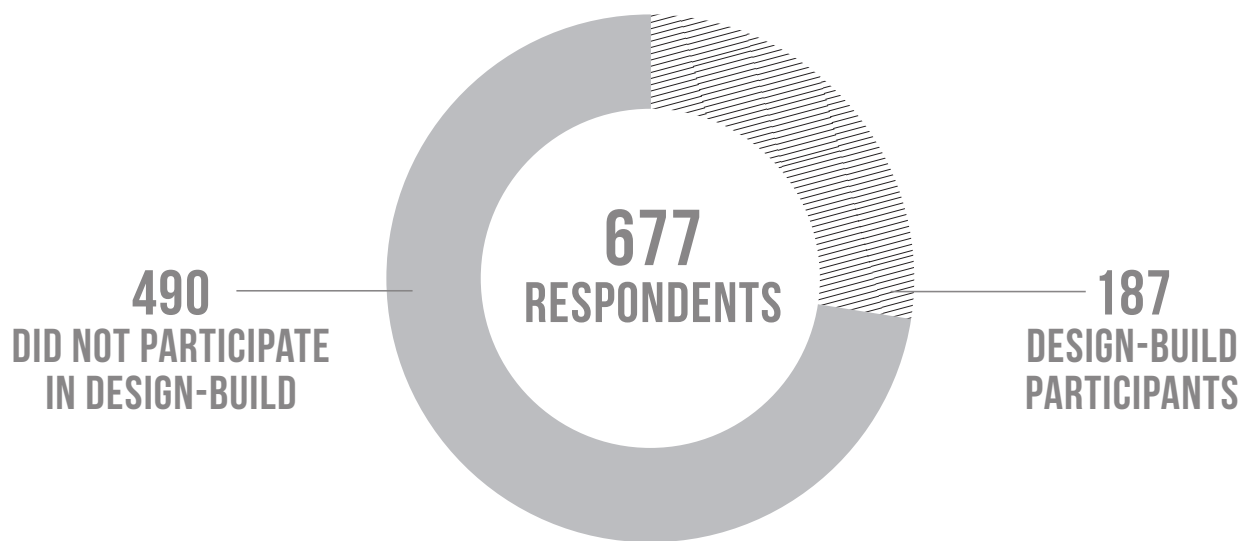


Figure 2. Alumni survey respondents breakdown.

Design build at Tulane takes three main forms:

- 1) Co-curricular Programs – Architects Week a weeklong student takeover of the school that has been running since the 1960's. Not all years include a design build component, though some have involved small scale temporary installations. Sukkah Design/Build- a yearly event that began in 2008 where faculty and students partner with Tulane Hillel in to build contemporary sukkah structures to celebrate Sukot.
- 2) Small Center studios – semester long studio design-build projects run out of the Albert and Tina Small Center for Collaborative Design. This program has been offering design build courses since 2006, primarily through small scale public projects such as pavilions, interiors, gardens, and skateparks.
- 3) URBANbuild – a two-semester residential design build studio focused on designing and building housing prototypes primarily in New Orleans' Central City neighborhood. This program has been operating since 2005 and focuses on design and permitting in the first semester followed by the build in the second semester.

THE SURVEY BASICS

We hypothesize that design build learning outcomes including those focused on complexity and collaborative problem solving offer transferable lessons that young designers can take with them into the profession. To test this hypothesis, we conducted a web-based anonymous quantitative survey of School of Architecture alumni. The survey was distributed via email to the alumni listserv and promoted via the social media platforms (Facebook, Twitter,

Instagram) of the School of Architecture. The survey includes open ended, likert scale, and closed questions and totals 45 questions. Average length of time to complete the survey was five to seven minutes. The survey asked demographic data including graduation year and gender identity as well as content specific questions. These questions included those focused on the role of design build education on career trajectories, assessment of confidence gained in studio as well as other outcomes including continued involvement in hands on making and current civic participation.

The survey was sent out to 3,500 alumni and 677 responded yielding a 20% response rate (our goal was n=750), which has a +/-3.5% margin of error. Of the respondents, 187 participated in design build projects (89 female, 97 male, 1 non-binary). Our two curricular design build programs have been in existence for 14 years. We estimate 525 unique students have participated in these intensive projects and 145 of the 187 respondents who participated in design build graduated in the years following these programs' creation.

KEY TAKEAWAYS

1) Overwhelming recognition of value of design build experience by people who participated

98% of those respondents who participated in design build projects thoughts that it was an effective part of their architectural education.

2) Overwhelming recognition of value of design build experience by people who can hire

Additionally, 98% of those who participated in design build and have the ability to hire said that design build

experience is an effective part of architectural education. This striking response rate could be due to selection bias wherein those people who have had an experience value it more in others. Yet a similar question was asked to all alumni (design and no-design build experience) and of those with the authority to hire 70% responded that design build experiences are moderately or extremely important to a candidate's resume. In fact, a majority of design build participants, 83.5%, include that work in their portfolios as they apply for positions post graduation.

3) Alumni report that design build experiences have influenced their career trajectories

70% of design build participants also reported that their experience with a design build project influenced their career trajectory. As researchers we thought that there would be a significant gender difference in influence of design build trajectories based on a previous related survey out of the University of Colorado Boulder¹³. What we found was less difference between men and women in the design build experience and its effects on non-traditional career trajectories than we had suspected.

4) Parsing aspects of the academic design-build experience

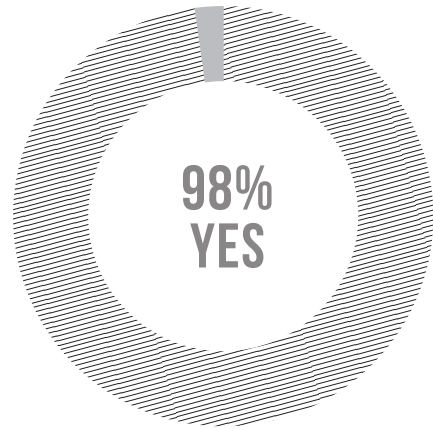
"initially it taught me the importance of detailing and allowed me to visualize how my drawings can be interpreted for better and worse on site. Since graduating, it has given me hands on experience that allows me to communicate with contractors and clients in a clear and concise manner. It also allowed me to build confidence in my ability to draw and create objects in the real world. I use those skills everyday whether I'm working on construction documents or designing and building an art piece for a client." – anonymous alumni survey participant

The value of this design build pedagogy and insights to its impact can be seen in the comments submitted by alumni when we asked "Is there anything else you would like to share about your TSA design build experience?" Alumni shared that they learned the importance of getting uncomfortable, gained valuable communication skills and an understanding of the importance of the client/architect relationship. They also have shared that the project management and fabrication skills gained in design build studios helped jump start their career by setting them apart in the initial job search. The introduction to alternative modes of practice led alumni to recognize the potential of non-traditional career paths. It was previous testimonials¹⁴ that prompted and served as the foundation for this question. Furthermore, we attempted to parse out the different aspects of professional practice that design-build was most helpful in preparing alumni for. Figure 4 shows the percentage of design build alumni who responded yes to each question. The response bar percentages are further broken down by gender to understand how men and women respond differently to each learning outcome.

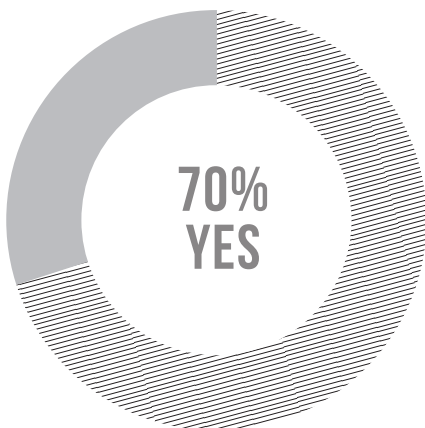
5) Alumni show sustained efforts in making

Of those who participated in design-build courses we asked if they have fabricated anything before the studio/project and 52% had, while asking who has fabricated anything since. 70% (125 of 177) have – further breaking that down by gender 60% of females, 79.5% of males have continued to make post-graduation.

Question: Do you think design-build is an effective part of architectural education? (n=187)



Question: Are design-build experiences an asset to a candidate's resume? (n=261)



Question: Do you include design-build studio work in your portfolio? (n=187)

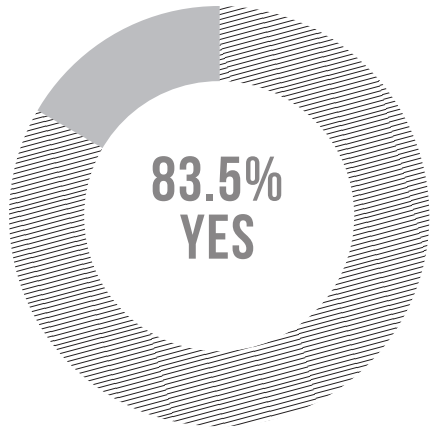


Figure 3. Understanding the value of design build experience.

Question: Did participating in a design build studio help you...?

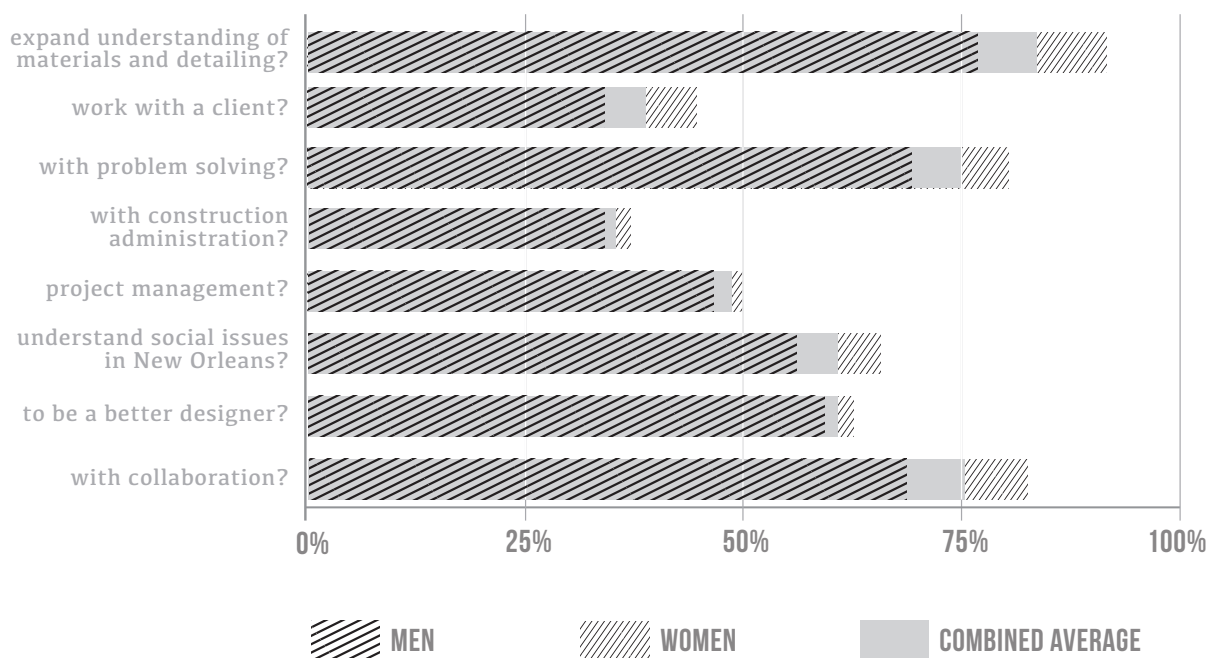


Figure 4. Understanding which aspects of professional practice design build experience helps prepare students for. Bars show what percentage of respondents answered affirmatively to each prompt. Hatching provides further information on how respondents answered by gender.

ADDITIONAL TAKEAWAYS

In addition to the yes/no and weighted questions we asked in the survey, individual written responses to open questions revealed further themes worth mentioning. The first is that design-build courses and programs serve as a powerful recruitment tool for the school.

"Tulane School of Architecture's design build programs are what attracted me as a graduate student. I wanted to work directly with the community as an architect. In practice, Tulane gave me the confidence to stand up for what I believe in and pursue the projects I am passionate about. Equally important, TSA also provided a critical lens in which to view social justice or human centered design."

– anonymous alumni survey participant

Alumni also reported that design build served as a preparation for the non-design aspects of the profession and prepared them to be better architects, as seen in the following submissions:

"Design build gave me an edge as well as confidence when thrown into leading a construction administration portion of a project"

"I think design build provided me with a better understanding of collaborating with a project team, construction detailing, and on-site problem solving."

"Made me a better architect all around and I am more knowledgeable in technical aspects and communication skills with contractors than my peers."

UNANTICIPATED RESEARCH OUTCOMES

"The (design build) experience has been integral informing my view of architecture as a means of social justice"

Given that our two main design build programs were born in the wake of a disaster and their content, partners, and sites have engaged in questions of equitable recovery, affordability, and access to design services, we sought to understand what the impact of a pedagogy with an implicit commitment to engagement and equitable design process that reflects a socio-political and/or eco-cultural agenda on the next generation of professionals? The results were not what we anticipated. Nearly all respondents (95%) report being aware of the social issues facing their current community and 62% report personally playing a role in trying to address these issues. When we further parse that out to understand if those who participated in design build are more pro-active in addressing the issues that face their community, we found that 59% of design builders report proactive responses while 64.5% of non-design build alumni say they were actively addressing issues in their community. While we had hoped that an experience in making paired with themes of social justice would translate to more agency and action in our alumni

it seems that they are slightly less proactive than their traditional studio peers – however, it should be noted that a majority of the design build respondents are in their first 10 years of their career path which may be a factor in how and if they have time to engage in their community’s issues.

“I attended Tulane knowing I did not want to practice architecture in the traditional sense. The design+build experiences I had allowed me to see more clearly what an alternative path may look like and gave me a good foundation to ultimately start a youth design+build program that provides similar opportunities to young people in New Orleans.”
– anonymous alumni survey participant

As a research team we also suspected that exposure to design build in a university setting would make people more inclined to pursue non-traditional career paths. The survey results disprove that assumption with 74% of design build participants working in architecture firms while only 49% of those who did not participate in design build work in architecture firms. Age and retirement may play a role in the large difference in these numbers. Data of recent graduates (post 2005) who participated in design/build indicate that 80% (116 of 145) are working in firms.

Likewise, we hypothesized that design build students would be more likely to work for small firms since often those firms can be more nimble and hands on in some ways, if New Orleans firms are any indication. That was certainly not what the data showed. Very few design build alumni are working in small firms, only 14%, with 40% working in large firms of 60+ people (n=138), while non-design build participants work for small firms at a rate of 32% and

large firms at a rate of 29% (n=188). For recent graduates who participated in design build post 2005, the data is more evenly distributed between large and medium firms with 43% (n=116) working in large and medium firms respectively and the remaining 13.7% working in small firms. Of the young alumni who did not participate in design build and responded to the question (n=44) over 50% are working in large firms.

NOTED LIMITATIONS

There are limitations to the study design, survey methodology, implementation and analysis. The authors initially intended to focus the survey only on design build education and its impacts, but due to school needs the survey was expanded to become a general alumni contact survey. This expanded both the population and objectives of the survey, but also limited the number of questions focused on assessment of design/build education outcomes. The lack of pre-testing of the survey with a diverse population of alumni led to questions not capturing the experiences of retired alumni. Internet availability and usage variance may also have limited response due to the web-based modes of promotion and distribution. As well, the length of the survey limited our ability to clearly assess the impact of the engaged design process on civic participation post-graduation. The self-selection for open ended questions may have led to a positive impact bias. In analysis, the authors made the decision to use all responses to individual questions even if a respondent did not answer all survey questions.

Q: What size firm are you working in?
small = 1-5 people
medium = 6-60 people
large = 60+ people

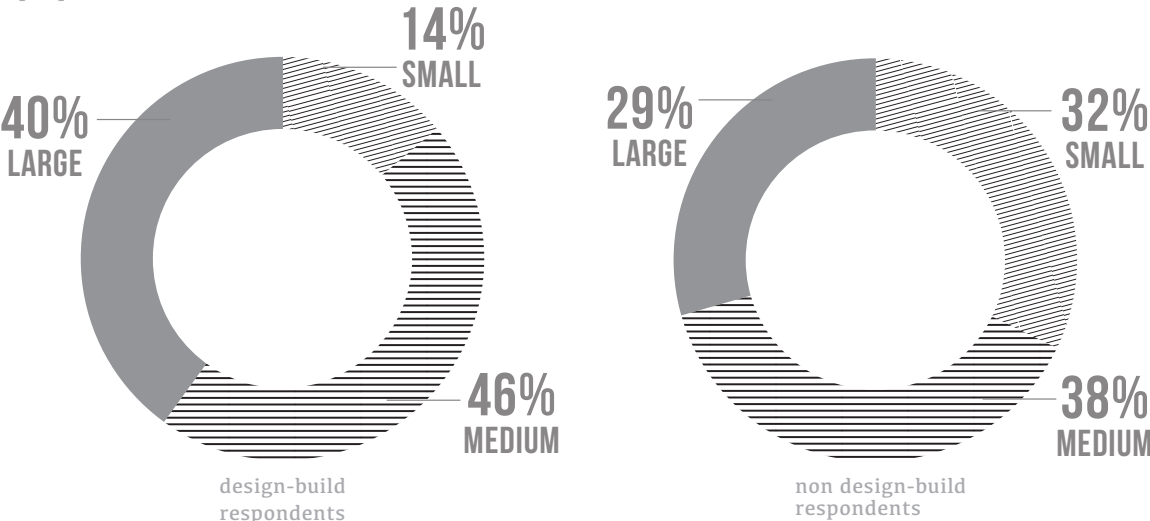


Figure 5. Understanding design build participation and how it impacts professional trajectories

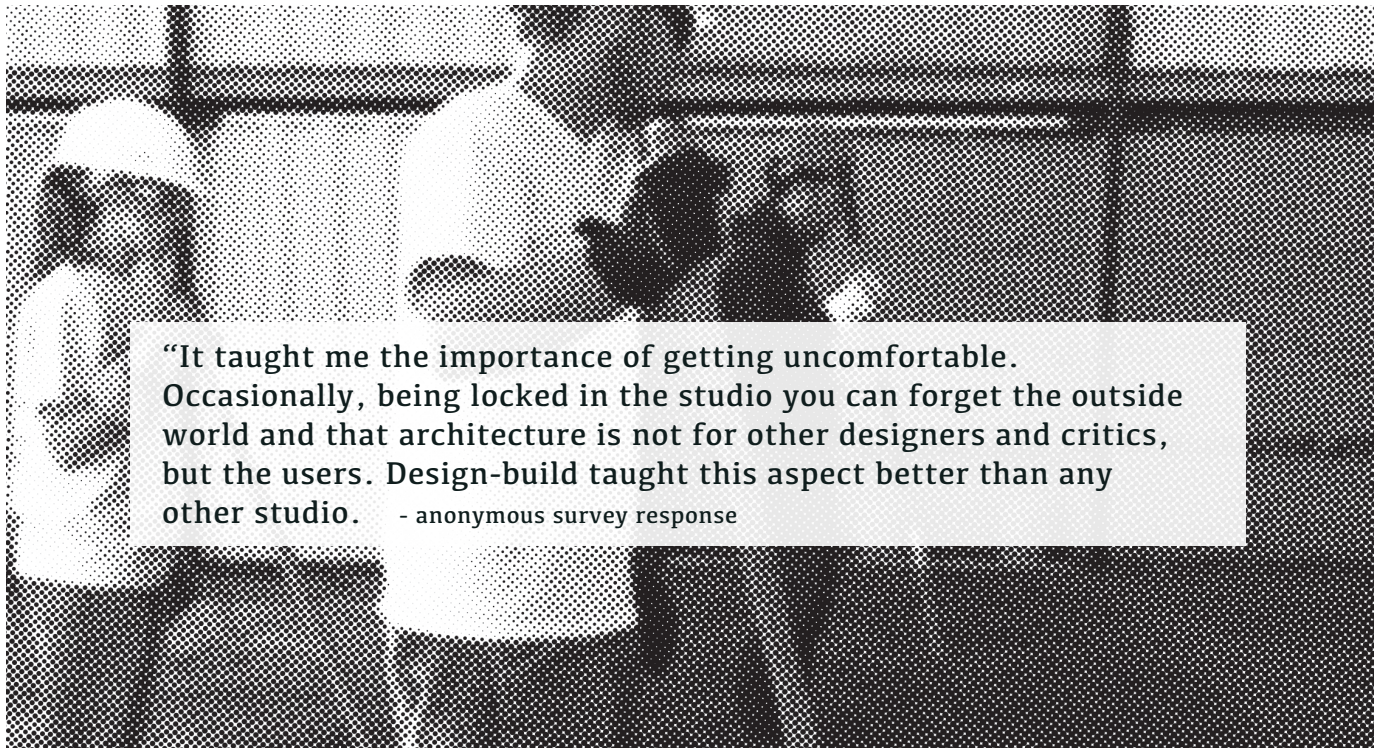


Figure 6. Anonymous survey response.

CONCLUSION AND FUTURE STUDY

As architectural education evolves and engages with challenges ranging from climate change to social inequity, there is continued importance in understanding the impact of design build education as faculty consider how to imagine new futures where craft, fabrication and speculation are connected with the development of individuals and growth of socially conscious designers. The growth of design build curricular offerings provide an opportunity for architectural education to assess impacts of pedagogy and how learning outcomes are translating to professional practice. This survey was an initial attempt at that assessment.

Moving forward, the authors recognize the value of deeper analysis of existing data in particular exploring generational differences as well as specific design build experiences. More in depth key informant interviews and a focused quantitative survey could provide additional insight into the nuances of civic engagement involvement post-graduation and alumni understanding of social justice. Study results indicate that design build experience is of value to employers and recent graduates with design build experience work in professional practice at a higher rate than their peers. Our hope is that these results increase recognition that studios with contemporary agendas that re-think the normative studio's approach to collaboration, projects, and making as a means of learning offer invaluable

professional skills transferable to practice. Furthermore, based on data showing more design-build alumni entering the profession than those without design build experience we speculate this form of education provides students an expanded understanding of how they can play a role in the profession.

Notes

1. Goodman, Anna Gloria. "Citizen Architects: Ethics, Education and the Construction of a Profession, 1933-2013" PhD diss., University of California, Berkeley, 2005.
2. Hinson, David. "Community Centered Design/Build Studios: Connecting the Past and the Future of Architectural Education", (2002) ACSA Technology Conference.
3. 70% of ACSA participant schools' curriculum include Design-Build courses according to the introduction to Paper Proceedings from ACSA Fall 2014 Conference, Working Out, Thinking While Building
4. For a summary of other predecessors to the modern day design build studio teaching method and institutional and collegial resistance see: Canizaro, Vincent B. "Design-Build in Architectural Education: Motivations, Practices, Challenges, Successes and Failures", International Journal of Architectural Research, Volume 6 - Issue 3 - November 2012
5. An additional indicator of interest and emerging scholarship in the topic can be seen in ACSA conference submission rates. The Fall conference head in Nova Scotia focused on the topic of design-build had nearly double the number of

submissions as each of the preceding 3 years had. (<http://www.acsa-arch.org/programs-events/conferences/conference-acceptance-rates>)

6. "Grounded in the realities that may include the site, setting, clients, schedules, budgets, and technical demands of construction, design decision-making is made more informed and responsive. Such training, it is assumed, will result in more informed and responsive future architects. And while construction is common to all, each program adopts the design-build pedagogy for their own reasons that can range from community service, experimentation with digital delivery methods, to various forms of 'building speculation'" from Canizaro, Vincent B.
7. Hailey, Charlie. *Design/Build with Jersey Devil: A Handbook for Education and Practice* Architecture Briefs. 2016
8. Gjertson, Geoff W. and Christopher D. Trumble. "Design-Build Gone South". *Working Out; Thinking While Building* (2014) ACSA Fall Conference Proceedings
9. Mockbee, Sam. Sarah Wigglesworth and Jeremy Till, editors, *Architectural Design: The Everyday and Architecture* (Academy Press, 1998)
10. Carey Clouse and Zachary Lamb, "Post-Crisis: Embracing Public Service Architecture with Humility." *Journal of Architectural Education*. 67:2. (2013), 186-194.
11. For and expanded explanation of our process see Taylor, Emilie "Refining Process, Expanding Practice: Public Interest Design Fieldnotes from the South" (2018) ACSA National Conference Proceedings
12. A critique of the common myths of academic design build can be found in Doyle, Shelby and Whitehead, Rob, "The Lore of Building Experience: Deconstructing Design-Build" (2017). *Architecture Conference Proceedings and Presentations*. 107.
13. Jade V. Polizzi, "Design-Build: A Vehicle for Self Discovery." *Working Out; Thinking While Building* (2014) ACSA Fall Conference Proceedings
14. Alumni of our Small Center program were interviewed for a *Featured Alumni Booklet* published in 2018, which can be downloaded at small.tulane.edu