

# Conference Resources

## Stephanie Farrell:

- [WEEF&GEDC\\_Spatial Skills Farrell.pdf](#)
- [LEAP Flyer Farrell Spatial Skills.pdf](#)

Spatial Skills Training for Access and Equity in STEM education - Spatial skills are a cognitive dimension that have received much attention for a well-established link to success in STEM fields. Group differences in spatial ability disadvantage populations already underrepresented in STEM fields: women, racial and ethnic minorities, low socioeconomic status individuals. Although much research has focused on the nature/nurture debate, of particular significance to this work is the evidence that spatial skills can be improved in a relatively short time and that doing so improves success in STEM. We have developed a novel, online, strategy-based spatial skills training that results in significant improvement of spatial skills with approximately 3 hours of training.

- [ASEE Safe Zone Workshops and Virtual Community of Practice to Promote LGBTQ Equality in Engineering.pdf](#)
- [LGBTQ Poster Final.pdf](#)

Increasing LGBTQ Inclusion in Engineering - Even though recent years have seen significant advances in LGBTQ equality in the U.S. through legislation and social acceptance, research shows that LGBTQ students and faculty on college campuses still experience exclusion and discrimination. STEM fields in particular have been particularly resistant to change. This transformative research-action project investigates barriers to LGBTQ inclusion in STEM creates research-informed Safe Zone ally trainings for STEM professionals, and supports a Virtual Community of Practice for LGBTQ inclusion in STEM.

## Richard Durán:

- [URL For Duran Team Project Site St George Youth Center Isla Vista.docx](#)
- [Univ Comm Partnerships Eq FabLearn2016.pdf](#)
- [ToolUseFINAL\\_Watermark\\_Final IDC 2017.pdf](#)

We describe a collaboration between UCSB and a local Teen Age after school activities center that introduces immigrant youths to Critical Making and design based learning exploring how everyday world physical phenomena occur and can be measured and manipulated by microprocessor and robotic technologies. Youths explore how local community problems--such as excessive sound pollution can be investigated and mitigated. Youths also receive mentorship and guidance from UCSB undergrad and grad students on the pursuit of continuing STEM course taking and preparation for STEM related careers.

## Louis Bucciarelli:

- [LEAP\\_SanAntonio\\_handout\\_2May.pdf](#)

A collection of modules, or learning units, for use within courses in engineering as well as the liberal arts to the mutual benefit of students in both domains. The modules are meant to infuse ways of thinking and doing in engineering into courses in the liberal arts.

## Cynthia Greenleaf:

- [LEAP Info Card-1.pptx](#)

Project READi (Reading, Evidence, and Argumentation in Disciplinary Instruction) defines reading for understanding as the capacity to engage in evidence-based argumentation drawing on multiple texts, with texts broadly construed as information sources in the multiple modalities and genres typical of a specific discipline.

## Rebecca Callahan:

- [Grade1\\_Complete\\_0426.pdf](#)

Lesson plans and handouts on literacy, language development, and engineering systems thinking. Design Technology and Engineering Education (DTEEL) for bilingual English Learner Students is a K-5th grade curriculum focused on language development through engineering design and problem solving. Each grade level includes a series of units focused on different aspects of engineering: Materials, Structures, Mechanisms, and Work & Energy. The last two grade levels add units that synthesize these engineering components with a Systems focus on Systems. Each lesson includes instructional strategies to strategically integrate language use and engineering content. The curriculum is thus designed to build on the assets that emergent bilingual students (García, 2009) bring to the classroom and provide them with research-based instructional supports for their meaningful participation and learning in engineering education.

## Zhihui Fang:

- [Chapman&Fang@LEAP2017.pptx](#)

In this presentation, we examine the social, cognitive, and semiotic practices of an engineering expert and discuss the implications of our findings for disciplinary literacy instruction.

## Edward Reeve:

- ITEEA STANDARDS: <https://www.iteea.org/39197.aspx>
- Technology and Engineering Literacy: <https://nces.ed.gov/nationsreportcard/tel/>
- NSTA STEM BOOKS: <http://www.nsta.org/publications/stembooks/>
- UTAH Engineering Standards: <http://www.schools.utah.gov/CURR/science/Revision/SEEdStandards68.aspx>