"To know who we are, we must understand how we are connected," write Christakis and Fowler in their 2009 book on the power of social networks. The NSF-funded ADVANCE Program at the New Jersey Institute of Technology (NJIT) puts this insight into action, pioneering the use of social network analysis to affect institutional change and ensure the full participation of women in academic science and engineering.

Organizational networks supply the social capital that powers career success, allowing young professionals to convert their human capital into status. Understanding network structure is especially important for women in technological organizations, who can easily spend their entire careers on the periphery, far from the flow of information at the core. NJIT ADVANCE addresses this problem by proactively linking women researchers to each other and to male peers; by supporting women-led collaborative research projects; and by mapping research network structure to help faculty assess and manage their careers.

Accomplishments of the project include: 1) construction of an interactive database containing over 7200 NJIT faculty publications (2000-2008); and 2) statistical modeling and visual mapping of this data to analyze gender patterns in network centrality, establishing correlations between collaboration, productivity, retention, and career advancement.