2026 Community Engagement Showcase

Enacting Mathematics Beyond the Classroom: Service Learning in Upper-Division Courses for Career and Civic Readiness

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SACRAMENTO STATE

Program or Project Description

- Service learning is integrated into upper-division mathematics courses through the study of math games, puzzles, and the mathematical concepts behind them.
- Students first explored and analyzed the underlying mathematical theory, developing both conceptual understanding and problem-solving skills.
- They then apply their learning by facilitating interactive sessions where they taught these concepts to members of the community.
- Students deepen their mathematical knowledge, strengthen communication and leadership skills, and experience mathematics as a meaningful tool for community engagement and civic impact.

Career Readiness/Civic Impact Highlight(s)

- Participating courses: MATH 193 (Capstone course for Teaching Credential Candidate), MATH 110A/B (Modern Algebra I/ II)

- # of students: 74 students
- # of Math Literacy Program mentors: 9 students

Experiential Learning for Career Readiness & Civic Impact

- This project integrates service learning into upper-division math courses to bridge academic study and professional practice.
- Through exploring math games and puzzles, students develop analytical thinking and problem-solving skills.
- By teaching these concepts in community settings, they learn to communicate complex ideas clearly and effectively.
- Facilitating these sessions builds essential career skills, including teamwork, leadership, adaptability, project management, and public speaking.
- Serving as both learners and educators, students gain confidence, strengthen their professional identity, and acquire practical experience for careers in education, industry, and community-focused fields.

Student Reflections:

"These experiences have shaped the kind of educator I want to become. I plan to use hands-on activities, puzzles, games, and real-world applications to help students see math as a tool for solving problems, thinking logically, and creating meaningful things. When students actively engage with materials, they stay motivated and develop a deeper understanding."

"Through outreach events, I developed key teaching skills such as communication, patience, flexibility, leadership, and engaging students effectively. Moving forward, I plan to use hands-on activities, explain concepts clearly, adapt to different learners, connect math to creativity, and make learning fun and meaningful."

Community Impact

The partnership equipped educators with practical, engaging strategies they could immediately use in their classrooms. It strengthened understanding of student-centered teaching and collaborative math instruction while boosting confidence and enthusiasm. Community feedback highlighted:

"This opened my eyes to new ways to do the work."
"It was fun and easy to take back to the classroom."
"I valued learning… how you set up your classrooms to see, hear, and value your students' thinking."
"This was a lot of fun… kids will like it."

Overall, participants found the experience useful, inspiring, and directly applicable.

Campus Impact

Participants' reflections:

"Through the program, I've met incredible people whom I have grown alongside… I've developed skills in 3D printing, laser cutting… and mentoring."
"I've gotten better at explaining math… to those who aren't studying for a STEM degree."
"We collaborate with high schools and middle schools to share our math creations… 3D printing projects and interactive resources… This job has improved my communication, teamwork, and problem-solving skills."

The project strengthened collaboration across Sac State by integrating mentorship, teamwork, and community engagement, while equipping participants with valuable academic and professional skills.