

NAC Safety Culture Symposia Recap



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NATIONAL ACADEMY OF CONSTRUCTION

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NAC Safety Culture Symposia Recap

The [National Academy of Construction \(NAC\)](#) completed a series of five symposia focused on safety culture in undergraduate university design, engineering, and construction programs. The symposia were conducted to promote the teaching of the principles, practices, and value of safety culture in undergraduate academic programs across the United States. Safety culture represents the shared beliefs, practices, and attitudes within an organization that motivate employee decisions and actions with respect to safety.

Committed to improving safety in the construction industry, NAC partnered with leading universities and industry practitioners to determine ways to augment the educational knowledge, experiences, and professional identity of the industry's future leaders to include the critical importance of safety culture. The goal of teaching safety and safety culture to students is to make them better hires and to empower them to lead and immediately contribute to the industry and their employer - to help them influence organizations they join to create, develop, sustain, and continuously improve the organization's safety culture.

About the Symposia:

The five symposia were hosted by NAC members in partnership with the University of Kansas, Worcester Polytechnic Institute, New Jersey Institute of Technology, The University of Texas at Austin/Texas A&M University, and University of Colorado Boulder. The symposia were well-attended by both education (faculty, staff, and students) and construction industry professionals. A total of 245 people attended and participated in the five symposia, representing 45 universities and 94 construction industry companies and organizations from across the country. Details of the symposia attendance is given at the end of this report.

Each symposium included a day-long agenda filled with individual and panel presentations by academic and industry leaders in the field of construction. Former NAC President and CEO Wayne Crew started each symposium by describing the need for improving safety in the industry and NAC's motivation for focusing on safety culture within undergraduate academic programs. Next, each symposium typically included presentations (individual and panel) from high-level industry practitioners regarding safety culture in their organizations and what they look for in new hires with respect to safety. After hearing from industry, the agendas included individual and panel presentations from educators about their current and planned efforts to include safety and safety culture in program curricula and how the effort can be enhanced in their programs. The symposia followed with breakout group discussions amongst all of the attendees to brainstorm additional ways to teach the concepts of safety and safety culture within academic programs and how industry can support the effort. Lastly, the symposia leaders provided summary recommendations from the breakout group discussions and proposed next steps to support greater inclusion of safety and enhanced safety culture concepts in undergraduate academic programs.

What was Learned:

It is clear from the presentations and discussions that both academics and industry practitioners deeply care about safety. Executives in engineering and construction companies espoused the benefits of a safety culture and practices, providing proof of its impact on worker health and safety. They also stressed the competitive advantage this focus provides for their firms in terms of productivity improvement and recruiting and retaining their workforce. The executives indicated they very much desire that new engineers and construction managers be exposed to safety practices and safety culture during their academic programs.

For engineers, the [National Society of Professional Engineers \(NSPE\) Code of Ethics](#) places safety first and foremost, as do many other professional association codes of ethics. Professional ethics is one component within the accreditation requirements for engineering academic programs. The [Accreditation Board for Engineering and Technology \(ABET\)](#) establishes criteria to which academic programs must adhere to gain accreditation. Explicitly including safety and safety culture in the accreditation criteria of each engineering discipline (e.g., Civil Engineering) was one of the recommendations commonly mentioned by the symposia participants. The [American Council for Construction Education \(ACCE\)](#) also includes safety and ethics as part of its accreditation requirements for construction management programs.

The symposia participants suggested a variety of ways to incorporate safety culture concepts in undergraduate courses. In-class suggestions included: creating a separate class devoted to safety, incorporating safety content in multiple classes throughout the curriculum, incorporating safety moments into the beginning of classes to raise awareness, developing and incorporating course topic-specific case studies, inviting guest speakers from industry into classes to discuss safety and safety culture in their organizations, including safety in student projects and assignments, and ensuring that lab assignments address safety in the laboratory in a similar manner to that done for work operations on a construction site. A culture of safety can also be promoted through out-of-class efforts. Examples suggested by the participants included field trips to project sites that focus on safety, student safety competitions, supporting OSHA training for all students, and providing PPE for students as they enter the program. Ultimately, the focus on safety culture, both in and outside of the classroom should provide students with knowledge about safety management systems used in practice and how to create and sustain a safety culture and establish safety as part of their identity and as an expectation on the jobsite.

The symposia presentations and breakout discussions highlighted potential barriers to teaching safety culture concepts. The lack of safety-related course materials, and limited instructor education and training related to both safety culture and construction processes, were viewed as barriers. Concern was raised regarding how to incorporate safety into an already full curricula. Motivating faculty to incorporate safety and safety culture amidst the many other demands and priorities of academic positions was also raised as a challenge. These and other barriers need to be addressed and mitigated to effectively change the extent to which academic programs provide an understanding of culture of safety concepts for students.

Next Steps:

NAC will continue to promote an understanding of culture of safety concepts in undergraduate programs. A forthcoming proceedings paper will be written that documents the symposia series

in more detail, providing recommendations for both academia and industry, and is expected to be publicly available in summer 2023. Further actions will be determined following consideration of the symposia results and available resources.

For more information about the outcomes of the safety culture symposia and the National Academy of Construction's future plans for enhancing safety understanding in undergraduate academic programs, please contact: Edd Gibson, President/CEO of NAC, at gedwardgibsonjr@utexas.edu.

Symposium Attendance:

Date	Symposium University	Symposium Location	Attendees (presenters, panelists, and participants)			# of universities represented	# of industry organizations represented
			Academic	Industry	Total		
08/18/2022	University of Kansas (KU)	Lawrence, KS	41	26	67	18	21
10/21/2022	Worcester Polytechnic Institute (WPI)	Worcester, MA	16	17	33	6	17
11/30/2022	New Jersey Institute of Technology (NJIT)	Newark, NJ	25	46	71	10	32
01/12/2023	The University of Texas at Austin / Texas A&M University	Houston, TX	14	40	54	7	37
02/09/2023	University of Colorado at Boulder	Boulder, CO	21	15	36	11	15
Total*			117	144	261	52	122
Total without overlap			111	134	245	45	94

* There was overlap between the symposia attendees. Some attendees attended more than one symposium. Also, some universities and industry organizations were represented at more than one symposium.

Symposia Organizers:

NAC would like to recognize the following individuals for their time, effort, and financial contributions to organize and conduct the symposia at the host universities:

University of Kansas:

Craig Martin / Jacobs (retired)
Chien-Ho Ko / National Center for Construction Safety (NCCS)

Worcester Polytechnic Institute:

Anthony F. Leketa / Parsons (retired)

New Jersey Institute of Technology:

Nicholas DeNichilo / Mott MacDonald (retired)
Patrick Natale / Mott MacDonald (retired)

The University of Texas at Austin/Texas A&M University:

Wayne Crew / National Academy of Construction (retired)
Carlos Caldas / The University of Texas at Austin
Jorge Vanegas / Texas A&M University

University of Colorado at Boulder:

Keith Molenaar / University of Colorado Boulder
Edd Gibson / National Academy of Construction
John Gambatese / Oregon State University

Symposia Sponsors:

NAC would like to thank the following organizations for their financial support of one or more of the symposia:

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