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PROJECT TEAM

This four-year design and development project brings together co-design teams of:

- public preschool teachers,
- families from culturally and linguistically diverse communities,
- early learning and STEM researchers,
- designers of media

PROJECT GOALS

- Co-design a professional learning hub to support public preschool teachers in their efforts to integrate science into classroom instruction
- Professional learning resources will aim to:
 - be feasibly used in preschool classrooms
 - meaningfully support teaching and learning
 - link to past work co-designing early STEM learning resources



RESEARCH AND DEVELOPMENT PHASES

Phase 1: Relationship Building & Initial Co-Design (2025)

- Co-design meetings to brainstorm ideas and gather teacher insights
- Classroom visits to capture video for practices library

Phase 2: Co-Design & Iterative Testing (2025 - 2026)

- Co-design meetings to test and refine materials being designed
- Gather teacher feedback about design ideas

Phase 3: Field Study #1 (2026 - 2027)

- Intervention condition: Teachers use Early Science Hub
- Comparison condition: Business as usual

Phase 4: Field Study #2 (2027 - 2028)

- Intervention condition: Teachers use Early Science Hub & *Early Science with Nico and Nor*
- Comparison condition: Teachers use *Early Science with Nico and Nor*



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Professional Learning Hub for Early Science (HubES): Leveraging Technology to Develop Supports for Educators to Promote Meaningful Science Learning in Preschool

CO-DESIGN COMPONENT



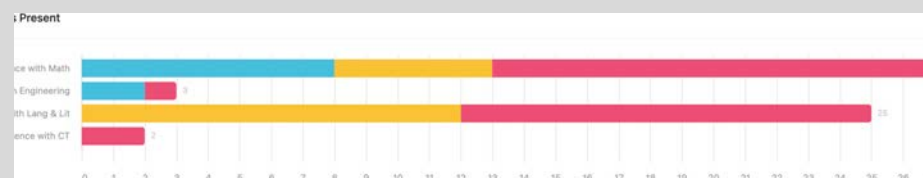
Science Practices Video and Resource Library: include short clips that describe the different practices and showcase public preschool teachers facilitating them in real world classrooms



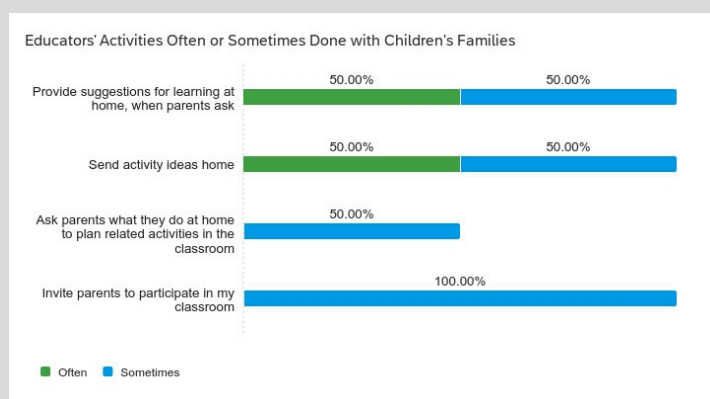
Science Core Ideas Interactive Explorations: leverage emerging technology to provide teachers with playful and interactive ways to become familiar with science ideas (e.g., interactive simulations)



Cross-Disciplinary Map: highlight evidence-based cross-disciplinary connections between science and other key disciplines, such as math, engineering, literacy, and approaches to learning



Home-School Toolkit: provides resources that help teachers to design and implement authentic science learning experiences that connect to children's everyday lives



PROGRESS TO DATE

- Review of science practices across multiple frameworks and standards to generate Early Science Hub practices and related posters
- Vet initial repository of existing photos and videos
- Map *Early Science with Nico and Nor* activities

- Initial brainstorm of design seed ideas across Life Science (Plants), Physical Science (Ramps), Earth & Space Science (Shadows)

- Landspace scan of early STEM resources
- Create blueprint to map science synergies across different domains (e.g., math, literacy)

- Gather information about teachers' current family engagement practices

SCIENCE PRACTICES

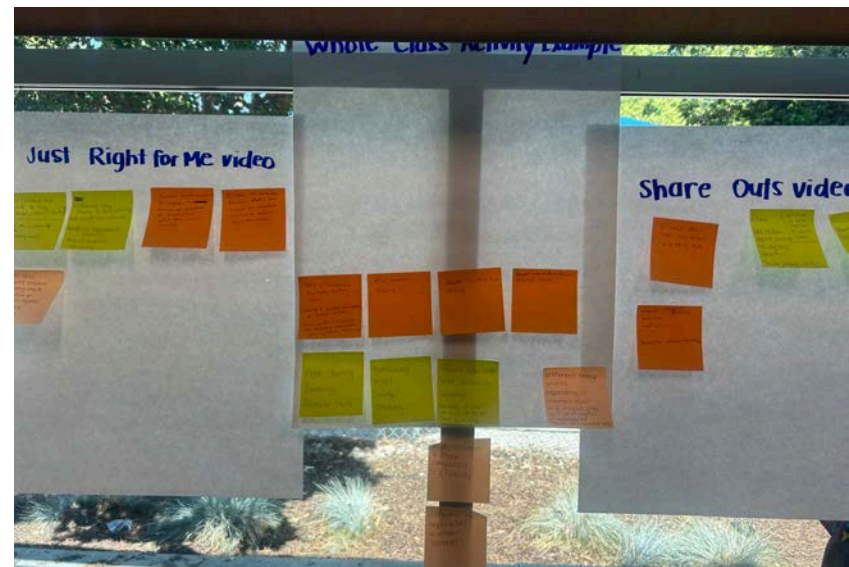
- Multiple frameworks and standards that highlight science as an important dimension of early learning, along with the Next Generation Science Standards (NGSS).
- As an initial step, our team generated Early Science Hub science practices aligned to the science practices in those other frameworks and standards.

Science Practices Alignment		
Early Science Hub Practice Clusters	Alignment to Head Start Framework	Alignment to K-12 NGSS
Observation <ul style="list-style-type: none">- Noticing- Comparing/Contrasting- Sorting	Subdomain: Scientific Inquiry <ul style="list-style-type: none">- Child observes and describes observable phenomena (objects, materials, organisms, and events).- Child compares and categorizes observable phenomena.	Asking Questions
Investigation <ul style="list-style-type: none">- Posing Questions- Making Predictions- Testing Things Out	Subdomain: Scientific Inquiry <ul style="list-style-type: none">- Child engages in scientific talk.- Child asks a question, gathers information, and makes predictions.- Child plans and conducts investigations and experiments.	Planning and Carrying out Investigations
Documentation <ul style="list-style-type: none">- Recording data- Analyzing results	Subdomain: Scientific Inquiry <ul style="list-style-type: none">- Child analyzes results, draws conclusions, and communicates results.	Analyzing and Interpreting Data
Communication <ul style="list-style-type: none">- Discussing Observations- Constructing Explanations		Constructing Explanations Engaging in Argument from Evidence Obtaining, Evaluating and Communicating Information



PHASE 1: KICKOFF CO-DESIGN MEETING

- One activity involved the co-design team reviewing three video and/or video library examples:
 - A video of a preschool science whole group activity
 - A video of a preschool math small group activity, part of an existing educator resource video library focused on early math
 - A video of an elementary science classroom focused on communicating, part of an existing educator resource video library focused on K-12 science
- Team documented initial insights (what they liked, what is missing, new ideas):
 - **Liked:** educator voice to describe the intended goal in the video clip; authentic classroom experiences
 - **Idea:** Consider different video entry points for a novice teacher vs an experienced teacher



For more information
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this work, visit
earlysciencehub.org

