

ASEE'S ANNUAL REPORT

October 2020–September 2021



Sheryl Sorby, ASEE President 2020–2021

ASEE MEMBERS,

I am happy to present to you our 2020–2021 annual report.

When I assumed the ASEE presidency in June 2020, I did so from my home, broadcasting to all of you, seated in your offices, dens, or perhaps your secluded, socially distanced vacation spot. When I concluded my year as president, handing the gavel over to my friend Adrienne Minerick (we are fortunate to live in the same town!), Annual Conference attendees were again communicating over our computer cameras.

However, you'll note that the activities and milestones we bring to you in this year's report are as robust and significant as in any of our past years—an indication that despite challenging and unique circumstances, ASEE and its members kept plugging away through the pandemic, undeterred.

I will report here on the work of two ASEE task forces, with efforts to improve our Society and engineering education, writ large.

The first task force began in 2020 when I challenged members to review the current state of engineering and engineering technology education. The task force was to take a fresh look at the preparation of engineers and ways to fundamentally improve the access, diversity, and success of undergraduate engineering students.

We should be ashamed when we consider how many creative problem solvers we have driven from our programs—or never given an opportunity over the years—who would have otherwise become excellent engineers. Likewise, how many inventors and entrepreneurs have we failed to inspire to join our ranks? How many out-of-the-box thinkers have we lost from engineering due to the rigidity of our curriculum? For at least fifty years, we have endeavored to diversify the engineering profession with marginal success. Deficit-based efforts have attempted to "fix" underrepresented groups so they could fit into the culture of engineering, but the systemic challenges facing diverse, aspiring engineers run much deeper.

This task force is chaired by longtime ASEE member Gary Bertoline, senior vice president for Purdue Online & Learning Innovation. The work of the task force will build upon the 1955 Grinter Report, which still has a significant influence on today's engineering curricula. A report will be written and shared with ASEE members and others as a guide to create the "Engineering Mindset of the Future." This is going to be the most significant attempt to dig into our curriculum and culture of the last ten years.

I also created a journals task force, chaired by Maura Borrego, director of the Center for Engineering Education and a professor of mechanical engineering and STEM education at the University of Texas at Austin. This body conducted interviews and benchmarked websites from other professional societies to conclude that ASEE publications currently operate as entities separate both from each other and the rest of ASEE operations. This results in a lesser impact than what could be achieved if the journals shared Society support of formal communication among the various publications and if there were regular reporting and advocacy at the Board level. From these recommendations, ASEE created a committee on scholarly publications, whose work is now underway. The committee is cochaired by Cindy Finelli, professor of EECS and education and director of engineering education research at the University of Michigan, and Nadia Kellem, associate professor in the Polytechnic School of the Ira A. Fulton Schools of Engineering at Arizona State University.

Those of you who saw my speech as incoming president know that I challenged all of us to take a strong stance on diversity, equity, and inclusion. As I said then, as engineers, we like to think that our objectivity shields us from history, our culture, and current events, but this is not the case. If diversifying engineering was a design project that we assigned to our students and they performed as dismally as we have, they would not graduate. I'm happy to see our continued progress on DEI issues, but we have a long way to go. As you read this, ASEE is in its "Year of Impact on Racial Equity," and I am excited for the many positive things that will yield.

As always, it has been an honor to work with you and serve you as ASEE's president. I look forward to seeing you in person in 2022.



Sheryl Sorby

ASEE President 2020–2021



Norman L. Fortenberry, ASEE Executive Director

EXECUTIVE DIRECTOR'S LETTER

At ASEE headquarters, we strive for continuous improvement. Not all of our efforts are successful, but we seek to learn from our mistakes with the goal of always providing you with better service.

The continuing pandemic poses a variety of challenges to you as members and to ASEE headquarters operations. I'm pleased to say that, for the most part, ASEE staff have been able to work remotely with minimal disruption of our operations.

GRANT OPERATIONS

ASEE headquarters directly operates a variety of grants and contracts. These are national-scale activities in support of our mission, vision, and goals and are frequently led by members.

In 2020–2021 we launched the Developing Engineering Leaders of Tomorrow in the Academy (DELTA) Institutes with four short courses: the DELTA New Faculty Institute, Future Faculty Institute, New Department Leaders Institute, and Junior Faculty Institute. We also began offering a series of online Distinguished Lectures; the inaugural speaker was Dr. Maria Klawe, president of Harvey Mudd College. Additionally, we provided an expanded array of new short courses, workshops, and webinars of direct service to members.

We were also able to support community convenings with support from the National Science Foundation (NSF), which led to tangible community opportunities in computing, engineering, and science. For example, a 2019 workshop we hosted was translated into an NSF program solicitation for the Engineering Research Visioning Alliance.

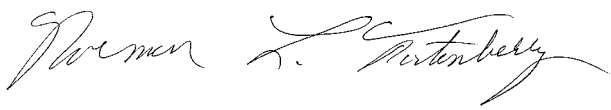
With NSF and private foundation support, we engaged in several initiatives to enhance diversity, equity, and inclusion in engineering education. For example, we hosted workshops to increase the competitiveness of minority-serving institutions for NSF grants in computing and continued a virtual initiative to enhance the knowledge of engineering deans and their teams on effective means of advancing engineering faculty into leadership positions. We expanded career opportunities for recent doctoral graduates by continuing our work to place engineering and science postdocs in start-up companies and initiating a new effort that helps recent engineering doctoral graduates obtain two-year postdoc positions at US academic institutions as an employment bridge. Both of these endeavors emphasized outreach to diverse communities. We also continued our operation of the only NSF grant to explicitly support building supportive engineering education environments for members of the LGBTQ+ community.

NEW ELECTRONIC INFRASTRUCTURE

During 2020–2021, we initiated the herculean effort to replace our homegrown, worn out, and out-of-date Monolith system. We chose to use commercial packages rather than custom-designed ones in hopes of maximizing support and minimizing system maintenance. However, no single commercial package offered all of the features that were built into Monolith; therefore, we had to use three separate commercial off-the-shelf packages: Impexium for our association management software, to enable financial transactions such as membership purchases, registrations, etc.; Kentico for our website content management system, to handle the images and content displayed at ASEE.org; and Slayte, to manage conference paper and abstract submissions. We also introduced the ASEE Hub (built on Personify) as a new interactive electronic community that will eventually replace our various unidirectional listserves. Planning is also underway for the implementation of a knowledge management system to handle the headquarters-administered short courses, workshops, and webinars. While integrating these systems has proven an even greater challenge than expected, we are confident that once we reach steady-state operations, members will see a marked improvement in their ability to access the services of the Society.

We look forward, with your support, to continuing to find creative ways to advance ASEE's mission.

Sincerely,



Norman L. Fortenberry, Sc.D.

2021 ASEE SOCIETY AWARDS

Benjamin Garver Lamme Award



Adam K. Fontecchio
Drexel University

Frederick J. Berger Award



Robert Weissbach
Indiana University–Purdue University Indianapolis

William Elgin Wickendon Award



Brian A. Burt
University of Wisconsin–Madison

Isadore T. Davis Award



Pauline Wade
Texas A&M University

James H. McGraw Award



Carol M. Lamb
Youngstown State University

DuPont Minorities in Engineering Award



Angelo Perna
New Jersey Institute of Technology

John L. Imhoff Award



Alaa Elwany
Texas A&M University

Lifetime Achievement Award



Karan L. Watson
Texas A&M University

Chester F. Carlson Award



Tracy Anne Hammond
Texas A&M University

National Outstanding Teaching Award



Hadas Ritz
Cornell University

Sharon Keillor Award



Bevlee Watford
Virginia Tech

National Engineering Technology Teaching Award



Rustin Webster
Purdue University

NEW ASEE FELLOWS

Ronald J. Bennett
University of St. Thomas

Carlotta A. Berry
Rose-Hulman Institute of Technology

Bobby 'Grant' Crawford
Quinnipiac University

Elliot P. Douglas
University of Florida

Keith V. Johnson
East Tennessee State University

Sharon Jones
University of Washington–Bothell

Donna C. Llewellyn
Boise State University

Gary S. May
University of California–Davis

Beena Sukumaran
Miami University

JOURNAL OF ENGINEERING EDUCATION (JEE)

Cultivating, disseminating, and archiving quality research in ways that reflect the diversity of experiences and perspectives within the engineering education community is at the core of ASEE. This is also the mission of ASEE's *Journal of Engineering Education* (*JEE*).

JEE is widely recognized as the premier publication for scholarly research on engineering education. Published quarterly through John Wiley & Sons, *JEE* receives about four hundred new submissions annually from authors in more than forty countries. It has an international editorial board that coordinates the peer review process. Under the editorship of Lisa Benson, the College of Engineering, Computing, and Applied Sciences and the Department of Engineering and Science Education at Clemson University have generously supported *JEE*.

During the past twelve months, *JEE* has published articles on design thinking and maker spaces; empathy, ethical reasoning, and socio-technical aspects of engineering; the challenges faced by Black engineering students and graduates as well as women of color in undergraduate engineering; inequities in access to engineering degree programs; and insights from social media about graduate student experiences in engineering. Summaries of these and other articles have appeared as "*JEE* Selects" columns in ASEE's *Prism* magazine. These summaries show how research can inform the practice of educating a diverse population of students to become the next generation of leaders in engineering. *JEE* launched new initiatives this year to expand its reviewer and author base, including the *JEE* mentored reviewer program and workshops at international conferences to identify and train new reviewers.

ADVANCES IN ENGINEERING EDUCATION (AEE)

Advances in Engineering Education (*AEE*) is an internationally recognized, practice-based, peer-reviewed journal that fills a much-needed niche in the field of engineering education. *AEE* documents and disseminates research-informed, education-related innovations in engineering education contexts. Particularly unique to *AEE* is that authors are encouraged to submit papers incorporating the creative use of multimedia, including animation, audio, graphics, and video.

This year marked the formal transition to Holly Matusovich as the new editor-in-chief. Larry Shuman, founding editor-in-chief, continued to curate two special issues initiated during his tenure, including one on educational transformations associated with teaching and learning during COVID and the other on worldwide leadership of innovative engineering education programs. The other issues demonstrate the strength and breadth of *AEE* work and encompass a range of topics related to engineering in K–12 through college settings.

AEE has a regular publication schedule of four issues per year in January, April, July, and October and is preparing to update its review criteria and practices.





RESOURCE CENTRAL

To support the continued learning and career success of our members, ASEE launched educational programming this year in the form of eight new virtual instructor-led workshops and courses, addressing topics such as proposal preparation, effective instruction, and leadership. Courses include the DELTA (Developing Engineering Leaders of Tomorrow in the Academy) Institutes; training for faculty of all levels; a Master Class on effective teaching led by Barbara Oakley, co-teacher of Learning How to Learn, the world's most popular MOOC; and Replacing Implicit Bias: Recognize, Reconsider, and Respond, an interactive workshop for educators, administrators, and staff focused on bias recognition and mitigation. This year, ASEE's educational workshops and courses reached over eight hundred members and constituents via both public and private trainings. View all ASEE courses and embark on your learning journey today at *https://resources.asee.org/courses*.

RECOGNITION FOR ASEE LEADERSHIP

ASEE President Sheryl Sorby received the 2020 IFEES Duncan Fraser Global Award for Excellence in Engineering, presented at a ceremony in the fall of 2021, in recognition of her work reenvisioning engineering education around the world. Sorby was also awarded ABET's Claire L. Felbinger Award for Diversity and Inclusion, recognizing US-based educational units, individuals, associations, and firms for extraordinary success achieving diversity in the technological segments of our society.

ASEE Past President Stephanie Farrell was presented with AIChE's 2020 IDEAL Star Award for her work with LGBTQ+ Safe Zone Training in conference programming. The award recognizes AIChE members who have created successful programming to progress the IDEAL path through engaging, inclusive content with an emphasis on topics pertaining to inclusion, diversity, equity, and/or anti-racism. Farrell received the award at a ceremony in 2021.





DIVERSITY, EQUITY, AND INCLUSION

ASEE is catalyzing open and thoughtful dialogue to identify and acknowledge underserved constituencies and advocate for their enhanced participation, inclusion, and success. The Society is promoting promising practices of inclusiveness and modeling public accountability.

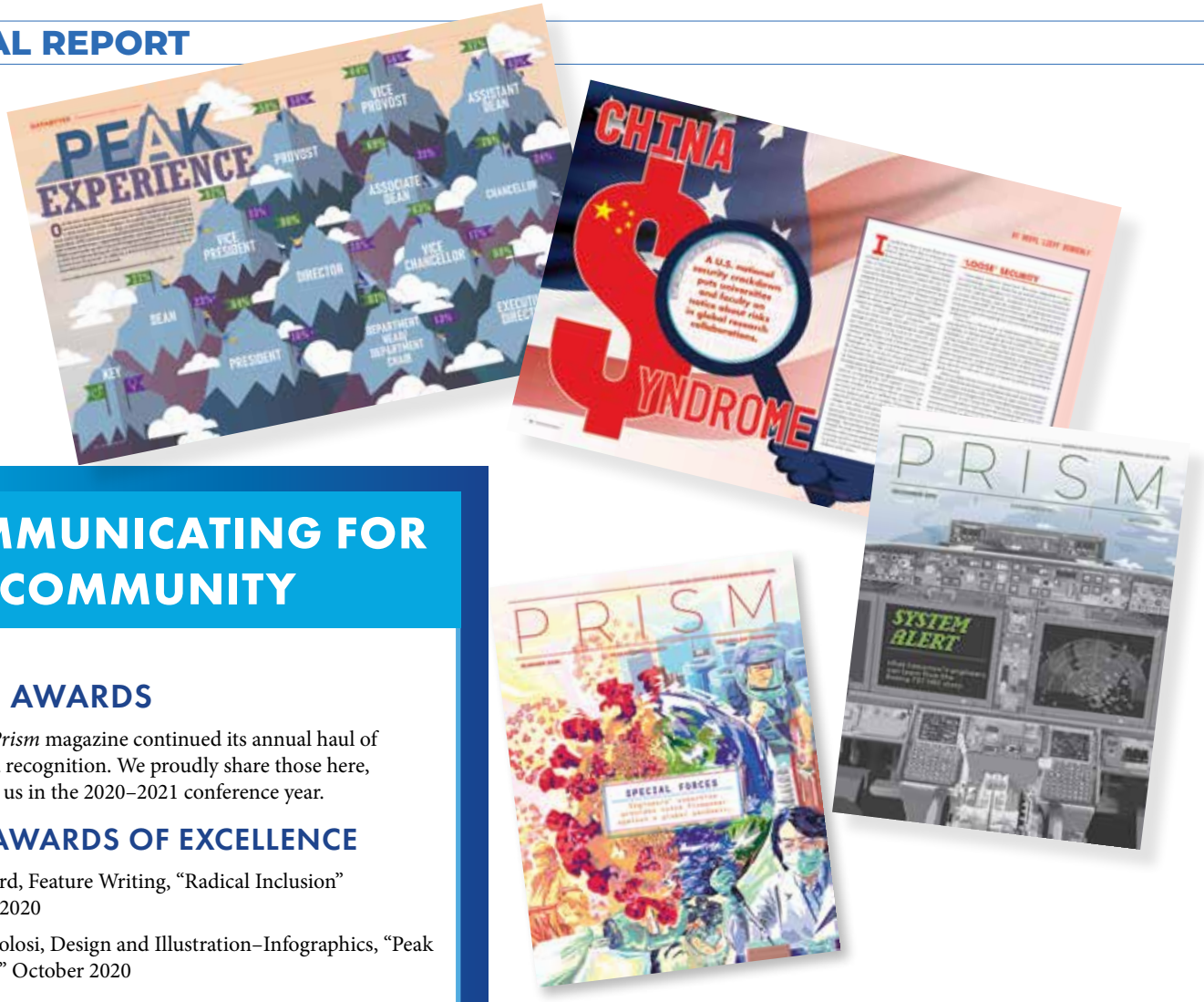
ASEE's Commission on Diversity, Equity, and Inclusion (CDEI) is working to: 1) increase visibility and discussion of DEI issues; 2) develop guidance to foster inclusive environments in which all engineers thrive; and 3) facilitate and encourage adaptation of strategies to promote the empowerment of all through the work of the commission, guided by the CDEI strategic framework.

Under the leadership of 2020–2021 chair Liz Litzler, the commission had an additional focus on increased communication to our membership and the larger engineering community, greater transparency in the work of CDEI, and continued momentum on racial justice.

The commission published regular blog posts to highlight its efforts and promoted colleagues' work through the Scholar Spotlight Series, guest blogs, and articles in *Prism*. It issued position statements affirming commitment to policies and initiatives that promote equitable outcomes and highlighted individual actions. These additional resources supplemented the programmatic arm of CDEI, which includes year-round professional development virtual workshops in addition to the valuable content provided at the annual conference. The professional development committee continues to successfully recruit volunteers to support the demand for education efforts like the virtual workshop series and cultivates an environment that supports the continued development of similar initiatives.

The commission's objectives for 2021–2022 were:

- Kick off the Year of Impact on Racial Equity at the 2021 Annual Conference and the task force groups that will lead efforts focused on the three pillars of impact.
- Support the Year of Impact on Racial Equity through committee programming and communications.
- Organize special events for the culmination of the Year of Impact on Racial Equity at the 2022 Annual Conference, in addition to recurring programming and community-submitted sessions.
- Increase participation in CDEI professional development workshops (virtual and Annual Conference) and scale up static and dynamic resources available to members (e.g., downloadable guides, virtual workshop recordings, communities of practice).
- Maintain CDEI communications via website, blog, social media, and other ASEE media (e.g., *Prism*), and track media use to inform future integrated communication plans.
- Increase awareness of and applications for ASEE Constituent Award.



COMMUNICATING FOR THE COMMUNITY

PRISM AWARDS

ASEE's *Prism* magazine continued its annual haul of awards and recognition. We proudly share those here, awarded to us in the 2020–2021 conference year.

APEX AWARDS OF EXCELLENCE

Mary Lord, Feature Writing, "Radical Inclusion" November 2020

Toni Rigolosi, Design and Illustration–Infographics, "Peak Experience" October 2020

THE 26TH ANNUAL COMMUNICATOR AWARDS

AWARDS OF EXCELLENCE:

Toni Rigolosi, Feature Design, "Don't Call It a Celebration" December 2019

Ron Gluckman, Feature Writing, "Under Siege" January 2020

Francis Igot, Cover Design, "Special Forces" Summer 2020

AWARDS OF DISTINCTION:

Francis Igot, Toni Rigolosi, Miguel Ventura; Feature Design, Full Issue; "System Alert" December 2019

Mark Matthews, Charles Q. Choi, Pierre Home-Douglas, Mary Lord; Feature Writing, Full Issue; "System Alert" December 2019

Nico Nittoli, Feature Design, "China Syndrome" Summer 2020

Mary Lord, Eva Miller; Feature Writing; "Fresh Perspectives" September 2020

DATA ANALYTICS AND INSTITUTIONAL RESEARCH

ASEE is the premier source of information for industry, academic, and government leaders who need to know what the potential engineering and engineering technology workforce looks like today and could be tomorrow. ASEE data:

- Help our industry partners identify new recruits for employment and areas where the graduating workforce can support new technological expansion.
- Give institutional leaders the tools to show government stakeholders progress and identify new targets of opportunity.
- Enable local, state, and federal decision makers to use sound judgment in developing the current and future engineering workforce.



PUBLIC POLICY

ASEE's institutional and individual members are deeply concerned with funding for engineering, engineering technology, and engineering education research; support for engineering and engineering technology education at all points in the education pipeline; and policies that further the technological literacy of Americans.

ASEE's annual public policy colloquium of engineering deans virtually assembled approximately 150 participants for a two-day event comprising briefings on the federal landscape as it relates to STEM funding and support. With the assistance of Lewis-Burke, our government relations firm, the PPC agenda was robust, and participants scheduled virtual Hill visits with their representatives on the event's final day.

ASEE leverages partnerships inside and outside of Washington, D.C., to maintain our sphere of influence; such partners include the STEM Education Coalition; the Alliance for Science & Technology Research in America; and the Coalition for National Science Funding.

ANNUAL CONFERENCE

For the second year, ASEE's members, colleagues, and partners gathered virtually, with over 2,000 participants convening for our 128th Annual Conference and Exposition.

Despite the distance between them, participants engaged in a meaningful, collaborative event. The conference featured more than four hundred technical sessions and thousands of authors and speakers, including peer-reviewed papers spanning all disciplines of engineering education; distinguished lectures, including the main plenary; provocative panel discussions; award ceremonies and social events; the "Greet the Stars" orientation for new ASEE members and first-time conference attendees; and workshops on topics ranging from new tools and technologies to research-proven, practical tips for improving teaching, learning, and equity.

The conference had three plenaries. One featured University of Maryland president Darryll Pines, focused on the "Grand Challenges." In another, Gary Bertoline, then-dean of the Purdue Polytechnic Institute, led a group to discuss needed changes in engineering curricula and the task force he is chairing on this effort. Our third, the "industry day" plenary, featured Jeff Abell, chief scientist for global manufacturing, global research, and development at General Motors.

