Innovations in Examining Pathways of Youth Who Stay in Science

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Overview

This research study investigates the pathways of approximately 1270 high-potential urban youth participants in intensive mentored science research programs to uncover factors that support persistence in STEM. We combine longitudinal social network and survey data with analysis of matched student data from New York City Public Schools records, to examine:

- how youths’ social networks develop through their participation in communities of practice (CoPs)
- the relationship between CoP features and youths’ social networks, academic achievement, and pursuit of a STEM major
- variations in pathways as related to learner characteristics, social network composition, and CoP features

Social Network Pilot Data

Different Questions

- In what ways do teachers and mentors interact with one another to collaboratively support student persistence and growth?
- How much new or unique support is provided through non-science research mentoring connections? Does this complement or reinforce what youth are provided through the mentorship program?
- Have youth’s relationships with scientists or adults more generally changed since their mentorship experience? If so, in what ways?

Ecosystem Approach Looks Across Formal & Informal Contexts

By collecting data from in-school and out-of-school contexts for over 300 youth per year, across three years, we hope to advance methodology in how to more easily collect and match these two traditionally separate spheres of influence and experience, and to advance theory on the impact on youth STEM-career pathways of participation across multiple settings and broader exposure to STEM social capital. The study involves:

Social Network Analysis:
- Uncover relational features of persistence that may be particularly critical for underrepresented youth
- Understand how STEM role models and cultural brokers foster a sense of belonging and identity in STEM

Analysis of Large Public School Data Set:
- Data set contains biographical and demographic variables, secondary and postsecondary course enrollment and grades, and persistence/graduation indicators
- Matched comparison of program participants and non-participant peers

Incorporates Youth as Co-Researchers:
- Select program alumni will work alongside education researchers on data analysis and dissemination

Engaging Youth as Co-Researchers

To empower youth voices in data analysis and to lead engagement around the findings among audiences important to them.

Involving Youth in Dissemination & Leveraging Social Media

- Seek input from youth on how best to share findings; empower youth to contribute
- Engage youth-facing organizations to help share what we have learned
- Utilize youth social networks (program alumni, current participants, co-researchers)
- Capitalize on existing communications assets, focusing on social media (YouTube; Facebook; Twitter; LinkedIn)

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