

An Evaluation of the [Name] Champions Institute: Strengthening Educators' Ability to Connect Students with Engineering (EEC - EWFD)

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Introduction

Founded in 2000 with a grant from NSF (EEC – EWFD – Eng Workforce Development), Teach Engineering is a free digital library of classroom-tested, standards-aligned K-12 STEM resources created in collaboration with educators across the nation. The three main goals of the project are: 1) Expand the reach of the project through new and existing partnerships; 2) Increase teacher preparedness to teach engineering through a variety of professional development opportunities; and 3) Enhance the library content by connecting engineering to other subjects and leading-edge technologies. For this paper, the focus is on goal 2 of increasing teacher preparedness to teach engineering.

One aspect of meeting this goal was an inaugural teach-the-teacher style professional development (PD) workshop held August 4-6, 2025, at the University of Colorado Boulder. This workshop is designed to be held annually to train ten “teacher champions” in engineering pedagogy, design, and mindset. These teacher champions are exemplary teachers from across the United States who were selected after an intensive application process.

Poster Focus

This paper and poster will focus on the evaluation results from the inaugural teacher champion institute held last summer. Research shows that effective STEM PD includes a supportive teacher learning environment that focuses on improving teacher’s content knowledge [1] [2]. The PD focused on teaching new content, creating a supportive learning environment, and providing a platform for a community of practice beyond the two-day workshop. The in-person portion of the PD consisted of a two-day, immersive program that blended hands-on exploration, collaboration, and reflection. To improve teacher content knowledge on teaching engineering, the PD featured workshops on engineering design curriculum, human-centered design, rapid prototyping, and embodied experiential learning. Upon completion, the teacher champions returned to their home states equipped with a practical “toolkit” of resources to support their local communities and constituents in expanding access to K-12 engineering education.

Evaluation Results

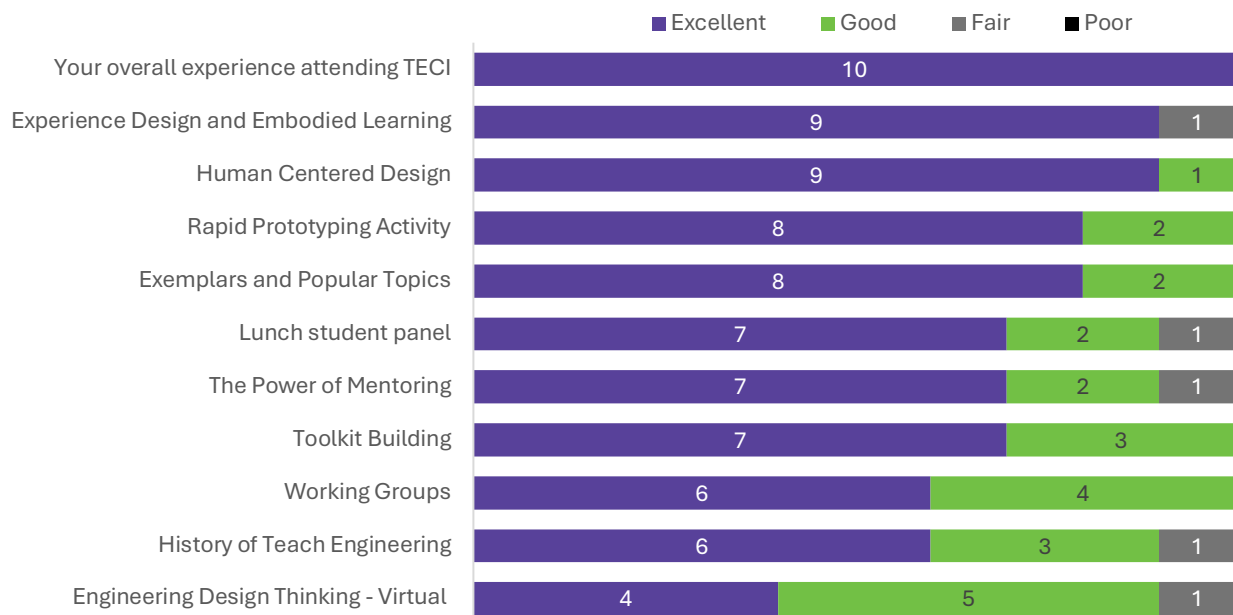
The evaluation of the workshop was cross-sectional utilizing a mixed methods approach. The evaluator observed six of the ten sessions and took field notes regarding the quality of each session and the engagement level of participants. At the end of the two-day workshop, participants received an online survey containing six items designed to measure the quality of the professional development, the impact of the PD, and collect their thoughts on next steps and how they can be best supported.

Observations: Observational data indicated strong interest and engagement with each of the observed sessions. Interest and Engagement were rated on a 5-point scale where 1 = very low engagement and 5 = very high engagement. The observer noted strong interest and engagement from all 10 participants for the Toolkit building, Human Centered Design, and Rapid Prototyping activity. For the remaining three observed sessions, one or two participants appeared less engaged and/or interested. The table below displays the session name, which sessions were observed, engagement rating, and interest rating.

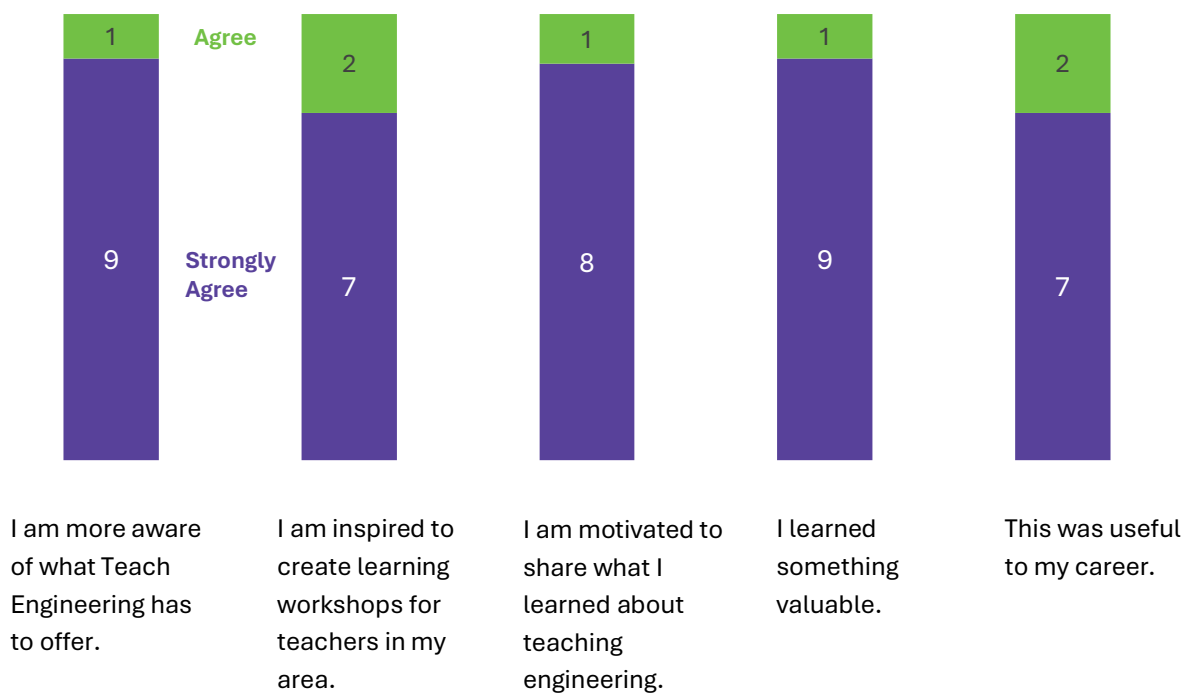
Session	Observed	Engagement Rating	Interest Rating
History of Teach Engineering			
Toolkit Building	X	5	5
Teach Engineering Exemplars and Popular Topics	X	4	4
Human Centered Design	X	5	5
Experience Design and Embodied Learning			
Engineering Design Thinking			
Rapid Prototyping Activity	X	5	5
The Power of Mentoring	X	4	4
Lunch Student Panel	X	5	4
Working Groups			

Slack Community: To help create a community of practice among the participants, a Slack group was created to allow them to connect with each other before and after the Institute. Five of the ten participants have shared successes and challenges with preparing to conduct their own PD. For example, one participant shared: “Last week I hosted a session at the North Carolina Science Teacher Association Professional Development Institute in which I adapted a lesson to be about North Carolina animals and focus more on prototype prosthetics/orthotics. Folks seemed to enjoy it!”

Survey Results: As shown below, all 10 participants rated the overall PD and five of the 10 PD session topics as excellent or good. For the remaining five sessions, nine participants rated them as excellent or good and one rated them as fair.



Regarding PD impact, all 10 participants strongly agreed or agreed with each of five impact statements.



As one participant stated, “to spend two days with educators who share my passion for equality in Engineering education was amazing! While this cohort came together from across the country and started as strangers, we are leaving as friends and champions for [Program Name] and our students.”

Conclusion

The evaluation revealed the participants were excited to attend the PD, appreciated the opportunity to learn more about the engineering design process, understand how to integrate the digital library of lessons into their teaching, and take advantage of the professional community established in Slack. They were excited to meet other teachers from around the country and felt the PD increased their knowledge of engineering principles. Evaluation results confirmed the need and usefulness of this type of PD and the creation of a learning community. As a participant stated, “Participating in the Teach Engineering Champions Institute has been both empowering and energizing. As an educator working in rural and Indigenous communities, I am always seeking high-quality, culturally adaptable STEM resources - and Teach Engineering delivered just that. The program gave me the tools, confidence, and community to champion engineering education in a way that feels accessible and relevant to the students I serve. The hands-on activities are thoughtfully designed, standards-aligned, and easy to implement, even in classrooms with limited resources. What stood out most was the collaborative spirit of the institute. Connecting with other passionate educators across the country reminded me that we are not alone in this work, and that together we can build more inclusive, inspiring pathways into engineering. I am excited to continue sharing Teach Engineering with my network and to help more students see themselves as designers, problem-solvers, and future engineers.”

References

- [1] Z.K., Avery, and E.M. Reeve, “Developing effective STEM professional development programs,” *Journal of Technology Education*, vol. 25(1), pp. 55-69, 2013.
- [2] C.K. Lo, “Design principles for effective teacher professional development in integrated STEM education,” *International Forum of Educational Technology & Society*, vol. 24(4), pp. 136-152, 2021. <https://www.jstor.org/stable/10.2307/48629251>