



Creating Pathways for Equity in STEM Through Family Engagement

Adapted from [this research article](#) written by Remy Dou and Heidi Chan from the National Science Teaching Association, Quality Start Los Angeles created this research-based infographic to highlight how early educators can work with families to support more equitable opportunities and experiences for young children from marginalized communities.



The Brief

The "Talking Science" research project explored **Latinx parents' everyday science talk with their children to highlight how parents work to make STEM "normal" in their homes.** This study focused on the learning setting children encounter the most: **the home**, where children learn many of their values, dispositions, & attitudes (Archer et al. 2015).



The Participants

This study focused on surveying participants about their STEM identity and childhood science experiences and conducting follow-up interviews about said experiences and identity.

Survey participants included:

- 500 high school and college students
- Over 65% identified as female and Hispanic/Latine
- 47% grew up in Spanish-speaking homes
- Many described having recent family immigration histories
- Nearly all respondents were STEM majors



The Research

This research study explored how family members in minority groups have the power to affirm and reinforce children's sense that they can **meaningfully participate in STEM.**

Drawing from the data, the research study described **three relevant factors that stand out as ways that family members give their children access to STEM** and support the development of their STEM identities.

What is a STEM Identity?

Defined as seeing ourselves and others seeing us as a STEM person, with 3 parts:

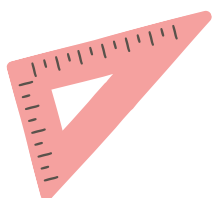
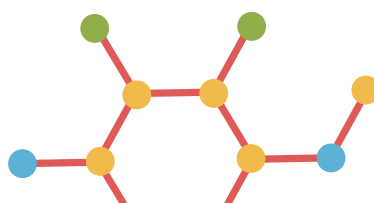
- (1) **competence**, or our knowledge and understanding of STEM;
- (2) **performance**, or our ability to engage in various STEM practices; and
- (3) **recognition**, or being seen by others and seeing oneself as a STEM person.

What 3 factors support a STEM identity?

1. Family members transfer **STEM capital (STEM knowledge, share STEM spaces, and relationships with STEM people)** to their children.
2. Family members **use their general knowledge and resources to access** STEM capital.
3. Family members make **STEM "normal" within their homes.**



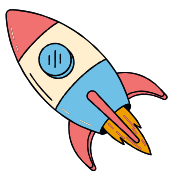
Key Idea: This research study showed having early STEM experiences helps a young child develop an identity as a "STEM person". Families contribute immensely to creating these experiences!



ECE Connections



How do families support a positive STEM identity in their children?	How can early educators partner with families to support positive STEM identities in young learners?
Expose children to STEM and STEM role models	<ul style="list-style-type: none"> • Read books about scientists and scientific discovery & send books/read-aloud links home with families • Provide science-exploration learning centers and activities consistently, sharing follow up activities for families to build on learning at home. Check out QSLA's STEAM Activity Guide!
Affirm their children's interests in STEM while reinforcing their own	<ul style="list-style-type: none"> • Offer Family Science Nights for adult family members and children to explore science together, including reflective opportunities on what they each learned & enjoyed
Provide access to settings where children can develop their STEM knowledge, skills, and confidence	<ul style="list-style-type: none"> • Organize STEM-related field trips to science centers, nature centers, local parks, and aquariums, inviting adult family members to chaperone! Pro tip: Bring a scavenger hunt activity for children to complete and take home to share with their family! • Host a science challenge project where children have creative freedom in finding solutions (ex. an egg drop, towers, bridges, etc.). Pro tip: Instead of having children compete against each other, have them "compete" against themselves to promote self-learning!
Positively recognize their children's engagement	<ul style="list-style-type: none"> • Model giving positive recognition about a child's STEM engagement in front of adult family members • Provide a short handout to families with ideas and scripts to help adult family members practice verbally recognizing their child's STEM involvement
Connect children with resources that increase their sense of "being in the driver's seat" within STEM	<ul style="list-style-type: none"> • Provide consistent STEM related project-based learning, based on children's' topics of choice & incorporate elements that require adult family members supporting while following their child's lead



If we as early educators can...



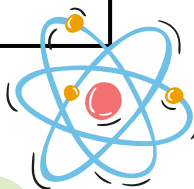
Understand how families offer children early STEM experiences & connections to STEM resources

AND

Partner with families to support a positive STEM identity in children,



Then we can work together to dismantle structures and systems that perpetuate racial and ethnic inequalities in STEM.



Carlone H. B., Johnson A. (2007). *Understanding the science experiences of successful women of color: Science identity as an analytic lens*. *Journal of Research in Science Teaching*, 44(8), 1187–1218.

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