ECR Hub
EDU Core Research

ECR Hub/CADRE Virtual Lightning Roundtables

November 18, 2025

While We Wait: In the Chat…

1. The **organization** you are affiliated with

2. Your **disciplinary background** (e.g., cognitive psychology, physics education)

Today's agenda

1. ECR Hub, CADRE, and STEM K-12 Resource Center
2. Presentations from ECR and DRK-12 PIs
3. Roundtable round 1
4. Roundtable round 2
5. Closing

ECR Hub

About ECR:Core and ECR:BCSER

The **EDU Core Research (ECR) program** at NSF supports **fundamental STEM education research and capacity-building projects** to conduct such research, complementing the more applied focus of other NSF EDU programs:

- Fundamental research projects through the ECR:Core solicitation
- Capacity-building projects through the ECR Building Capacity in STEM Education Research (BCSER) solicitation

About ECR Hub

Check out: ECRhub.org

Two overarching goals of the ECR Hub

- **Extend the influence and reach** of existing ECR:Core and ECR:BCSER investments
- **Build career development opportunities**, especially for underrepresented institutions and scholars

Learn more about ECR projects

- **Projects library:** filter through ECR projects
- **Publications library:** publications related to ECR projects
- **Impact stories:** how ECR projects impact the field

CADRE

About Discovery Research PreK-12 (DRK-12)

The **DRK-12 program** aims to support continuous **accumulation of knowledge** about STEM teaching and learning**, particularly for practical innovations**.

- Situated at the intersection of fundamental and applied research and development
- Supports projects that seek to transform and strengthen formal preK-12 STEM education through innovative approaches, tools, and practice
- Objectives include (1) building knowledge; (2) supporting collaborative partnerships; and (3) building the field of STEM education through knowledge synthesis, interdisciplinary interactions, and development of novel and robust assessments

Community for Advancing Discovery Research in Education

CADRE provides services to broaden participation and engagement in preK-12 STEM education and research, build capacity for quality research and development, and disseminate findings, practices, and products of DRK-12 projects.

CADRE Resources for You | cadre@edc.org

1. cadrek12.org | Access NSF Proposal Toolkit, solicitation webinar recordings, project descriptions and products
2. CADRE Newsletter | Subscribe to keep up-to-date with DRK-12-related news and events
3. @CADREK12 | Stay engaged with the DRK-12 community

STEM K-12 Resource Center

About STEM K-12

The new **NSF STEM K-12 solicitation** aims to invest in **fundamental, applied, and translational research** that advances STEM teaching and learning and improves understanding of education across the human lifespan and a range of formal and informal settings.

The program encourages the development of innovative, multidisciplinary projects that advance theory, create new knowledge, and improve teaching practices in a fast-changing world shaped by emerging technologies like AI.

Archived EDU solicitations

- **Archived solicitations**
  - Advancing Informal STEM Learning (AISL)
  - Computer Science for All (CSforALL)
  - Discovery Research PreK-12 (DRK-12)
  - Translation and Diffusion (TD)
- Investigators who would typically submit to the EDU Core Research (ECR) solicitation **for research in K-12 and informal settings** are encouraged to apply to NSF STEM K-12.

STEM K-12 award details

- **Rolling submissions.** Proposals are accepted anytime.
- **Smaller awards and timelines.** It is anticipated that most awards supported by the program will range between **$25,000 and $750,000**, with a typical duration of **one to three years.**
- **CAREER awards** are expected to range between $500,000 and $750,000. CAREER proposals must be submitted to the NSF-wide CAREER solicitation for the annual deadline.

About the STEM K-12 Resource Center

- The **STEM K-12 Resource Center for Transformative Education Research and Translation (STEM K-12 RC)** is designed to cultivate a well-connected, highly skilled STEM education community.
- The STEM K-12 Resource Center will host targeted need sensing activities, offer virtual learning opportunities, and launch a new website and other technology solutions to facilitate community communication and connections.
- We will also work to expand the visibility of the STEM K-12 program and program funded impact (your discoveries).

Presentations

THE IMPACT OF AN INCLUSIVE GRADES K-2 EARLY ALGEBRA INTERVENTION

IMPLEMENTED BY CLASSROOM TEACHERS

LEAP
Learning through an Early Algebra Progression

NSF DRK-12 PROJECT

Acknowledgment: The research reported here was supported by the National Science Foundation under DRK-12 Award # 2404984 and the US Department of Education under IES Award #R305A140092 . Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Research Questions & Participants

Student Achievement:

- Do students who are taught the K–2 LEAP intervention during regular instruction significantly outperform students who receive only regular instruction on measures of algebra knowledge and general mathematics knowledge?

Fidelity of Implementation (FOI):

- What is the fidelity with which teachers implement the intervention?
- What aspects do they implement with high or low fidelity?
- How do variations in teachers' FOI relate to variations in students' performance?

DISTRICT	NO. ELEMENTARY SCHOOLS	LOW SES (FREE/REDUCED LUNCH)	ENGLISH LANGUAGE LEARNERS	MINORITY (NON-WHITE)
District A	23	54%	10%	50%
District B	8	65%	4%	51%
District C	9	48%		52%

Methods & Data Collection

Research Design

- Cluster randomized trial (CRT) experimental design
- Use hierarchical linear modeling [HLM] to measure effects on student performance year-to-year and to account for variations in the effects (School is unit of analysis)
- Primary analysis of intervention effects: Change in students' online LEAP (proximal and MAP (distal) assessments from beginning to end of Grades K–2 (4 timepoints).
- Secondary analysis: Interview data from 400 randomly selected students (4 timepoints)
- Use separate three-level HLM model (repeated assessments nested within students nested within schools) for each outcome measure.

Student Performance Assessment

Measure changes in student scores on LEAP Digital Assessment and MAP assessments from grades K to 2.

Fidelity of Implementation

All treatment teachers complete a LEAP survey about each LEAP lesson taught and 40 Randomly selected teachers (each year) video record 3 LEAP lesson observations and participate in a semi-clinical interviews with the FOI team after each lesson they record.

Classroom Practice Evaluation

Both treatment and control teachers report monthly regular curriculum -analysis will be conducted to identify treatment of early algebra concepts within their reported curriculum.

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How do deaf children using sign language develop numerical understanding?

Dr. Ilaria Berteletti – Gallaudet University

#1916524: Impact of Language Experience on Early Numerical Cognitio

Problem?

Why do deaf children fall behind peers as early as kindergarten?

Early math achievement = predictor of academic success

Why important?

Support better educational strategies.

Understand the strengths of sign language use.

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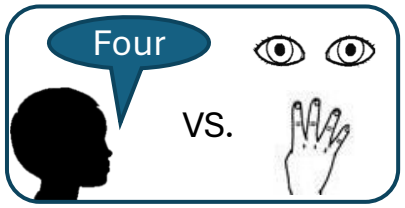
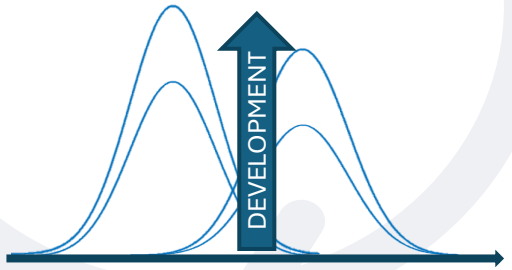
Approach?

Language modality



Language access

Exact Number Representation



Approximate Number Representation

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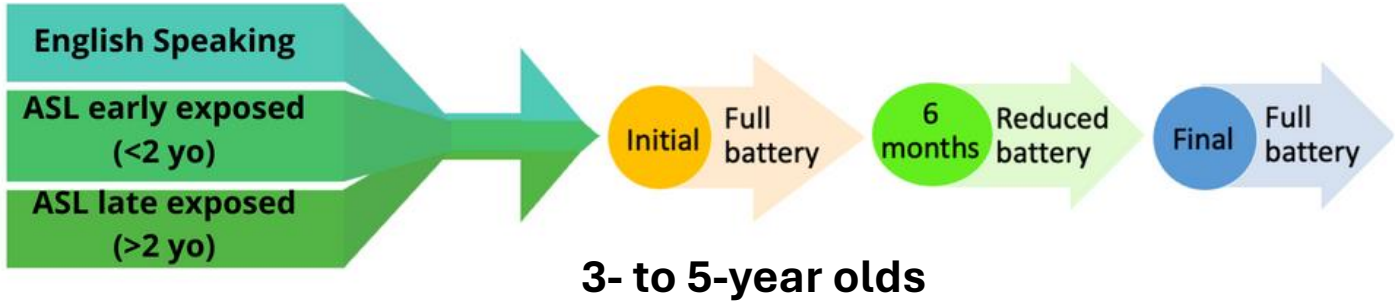
Method

Longitudinal



3- to 5-year olds

Schools

Testers

Protocols

NSF

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Challenges

Schools

Deaf

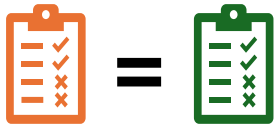
Hearing

Testers

Deaf

Hearing

Protocols



ASL = English

Longitudinal

n = 20 n = 12 n = 2

Time

Academic semester
Classes

Breakout rooms

Breakout rooms!

- **Breakout rooms round 1**: ~20 min
- **Breakout rooms round 2**: ~20 min

Closing

Thank you!

- Thank you for joining us!
- We encourage you to share contact info with other attendees if you want to continue your conversations from today.
- We also would love your feedback so we can improve future events like this: https://tinyurl.com/ECRHubCADRE