

NSF Sponsored: National Workshop on Architectural Faculty in Environmental Sustainability Research (WAFES)

JOON-HO CHOI
University of Southern California

HAZEM RASHED-ALI
University of Texas, San Antonio

SIMI HOQUE
Drexel University

JEFFREY RAVEN
New York Institute of Technology

DOUGLAS HOLMES
Boston University

Despite the critical role of architecture and architectural design in a building’s sustainability profile, most building performance-related research has relied heavily on system and computational process-centered approaches that do not integrate qualitative human and design research parameters. In addition, many Architectural programs in the U.S. have had a cultural preconception of “no-research-needed” in professional schools and have developed their curricula with little consideration of the merits of fundamental or applied research. Such a skewed intellectual atmosphere may isolate Architectural scholars from “major” research initiatives, and limit the advancement of Architectural research and the development of an essential research infrastructure in architecture schools across the U.S. This lack of research advancement delays an Architectural faculty’s research career pathway and forecloses educational opportunities in Architectural research among their students.

To address these challenges, we organized a national workshop to engage Architectural researchers who are pursuing (or are interested in) architecture/building-related environmental sustainability research. This workshop project was a first program, sponsored by the U.S. National Science Foundation (NSF) for U.S. Architectural faculty research (Award #1916623)1. 37 Architectural faculty, who were invited to the workshop, represented 30 universities in the U.S. More than 60% of the faculty participants were assistant professors, and the remainder were associates or full professors. This workshop 1) provided a networking opportunity that helps Architectural faculty conduct in-depth discussions on how to promote an Architectural research framework, with specific research parameters, across the disciplines in architecture; 2) identified the challenges and drawbacks that affect the success of a faculty’s research career in architecture and that also create a limited involvement of Architectural students in an art/design-integrated STEM research activity; and 3) explored potential cutting-edge Architectural research paradigms and topics in the environmental sustainability research field. The workshop contributed to describing how to support Architectural scholars in overcoming academic or cultural limitations to their

research career development; helping identify institutional and structural barriers and challenges in cultivating a productive research agenda in Architectural Schools; promoting Architectural research to support and motivate junior faculty in their efforts to develop a successful research career. Among the many critical findings and ideas that were discussed at the WAFES workshop, this presentation focused on the facts that the workshop committee had identified, were the following:

AVAILABILITY OF START-UP FUNDING

Among the participants, only 49% reported that they received start-up funds from their institutions at the starting point of their employment. The average start-up size that these received was \$31,111, and the median was \$20,000. The minimum was \$3,000, while the maximum was \$165,000, which is an outlier as compared to the major range of the funding size. Also, 44% of them reported less than \$8,000 for start-up funding. Therefore, the deviation of the start-up funding is significantly large, and the funding sizes vary, depending on the institutions. Overall, the start-up funding seems limitedly available, and most of the architecture schools did not provide sufficient funding to junior faculty.

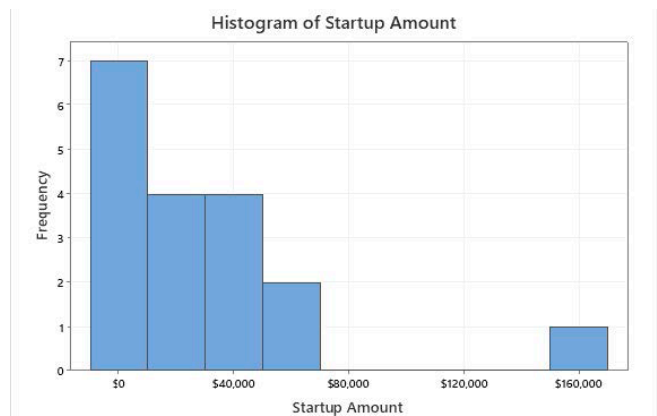


Figure 1. Summary of Start-up size.

TEACHING AND SERVICE LOADS

As summarized in Table 1, the average number of courses taught is about four, which is two per semester, and the average teaching hours is 11, which indicates about 2.8 hours per course. The average number of students per course was 33.5, but this may be due to a couple of extreme course sizes. Also, on average, the faculty spent about 7.5 hours for their required service duty at their institutions. 50% of the faculty reported that they are not satisfied with their current teaching load, while 37% showed their satisfaction. Regarding the service load, 34% of them reported that they are satisfied with their current service load. Therefore, on average, teaching and service loads account for about 30 hours. Considering that the weekly work hours are 40, only 10 hours are available for a faculty's research and creative work performance when the remaining hours are dedicated to that purpose.

Variable	Mean	Minimum	Median	Maximum
# of courses	3.8	1.0	4.0	6.0
Teaching hours / week	11.0	2.0	11.0	23.0
# of students per course	33.5	13.0	23.5	120.0
Service	7.5	1.0	6.0	25.0

Table 1. Statistics of teaching and service loads.

RESOURCES AVAILABLE FOR RESEARCH/CREATIVE WORK

Table 2 summarizes the faculty's agreement/disagreement with their resources. Most faculty agreed that they have equipment/supplies for their research and their given labs or offices seem moderately sufficient for their research. However, more than 62% of them reported a shortage in their funding to conduct their research.

	Agree strongly	Agree somewhat	Neutral	Disagree somewhat	Disagree strongly
A. I have the equipment and supplies I need to conduct my research	7%	58%	23%	3%	10%
B. I have sufficient lab/office space	19%	35%	19%	16%	10%
C. I have enough internal funding to conduct my research	3%	26%	10%	52%	10%
D. I have colleagues on campus who do similar research	3%	36%	13%	32%	13%

Table 2. How much do you agree or disagree with the following statements about the resources available to you?

IMPORTANT FACTORS CONTRIBUTING TO ENHANCED RESEARCH PERFORMANCE

The faculty participants ranked the seven options, in accordance with their importance to their research/creative work, based on a 7-point scale: 1-most important and 7-least important. The seven options were:

- a) Reduced teaching load
- b) Seed research fund
- c) Students to recruit
- d) Reduced service load e) Mentor
- f) Facility
- g) Research workshops/seminars/symposium

As summarized in Figure 2, "Reduced teaching load" and "Seed research fund" were selected as the highest importance in those seven options. Also, "students to recruit" was ranked in the last third of the list.

There are many research potentials in the domain of Architectural and built environment research and creative work. Due to the scholarly significance, many architecture schools in the U.S., as discussed above, wanted to advance relevant research and creative work performance. However, the infrastructure that is lacking in architecture schools in the U.S. seems to frequently delay an Architectural faculty's research career and also affects educational opportunities for their students. Even though Architectural faculty has been frequently reviewed in terms of their research performance and productivity by their institutions, according to the facts identified at the WAFES workshop, most schools seem to have limited resources to support their faculty while requesting significant teaching and service loads that may result in weakening their research performance. Therefore, a strategic plan should be considered to enhance faculty's research and creative work productivity in architecture schools by reducing teaching and service loads while mitigating any impact on the quality of the school program without compromising administrative performance. In addition, a seed research grant program should also

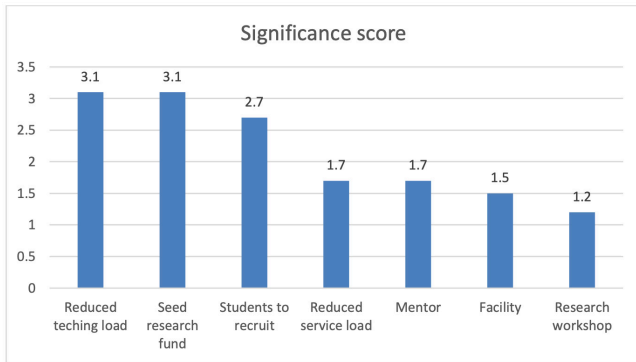


Figure 2. Important factors that can affect the research/creative work performance

be considered to accelerate faculty’s scholarly performance in a school’s program. 37 faculty from 30 architecture schools may not be able to represent the whole group of architectural faculty in the U.S., but this workshop has provided meaningful evidence that is alarming. Goals of architecture schools should be set that further promote the advancement of relevant research and creative work quality, by strategically supporting their faculty’s research and creative work performance and productivity.

ENDNOTES

1. National Science Foundation - National Workshop on Architectural Faculty in Environmental Sustainability Research (WAFES), https://www.nsf.gov/award-search/showAward?AWD_ID=1916623&HistoricalAwards=false
2. WAFES official webpage, the detailed workshop outcomes are available at: <https://sites.usc.edu/wafes/outcomes-of-the-discussion/>