Course-Based Research in Virtual Learning Environments as a new channel to make STEM Education Accessible to All Students

Franco Delogu
Excellence in STEM is still not very inclusive

University DROP OUTS
• 26% of Black STEM students
• 20% of LatinX STEM students
• 13% white STEM students

Transforming the Arts and Sciences curriculum to nurture inclusive excellence in STEM through course-based research experiences (CRE)

increase capacity for inclusion of all students, especially those students who belong to groups underrepresented in science.

No selection
no self-selection
no extra curricular time
Research ownership
CRE at LTU

Small PUI, 3500 students, 4 colleges, 15 departments, South-East Michigan

- **Scale:** more than 40 courses and 30 instructors
- **Heterogeneity:** CRE involves all the academic fields within Arts & Sciences

About 30 instructors from all disciplines within Art and Sciences
Logistics of CRE – Time management

Single session CRE

Multiple sessions CRE

Entire Class CRE

Explore Questions W1-W2

Design and planning W3-W4

Conduct Research W5-W12

Disseminate Results W13-W16
CRE Virtual Spaces as Inclusive Spaces

CRE in Physical Space

CRE in Virtual Space

More Data
More People
More Diversity
More Resources
More Collaboration
Democratize Neuroscience Education via Open Data and Cloud Technology.

Neuroscience data \[\text{in}\]accessibility

- fMRI data acquisition = between $300 and $1,000 an hour
- Data are usually used only once
- Most colleges do not have access to imaging facilities at all
- Data acquisition is limited to faculty and grad students
Integrating CRE and BrainLife.io

Community Development and Engagement Project

- CRE course at LTU
- CRE course at partner MSIs
- Instructor training and outreach
- Collaborative proposal-development activities.

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Thanks!

fdelogu@ltu.edu