



Equity-centered Leadership and Communication



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Purpose of the Brief

The National Science Foundation (NSF) established the Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) program to help address national challenges in broadening science, technology, engineering, and mathematics (STEM) participation (National Science Foundation, 2019). In developing NSF INCLUDES, they wanted to design a program that would provide a useful structure for projects to organize collective work to impact inequitable STEM systems at scale. NSF developed the NSF INCLUDES Five Design Elements of Collaborative Infrastructure that include: 1) *shared vision*, (2) *partnerships*, (3) *goals and metrics*, (4) *leadership and communication*, and (5) *expansion, sustainability, and scale*. Leadership and communication, especially in service to equity, are essential elements in increasing the visibility and reach of STEM diversity work (National Science Foundation, 2019).

In this brief, we illustrate how equitable leadership and effective communication strategies can support systems change efforts. It is a synthesis of existing literature on the centrality and value of equity-centered leadership and communication in cultivating transformational change.

In addition, we share an example of a current effort, The Colorado STEM Ecosystem, an NSF INCLUDES National Network member-led initiative that is building an equitable STEM ecosystem and equity-centered quotes from the voices of NSF INCLUDES National Network members retrieved from the 2022 NSF INCLUDES National Network survey throughout the brief. These showcase how Network members' research is contributing to equity-centered leadership and communication.

We hope the brief will deepen readers' understanding of the need for equitable leadership and effective communication strategies and the impact they can have on the STEM field. Audiences for this brief include leaders in PK-12 schools and school districts, post-secondary institutions, professional societies, and other organizations who work in cross-sector collaborative settings or seek to transform their leadership cultures.



Literature Landscape: Equitable Leadership and Effective Communication

What is the issue?

The economic competitiveness and global leadership of the United States in scientific discovery and innovation is reliant on a well-prepared and talented STEM workforce (Committee on Equal Opportunities in Science and Engineering (CEOSE), 2019-2020; Fealing et al., 2018). Full participation of all STEM talent in the workforce requires the inclusion of wide range of perspectives, skills, and capabilities from diverse populations (CEOSE, 2015-2016; James & Singer, 2016).

Leadership in our current STEM enterprise is homogenous. Research reveals that individuals from historically marginalized groups (e.g., women, racial and ethnic minorities, and people with disabilities) are significantly underrepresented in leadership positions (Association for Women in Science (AWIS), 2019; Esquierdo-Leal & Houmanfar, 2021). The disproportionality of the STEM workforce and scientific leadership (AWIS, 2019), points to system-level deficiencies in identifying, engaging, and empowering leaders from diverse backgrounds, thereby limiting the potential for inclusive approaches to leadership (Bevan et al., 2018). Those in positions of power are particularly key to driving workforce inclusion (AWIS, 2019). Beyond ensuring diverse representation in positions of power, it's essential that leaders adopt inclusive leadership practices.

Communication is commonly linked to leadership (Houmafah & Rodrigues, 2012; Ruben & Gigliotti, 2016) as the glue that binds leaders together and is essential to successful interaction and coordination in collaborative efforts (Krumm & Curry, 2017). One of the inhibiting factors to effective leadership is lack of or poor communication (Ruben & Gigliotti, 2016; Schafer, 2010; Yue et al., 2019). Leadership and communication are inseparable and are essential in understanding the dynamics and influence of the leadership efforts (Ruben & Gigliotti, 2016).

Why is equitable leadership and effective communication important?

Effective and inclusive leadership approaches are critical for broadening participation in STEM (Clavier et al., 2021; CEOSE, 2020). Leadership includes behaviors that guide, influence and mobilize others toward a common vision, goal or objective. Leadership occurs in: 1) decision-making; 2) relationship building and networking; 3) the development of individuals to be leaders; 4) the commitment to serve as role models and change agents; and 5) the responsibility for transparency and accountability to further advance broadening participation and inclusion in STEM (CEOSE, 2020).

Leadership matters because leaders shape funding and publishing decisions, admit students to STEM graduate programs, decide when and if communities are invited to partner in NSF-funded projects, and determine, through actions or inactions, if the microculture of their research teams prioritizes inclusivity (CEOSE, 2020). Leaders in policy and institutions of learning should incorporate voices of students in their quest for equity to create outcomes that benefit students at all educational levels. Students are the largest stakeholders in education and should have self-determination in their own education and access to quality and equitable education (Ferren, 2021). Leaders who are equitable promote inclusive practices for students and their organizations.

“The project also does a lot to get student audiences with policymakers, institutional leaders, and other people in positions of power so they can learn from students about relevant equity issues.”

-NSF INCLUDES National Network Member

Collaborative cross-sector approaches to equity are critical in disrupting longstanding societal problems of inequity (de Montigny et al., 2017; Wolff et al., 2017). Collaborative leadership structures and processes across multiple sectors influence the ability to achieve transformational change (de Montigny et al., 2017). “Centering equity requires diverse representation in leadership and specific strategies to shift power so that those with formal power...mostly white male are able to engage with, listen to, share power with, and act on the wisdom of the community” (Kania et al. 2021, pg. 40). Inclusive leadership structures have been linked to catalytic innovation, enhanced research quality, and better decision-making (AWIS 2019; 2017).

Inclusive leadership is essential to a successful national STEM enterprise. Authentic change requires collaborative or distributed leadership that maximizes the contribution of individuals from diverse backgrounds at different levels not just those in positions of power (Kezar & Holcombe, 2017; Fernandez & Shaw, 2020). Leadership should be distributed throughout the collective effort with all primary stakeholders involved in meaningful ways (Kania et al., 2021). This cultivates collective action toward the problem that is being addressed (Alvarado et al., 2019) in an inclusive way.

“Teams of administrators at each higher ed institution agree to meet with first-generation and other underrepresented student leaders on their campus at least four times a year to discover and address challenges for students.”

- NSF INCLUDES National Network Member

Communication is an essential leadership skill and effective leaders are also effective communicators. Leaders are in a position to affect oppressive systemic practices through strategic communication. Communicating effectively while also intentionally including all of stakeholders’ perspectives is critical to adequately addressing the fundamental problem(s) (Esquierdo-Leal & Houmanfar, 2021). According to Esquierdo-Leal, et al. (2021), communication is crucial because it impacts the development and implementation of policies and practices that influence systems change. Similarly, language matters in that carefully constructed words are one of the “greatest weapons against systemic oppression and racism” (Esquierdo-Leal et al. 2021, p. 505).

How can equitable leadership and effective communication be fostered?

To authentically engage in transformative change, researchers recommend the following 10 evidence-based practices for equitable leadership and effective communication:

1. Build a **common narrative** and **clearly and regularly communicate** information to stakeholders through multiple channels.^{1,2,3}
2. Put **authentic structures and processes** in place for **distributed leadership** and prioritize **close communication** between leaders.^{1,4}
3. Engage diverse stakeholders in **clearly defined roles** and leverage their **collective perspectives** on the issue(s) being addressed.^{3,5}
4. **Connect with stakeholders** as individuals as well as nurture relationships and **build mutual trust** across sectors.^{1,3}
5. **Provide opportunities** for all stakeholders to have discussions and contribute meaningful input into decision making.^{5,6}
6. **Recognize the norms** and **tensions** that stakeholders bring from their institutions, organizations, and sectors.¹
7. Regularly **engage in discussions** about **power and privilege** and encourage leaders to interrogate their own biases.⁷
8. Engage in **reflective dialogue** among partners that allows individuals to listen and understand issues through different lenses and provide space for **continuous improvement**.^{1,5}
9. Provide **mentoring and sponsoring activities** that foster new leadership ideas, observe and model leadership behaviors, and test opportunities to demonstrate leadership and develop **formal leadership training opportunities**.⁸
10. Plan for **long lasting** changes and how to implement and sustain them.¹

1 Alvarado, M. & Vargas, J. (2019). How to lead systems change for student success: Developing six qualities of effective cross-sector leadership. JFF. <https://files.eric.ed.gov/fulltext/ED593999.pdf>

2 Edmondson, A. C. (2020, March 6). *Don't Hide bad news in times of crisis* Harvard Business Review. <https://hbr.org/2020/03/dont-hide-bad-news-in-times-of-crisis>

3 Fernandez, A. A., & Shaw, G. P. (2020). Academic leadership in a time of crisis: The coronavirus and COVID-19. *Journal of Leadership Studies*, 14(1), 1–7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7228314/>

4 Kezar, A. J., & Holcombe, E. M. (2017). *Shared Leadership in Higher Education: Important Lessons from Research and Practice*. Washington, DC: American Council on Education.

5 Sanborn, E. K., Huskins, K., Jackson, R. G., Skelton, S. M., & Thorius, K. K. (2019). Centering equity together in critical collaborative partnership: School boards and district leaders. *Equity Dispatch*. Indianapolis, IN: Midwest & Plains Equity Assistance Center (MAP EAC). https://greatlakesequity.org/sites/default/files/201927112097_newsletter.pdf

6 Morton, 2017 Supporting student success through authentic partnerships: Reflection from parents to caregivers. *Equity by Design*. Indianapolis, IN: Midwest and Plains Equity Assistance Center (MAP EAC).

7 Skelton, S. M., & Kyser, T. S. (2015). Leadership practices for advancing educational equity [PowerPoint Slides]. <https://greatlakesequity.org/resource/leadership-practices-advancing-educational-equity>

8 Committee on Equal Opportunities in Science and Engineering (2020). *Making Visible the Invisible Bold Leadership Actions, 2019–2020 Biennial Report to Congress*. Arlington, VA: National Science Foundation.



“We center learning tool design, development and deployment around minoritized learners’ perspectives and incentive their participation and ownership (in their portfolios) such tools, collaboratively created.”

–NSF INCLUDES National Network Member

NSF INCLUDES National Network Highlight

In this section, we feature the perspectives of an NSF INCLUDES Network member effort that is building a STEM ecosystem in Colorado. The Colorado STEM Ecosystem is building the capacity of small organizations in Colorado to connect with each other and with relevant resources. Janelle M. Johnson and Josh Kumin offer insights into how they are prioritizing inclusive leadership during the early phases of the newly established Colorado STEM Ecosystem and the practical steps they are taking to communicate and foster relationships.

Network Highlight: Planning for Inclusive Leadership from the Start

Equitable leadership and effective communication strategies are key components to building the Colorado STEM Ecosystem and will continue to be essential as we move forward.

In our planning process, we recognized there are isolated sites where innovative practices are successfully closing STEM opportunity gaps. While many of us could learn valuable lessons from these cases, organizations and individuals with limited resources often do not have the means or time to document their work in order to be analyzed and disseminated to others. We asked the question: how can we connect these sites of innovation and learn from them so that we may sustain and/or scale up their efforts?

The national network known as STEM Ecosystems (stemecosystems.org) aims to address this problem by linking STEM education and workforce pathways. Some ecosystems in the network are regionally organized by state or locality, while others are centered on a theme such as health care. While locally based Ecosystems tend to better document grassroots initiatives, they often constitute a geographic patchwork that inadvertently excludes some areas. Some Ecosystems began with a statewide infrastructure and then established regional hubs to provide coverage across the state, but risk being viewed from a local perspective as top-down.

The goal of the newly established **Colorado STEM Ecosystem** is to critically reflect on lessons learned and create inclusive leadership structures to help overcome these challenges. We are attempting to do this by building a digital infrastructure that equitably maps out and connects stakeholders of all sizes. This has the dual purpose of facilitating practitioners’ problem-solving processes to address their own needs and to share and disseminate promising practices.

STEM advocates in Colorado had been engaged in this work for several years, both informally and in piecemeal formal ways, but had not yet established any structures that were sustainable and/or equitable. In September of 2021, we reached out to these stakeholders for a remote listening session on the question: if we could establish STEM Ecosystems in Colorado, what would they look like?

We had the meeting transcribed and then analyzed it to create a stakeholder survey. We distributed the meeting video archive to the attendees of the meeting and asked them to distribute it with the link to the survey.

The survey allows people and organizations not only to join the Ecosystem but to shape it. The questions ask participants to describe the region or regions of the state they serve, what sector they represent, and how they are engaging in STEM. An optional second section of the survey asks respondents to list both their personal and organizational STEM partners. These responses instantly populate an interactive stakeholder network visualization on [Kumu](#), a visualization platform for mapping systems and relationships.

There are two versions of the visualization—one is public, and one is for Ecosystem members where they can access the contact information other members have opted to share. Stakeholders can search and revise the visualization to seek out partners for any number of purposes—outreach, funding, volunteer opportunities, mentorship, etc. This facilitates Ecosystem members' agency in developing their own partnerships as they are not dependent on having access to a person who can make the introduction—enabling equitable opportunities for engagement by lesser resourced organizations and those in underserved regions of the state.

The next stage of this effort will be to launch eight regional hubs corresponding to the regions established by the state department of education and various professional organizations, followed by the establishment of state-wide working groups that stakeholders propose and run.

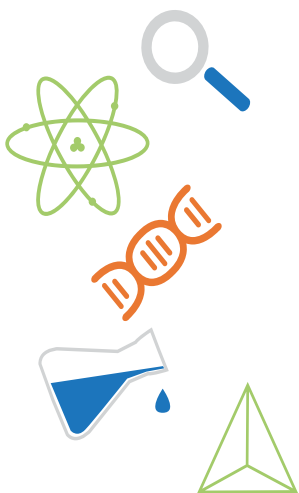
We will be critically analyzing our stakeholder involvement for disproportionality to highlight areas that require additional outreach. For example, the Ecosystem's current membership is heavily skewed towards educators—40% of members are pK-12 educators, 18% are in post-secondary, and 14% are informal STEM education providers. Business and industry, the military, government agencies, medical and health professions, non-profits, and professional organizations combined make up the other 28%, indicating a real need to reach out to these sectors.

Regional engagement is even more skewed; nearly 60% of membership represents the Denver Metro region in a state where the urban-rural divide is a longstanding problem. As we continue to grow and evolve, we are mindful of how communication strategies and inclusive leadership require feedback and member agency—and most importantly, centering our community to continue to make strong relationships and connections.

Next Steps

Fostering equitable leadership practices and effective communication is essential to broadening participation in STEM education and careers. We will provide opportunities at www.includesnetwork.org for members of the NSF INCLUDES National Network to have further conversations on how they are engaging in equity-centered leadership and communication practices to enhance the participation of marginalized groups in STEM at scale. As part of this next step, we would like to offer several questions to help drive the conversation:

- How have you engaged in equitable leadership in your efforts to broaden participation in STEM? Can you share your experiences, lessons learned, and opportunities?
- What has been your experience developing effective communication within the partnership?



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