TURNING MIRRORS INTO WINDOWS - MIRRORS RESEARCH BRIEF

# Changing the Narrative

Science today is still a predominantly male field. Typically, women are less likely to participate in science and engineering fields than men. There are a number of reasons cited to explain this phenomenon. Stephanie Pincus, founder of the RAISE project, a campaign to increase the number of women receiving science-related awards, notes that “in order to bring gender equity into science fields, the social and cultural aspects of the fields must be revamped.” She argues that “women probably feel more identity-safe in the environment where there are more women. They feel that they really could belong there” (Bryner, 2007).

Over several decades, researchers have studied children’s perceptions of scientists in order to understand why so many adults today associate science with males more than they do with females (Miller, Eagly, & Linn, [2015](https://srcd.onlinelibrary.wiley.com/doi/full/10.1111/cdev.13039#cdev13039-bib-0036); Smyth & Nosek, [2015](https://srcd.onlinelibrary.wiley.com/doi/full/10.1111/cdev.13039#cdev13039-bib-0048)). Spanning from 1966-1977, one landmark study of nearly 5,000 children asked students to draw a picture of a scientist (Chambers, [1983](https://srcd.onlinelibrary.wiley.com/doi/full/10.1111/cdev.13039#cdev13039-bib-0010)). These drawings almost exclusively depicted male scientists with glasses, facial hair, wearing a lab coat while using lab equipment in a laboratory. Only 28 children, or 0.6% of the sample, drew a female scientist. This result suggests a strong gender-science stereotype subconsciously linking science with men.

An additional factor that enters into the issue is that students may themselves believe that they are limited to a particular career because of familial or social reasons. Prue Huddleston, Professor Emeritus at the University of Warwick, describes the TVEI[[1]](#footnote-0) notes: TVEI was designed to be relevant to a very wide range of learners in participating schools and was typically delivered. If students’ beliefs prevent them from deeper career exploration, they are less likely to have a variety of career opportunities in adulthood.

To dispel misconceptions about careers and ensure sustainability, GEAR UP and programs like this one actively implement programs and activities that provide accurate and diverse representation. These programs also ensure that female students and students from underrepresented populations are encouraged to participate.

# Creating an Inclusive Classroom Environment

The International Bureau of Education defines an inclusive curriculum as being “flexible, relevant, and adjustable to the diverse characteristics and needs of [students]” (UNESCO IBE, 2008). This definition could be interpreted as a teacher's ability to develop relationships with their students and promote an environment that highlights and celebrates these qualities. Opertti and Brady further presuppose that an “inclusive curriculum reflects the kind of inclusive societies to which we aspire, equitably distributing opportunities, and eliminating poverty and marginality” (2011). They lay out a series of clarifying points to be considered when developing or implementing a curriculum that has been designed around equity and inclusion. The most notable rumination being the “development of political, legal, and curricular frameworks as a critical orientation for teacher education, the curriculum, the renewal of school visions and practices for inclusion, as well as teachers and communities” (Opertti and Brandy, 2011). In the development of their Conceptual Framework of Inclusive Education (2009), Blanco shared that it is essential we move away from a standardized curriculum approach, which has been based on the needs of the average student, and rather, consider curricular content, settings, provisions, and processes that are common and different in their own rights. One way to do this is to connect coursework to future goals that makes learning feel more personal and important(Bridgeland, Dilulio, & Morison, 2006; Rumberger et al., 2017).

Like female students, students with disabilities are often overlooked and do not make the achievement gains they should make, especially in science and math classes. Despite individualized education plans and adaptive technologies, the problem persists. While there is ample evidence and research to support the addition of diversity, equity, and inclusion in the classroom setting, there is further evidence that the levels of confidence in teaching students with disabilities increase when teachers are familiar with the state and local legislation and are properly trained (Forlin, Loreman, Sharma, & Earle, 2009).

Studies indicate that individuals with an understanding of diversity and the need for inclusive education contribute significantly to students and that pre-service training has a significant impact on teacher candidates. Closer contact with people with disabilities and involvement in teaching students with diverse needs improve attitudes towards inclusivity. Training courses that offer opportunities for early engagement with students with disabilities should be incorporated in their training.

# A Call to Action

School leaders have provided various professional development opportunities that focus on the development of teachers’ understanding and practice of differentiation and inclusive teaching. These foci include the importance of knowing one's communities, knowing the school system, and recognizing that fellow educators have the capacity to create equity as a foundational priority for all students (Cummins, 2020; Deci & Ryan, 2015; Fortner et al., 2021; Howard & Rodriguez-Minkoff, 2017). Leaders determined that knowing and caring about students and their strengths and assets in terms of cultural capital, social capital, and funds of knowledge are key to students’ education and continued academic success.

To effect positive change, an educator should know him/herself and have the wherewithal to argue for the emancipation and inclusion of student voice, create democratic, equitable, and socially-just learning environments where all students can have equal opportunities to experience access. Schools should provide a sense of belonging, competence, and autonomy to foster academic success for all students.

High school should be a safe, supportive environment that provides students with opportunities to build career development skills. This can be done by providing resources from within and outside the school as well as allowing students to develop soft skills to learn from, understand, respect, and value one another’s differences.

Studies show that adolescents experience different barriers in career development, dependent on location, that may lead to higher rates of unemployment (Turner & Conkel, 2010). While there is ample evidence and research to support the addition of diversity, equity, and inclusion in the classroom setting, there is further evidence that by making resources and support accessible to students at school, educators can lessen the future wage and job opportunity gaps for the generation of students they teach (Turner & Conkel, 2010).

# Resources

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1. Technical and Vocational Education Initiative (TVEI) [↑](#footnote-ref-0)