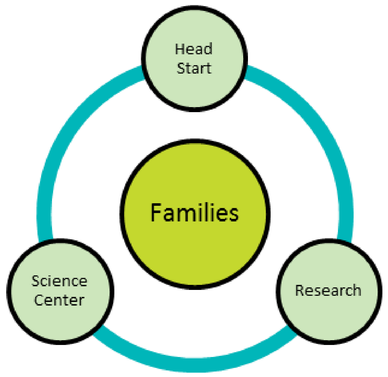
Head Start on Engineering

Supporting Engineering Interest Development in Early Childhood

DRL #1515628

HEAD START ON ENGINEERING

Community-Based Research-Practice Partnership



Collaboration principles[1]

- Ensure that project goals and activities are relevant to local needs, issues, and priorities.
- Honor local norms and authority when entering the Head Start community.
- Use asset-based perspectives and strategies for both research and programs.
- Listen to Head Start families and community members and involve them in key decisions.
- Ensure that the project gives back to the community.
- Share results and findings with all partners and community members.
- Work to sustain relationships and partnerships

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Project goals

1) Build relationships and establish collaborative structures and processes
2) Advance a long-term research program to develop and test a theoretical model of engineering-related interest development in early childhood
3) Pilot community programming, in partnership with a science center, Head Start, researchers, and families, to support the foundations of early childhood engineering-related interest development

Head Start on Engineering is a pathways project focused on developing the foundations of a long-term, community-based research program to (a) understand how preschool children (4 years old) and their families develop engineering-related interests in early childhood and (b) develop community partnerships and programs that support engineering interest pathways for these families. Understanding and honoring family beliefs, knowledge, and experiences is central to the project. In developing and implementing both the programs and research activities, the team has adopt culturally responsive and asset-based perspectives, drawing particular from the field of community-based participatory research.[1]

Project challenges

a) Developing an approach to collaboration and relationship building that is aligned with the scope of the project and authentically engages all partners and community stakeholders

b) Conceptualizing the many complex factors and processes involved in early childhood engineering-related interest development in order to guide pilot research and program development

c) Prioritizing goals and deliverables for this two-year pathways project

[1] Israel, B. A. (Ed.). (2013). *Methods for community-based participatory research for health* (2nd ed.). San Francisco, CA: Jossey-Bass. Reason, P., & Bradbury, H. (Eds.). (2013). *The SAGE handbook of action research: Participative inquiry and practice* (2nd ed.). London: SAGE.

[2] Dorie, B. L., Cardella, M. E., & Svarovsky, G. N. (2014). *Capturing the design thinking of young children interacting with a parent*. Presented at the 121st ASEE Annual Conference and Exposition, Indianapolis, IN.

Engineering-Related Interest Development Framework

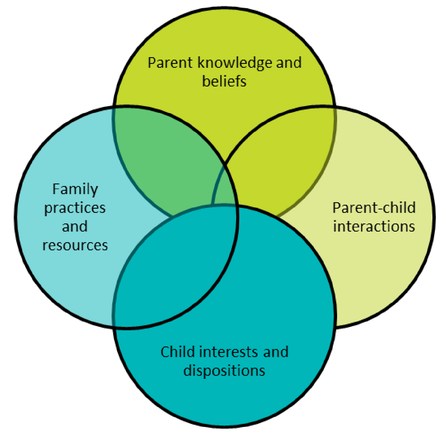
Engineering continuum

Play	Exploration, understanding the world, becoming familiar with the physical constraints of different materials and situations
Making and tinkering	Intentional play and exploration with materials, partially goal directed, primarily motivated by internal curiosity and interests
Formal engineering	Clear goals, external constraints and guidelines, one or more phases of the engineering design process

Early childhood engineering practices[2]

Problem scoping	Discussing goals and constraints
Idea generation	Brainstorming and planning
Design evaluation	Assessing whether or not a design has achieved its goals
Revision	Making changes to a design or testing a different approach

Family-level conceptualization of early childhood interest development



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