

Journal of Pre-College Engineering Education Research (J-PEER)

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Journal of Pre-College Engineering Education Research (J-PEER) Annual Report from January 1, 2020 to December 31, 2020

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Abstract

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by Senay Purzer and Kami N. Schwartz

Abstract

Over the last ten years, the *Journal of Pre-College Engineering Education Research (J-PEER)* has been disseminating research that seeks to investigate, enhance, and transform pre-college engineering education and, ultimately, to create an engineering-literate society. The 2020 annual report presents readership metrics and statistics of the decade, trends and metrics on *J-PEER*'s authorship in 2020, and our reflections on the last year.

Reflections on 2020 and the COVID-19 Pandemic

The year 2020 was highly unexpected and unusual. The initial draft of this report, as contemplated in 2019, was going to highlight two National Academy reports published in the early 2000s, reporting on visions of engineering education in 2020 (National Academy of Engineering, 2004, 2005). We were going to ask: Have we achieved the vision of engineers in 2020? However, these plans quickly changed with a world shaken by an unprecedented pandemic caused by an airborne virus, COVID-19.

The pandemic impacted all humanity in endless ways. It transformed the ways we live, the ways we communicate with one another, the ways we understand social justice, and the ways we shape future generations. The pandemic tested the limits of healthcare with a surge of patients and constraints of medical equipment. Those who tested positive for the virus had to learn to self-quarantine. We adapted to social distancing and communicating over our masks when in public. Yet, the pandemic also expedited biomedical science and engineering in the development of rapid testing technologies and vaccines that are safe and effective. The pandemic was difficult for the psychological well-being of many people. Many have lost loved ones, mentors, and friends, while many were worried of loss. Yet, the pandemic also enlightened many, with a heightened recognition of grace and appreciation.

The pandemic widened inequalities and made existing ones more evident but also produced a global awakening for racial equity and social justice. Voices joined together in the Black Lives Matter movement to speak out against inequality and racism. The inequalities in education have also become more evident when schools switched to online education and families struggled to find reliable access to the Internet and digital devices. Numerous children depended on their parents for home-schooling while many families lost incomes. Yet, the pandemic also transformed education and society, with many educators who quickly adapted to teaching virtually and a society with a firmer appreciation of public education.

For those of us lucky enough to reflect on the pandemic, it is time to rethink our values. This was a difficult time for everyone worldwide that entirely reshaped our daily lives; yet, this is also an opportunity for rebirth. It is time to ask questions and imagine a better future. What is our vision for the future? What is our vision for pre-college engineering education? How can pre-college engineering education promote the creation of a just society through research? What can the *Journal of Pre-College Engineering Education Research (J-PEER)* do? *J-PEER* is leading efforts to create impactful change in a number of ways.

Table 1
Readership metrics in the last decade (since the founding of the journal).

Year	Number of total downloads	Metadata page hits	Number of institutions	Number of countries
2020	40,860	20,606	2,084	170
2019	32,937	17,721	2,507	176
2018	27,808	12,218	2,300	157
2017	21,688	10,741	1,985	155
2016	21,332	8,018	2,068	154
2015	12,756	4,722	1,294	126
2014	9,329	2,818	32	35
2013	8,556	2,641	n/a	n/a
2012	4,887	2,734	n/a	n/a
2011	n/a	n/a	n/a	n/a

We present historical data in Table 1 to compare download and access trend data since 2011, when the journal was founded. The number of downloads has steadily grown over the years. In 2020, there was a decrease in the number of institutions and the number of countries, likely a reflection of the pandemic.

High-Impact Articles

J-PEER provides impact data to its authors through the PlumX analytics. Two of these analytics we highlight are the citations index and the downloads-based popularity index. The *citations index* reflects traditional citations indexes (such as Scopus) but also indicates societal impact such as being cited by clinical or policy reports. This *popularity index* is determined by the total number of full downloads.

The all-time most cited paper of *J-PEER* is the *Promise of the Maker Movement for Education*, authored by Lee Martin in 2015 (volume 5, issue 1). *J-PEER*'s all-time most popular paper is *Considerations for Teaching Integrated STEM Education* by Micah Stohlmann, Tamara Moore, and Gillian Roehrig published in 2012 (volume 2, issue 1).

In 2020, *J-PEER* published ten research articles in two issues in its 10th volume. The most popular paper of the April 2020 issue was *Recognition and Positional Identity in an Elementary Professional Learning Community: A Case Study* by Christopher Wright, Rasheda Likely, Kristen Wendell, Patricia Paugh, and Elizabeth Smith. The most popular paper of the October 2020 issue was *The Importance of Collaborative Design for Narrowing the Gender Gap in Engineering: An Analysis of Engineering Identity Development in Elementary Students* by Mandy McLean, Jasmine Nation, Alexis Spina, Tyler Susko, Danielle Harlow, and Julie Bianchini.

The Authorship Report

When a new manuscript is submitted to *J-PEER*, it is first processed by the chief editor. The editor makes a decision at this early stage by asking if the manuscript is ready to be sent for peer review. The manuscripts that do not fit the scope of the journal are desk-rejected for scope. The manuscripts that do not meet most review criteria or lack clarity and coherence are desk-rejected for quality. In order to be ready for external review, the manuscripts must be fully blinded, have a focus within the scope of *J-PEER*, present arguments that are sufficiently clear and evident with regard to the five review criteria (listed above), and meet the journal's criteria in terms of format, language, and length (e.g., the abstract is written in English, the length is within the 10,000-word count).

The manuscripts that are determined to be ready for peer review are assigned to an associate editor, who then identifies two to three expert reviewers. After the reviews are complete, a decision is made on each manuscript. If the manuscript is approved, it will be carefully copyedited and typeset before publication. Overall, the original manuscripts submitted in 2020 were processed with an average turnaround of 84 days, meeting our target to keep the average turnaround time below 100 days.

In this authorship report, we present data collected from January 1, 2020 to December 31, 2020. During this period, the journal received 49 original manuscripts. There were also an additional 25 manuscripts that were revised submissions. Hence a total of 74 manuscripts were under consideration in 2020. In these calculations, each manuscript is only counted once, even though some manuscripts went through several decisions.

The distribution of the original submissions was consistent across each month except for July and August (Figure 2). These months coincided with the due date of the special issue papers to be submitted to *J-PEER*'s b-press system.

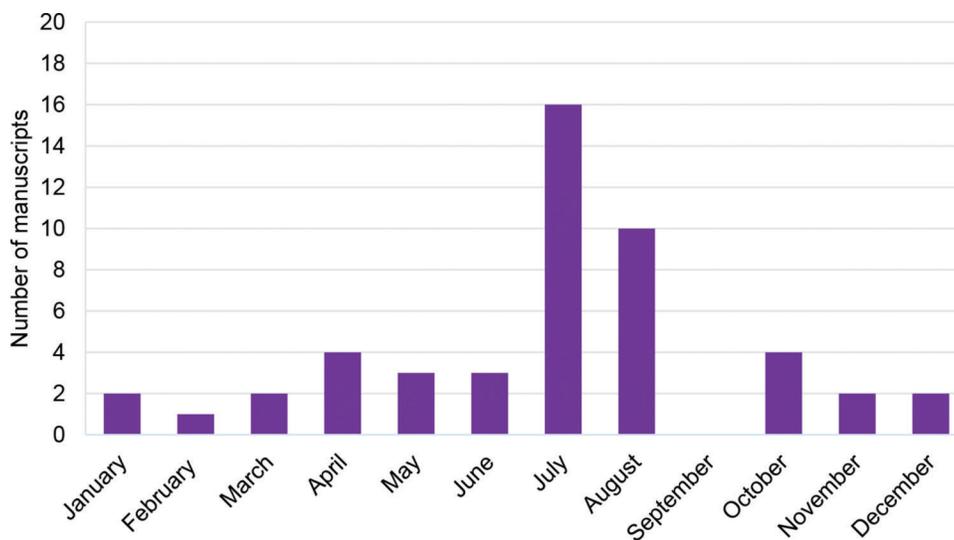


Figure 2. Monthly distribution of new manuscript submissions in 2020.

Decision Letters and Acceptance Rate

The *J-PEER* system registers decisions under four categories: accept, accept with minor revisions, request major revisions, or reject. In 2020, we received 74 new and revised manuscripts. The distribution of the status of the 74 manuscripts at the end of 2020 is presented in Figure 3, resulting in a rejection rate of 32.4%, with 16 manuscripts that were still pending decisions by the end of the year.

Acknowledgments of Editors, Reviewers, Editorial Board, and Staff

As mentioned earlier, *J-PEER* is an open-access journal with no page charges and a staff of mostly volunteers. Hence, the critical work of *J-PEER* would not be possible without the exceptional work of our associate editors, guest editors, and reviewers. We are extremely grateful to our associate editors and guest editors:

- Merredith Portsmore, Tufts University
- Mack Shelley, Iowa State University
- Gina Svarovsky, University of Notre Dame
- Kristen Wendell, Tufts University, guest editor
- Lee Martin, University of California, Davis, guest editor

We are also grateful for *J-PEER*'s editorial board members, who have a vital role in guiding our journal and disseminating the great work of our authors. These members include:

- Robin Clark, Aston University, United Kingdom
- David Crismond, City College of New York
- Lyn D. English, Queensland University of Technology, Australia
- Tirupalavanam Ganesh, Arizona State University
- Stacy Klein-Gardner, Vanderbilt University
- Stephen Krause, Arizona State University
- Marcia Linn, University of California, Berkeley
- Mitchell Nathan, University of Wisconsin-Madison

We would also like to give our thanks to the School of Engineering Education, Purdue University Press, and Purdue University Libraries and School of Information Studies for supporting the open-access model of *J-PEER* philosophically and financially. Thanks are due to Katherine Purple at Purdue Press, whose crucial work facilitates the production of our articles. Last but not least, many thanks are given to *J-PEER*'s Editorial Assistant, Kami Schwartz, for her work in the background and editing of all manuscripts, including this one.

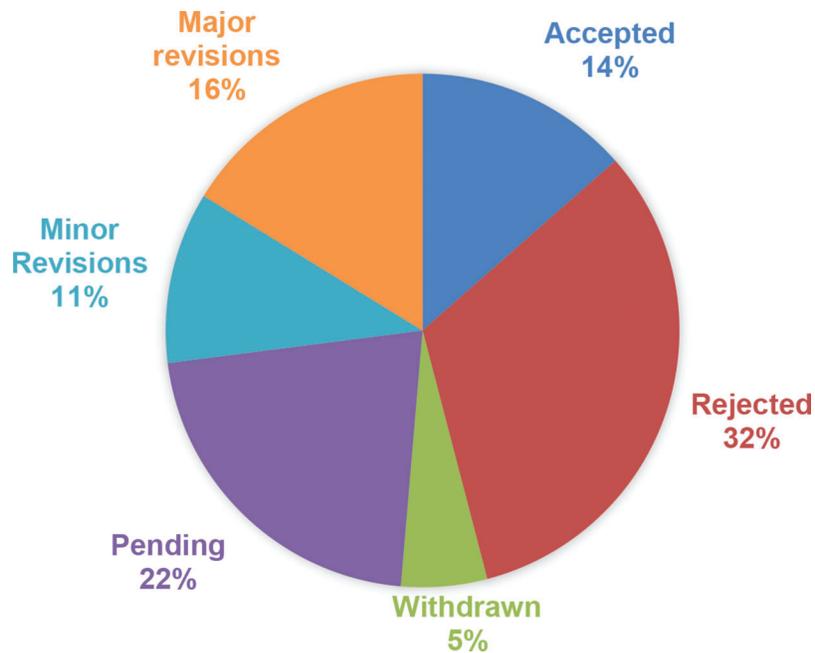


Figure 3. The distribution of decisions made in 2020.

Looking Forward

The COVID-19 pandemic continues to affect everyone worldwide in 2021. As we look forward, we will continue to learn and grow despite these difficult times. We look forward to expanding the journal by incorporating new sections and publishing special issues, envisioning the future of pre-college engineering education and addressing emergent needs.

We are grateful for the continuous interest of our readers and authors, who select *J-PEER* to access and publish research on pre-college engineering education. The open-access nature of *J-PEER* facilitates free access to original research papers worldwide. We invite our authors and readers to spread the word by following our new Twitter account (@JPEERResearch) and sharing *J-PEER*'s articles with their social circles. Our authors who have published articles with us can access impact data for their articles within their b-press accounts by accessing the "Dashboard."

We hope that with the development of a vaccine and the protective measures being taken that our authors can continue their amazing efforts. We look forward to seeing the outcomes of such work and receiving submissions for empirical research, synthesis studies, innovative practices, and visionary papers.

Author Bios

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