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Disrupting Inequity Pages 62-68

Gender Insights Coming to Your Classroom

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Recent developments in gender research can help us increase equity for male and female students.

For many educators and parents, gender generalizations are disappointingly simplistic. Girls excel and boys flounder in school. Girls receive higher grades and have fewer disciplinary problems. They are more likely to become valedictorians and go on to college, but less likely to enter STEM careers. Boys, on the other hand, often struggle in a traditional school culture. They are more frequently class clowns or troublemakers; they get worse grades and are more likely to drop out—but they do surpass girls in science, math, and sports.

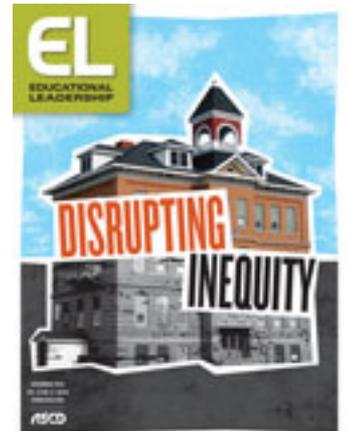
Fortunately, research on gender has advanced to a more sophisticated level in the last decade. Today, we have an amazing lens to better understand the complex factors that affect boys' and girls' classroom life. We'd like to share five gender insights generated by recent research.

Insight 1: Stereotype threat is powerful, but malleable.

Stereotype threat interferes with learning when people in certain groups are reminded of assumptions about their group and succumb to the pressure this creates (Aronson, 2004; Nguyen & Ryan, 2008). No one is immune from stereotype threat. Each of us holds an image of some group (gender, racial, ethnic, religious, economic class, and so on) that we believe has knowledge or ability superior to ours.

Science, math, and technology are ripe fields for stereotype threat for women (Nix, Perez-Felkner, & Thomas, 2015). Steele and his colleagues found that when women were reminded—even subtly—of the stereotype that men are better than women at math, the women's performance declined measurably (Steele, Reisz, Williams, & Kawakami, 2007).

Here's the subtle way stereotype threat can unfold. In one study, all the women enrolled in an advanced university calculus class were told that a test would measure their "mathematical abilities." But some women were also told that "this mathematics test has not shown any gender differences in performance



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or mathematical ability." The result? The women who were told there were no gender differences in the test scored better than the other women—and they also outscored the men taking the test (Good, Aronson, & Harder, 2008).

In another study, one group of students taking the advanced placement calculus test was asked to mark their gender on the test before they began (which is the typical practice). Another group was not asked to indicate their gender until *after* completing the test. The girls who waited until after the test to record their gender scored an average of 15, whereas the girls who indicated their gender before taking the test scored only 12.5. The boys who waited until after the test to record their gender scored an average of 14, but the boys who indicated their gender before the test scored 16.5. Not only did stereotype threat significantly harm girls' scores, but it apparently benefited the boys who were reminded of their gender before taking the test (Danaher & Crandall, 2008).

These studies also provide educators with clues for how to inoculate students against the damage of stereotype threat (Dasgupta, 2011). When we introduce lessons and assessments, we can consider what stereotype threats might exist and frame our introduction in language that assures students that their gender is not a factor. We can also be proactive in the words we choose, the classroom displays we post, and the classroom strategies we implement (see "Tips for More Gender-Equitable Classrooms," p. 66).

Insight 2: Boys' and girls' brains are not so different—and they can change.

Historically, the cognitive and psychological differences between males and females were thought to be large and immutable. Today, we are better informed. Janet Hyde (2005), using a sophisticated meta-analytic statistical procedure, reviewed numerous studies on gender differences and similarities. The big surprise—there are few educationally relevant gender differences. In fact, greater educational differences exist *within* the genders than *between* the genders.

Neuroscientist Lise Eliot (2009) concurs. Drawing on her review of the research and her own work, she concludes that the differences that emerge in schools are often the result of socialization. For example, the many hours boys clock with Legos, baseball, and video games help develop their spatial skills—which figure prominently in subjects like physics, trigonometry, calculus, and engineering.

You may have heard the phrase, "neurons that fire together wire together." It's true—we learn by physically creating neural pathways connecting some of the billions of neurons throughout the brain and the body. Whether the skill is learning how to conjugate a French verb, code a computer, repair plumbing, or ice skate, more study and practice leads to a stronger neuropathway in the brain, and the activity become easier. The more we repeat something and use that portion of the brain in a focused way, the more prominent that neural pathway becomes.

At this point, you may be thinking, "I like French and ice skating, and I can see how I've developed strong neuropathways for these skills. But have I also developed *negative* neuropathways?" Unfortunately, we often do! When a girl learns to fear math and stops trying, when a boy avoids reading because he finds it difficult, or when any of us succumb to stereotype threat, those unhelpful neurons are firing together as well. We are learning to lose our confidence, our persistence, and our resilience. Today's take-away concept from brain research is *neuroplasticity*, the idea that we create our neuropathways, good and not-so-good (Doidge, 2015). We are not victims of our brain; we are its architects.

The brain's remarkable ability to adapt and change is wonderful news for thoughtful educators and their students. And by teaching students about this potential for brain growth, we can help them develop a

growth mindset and challenge the idea that they're limited by their gender characteristics (Dweck, 2015).

Insight 3: We can make technology careers more accessible to girls.

At an early age, all groups of students demonstrate similar interest in STEM (science, technology, engineering, and mathematics). But as they go through school, many girls and students of color abandon these fields (Modi, Schoenberg, & Salmond, 2012). A national report on college freshmen majors and career interests shows that on average, just 20 percent of young women intend to major in a STEM field, compared with 50 percent of young men (National Research Center for College and University Admissions, 2011).

The situation is particularly stark in computer science. The College Board (2013) reported that of the 30,000 students who took the computer science advanced placement exam, fewer than 20 percent were female, about 3 percent were black, and 8 percent were Hispanic. The following barriers tend to exclude girls and minorities from computer science:

Access to technology. Students need time to tinker and play with technology to succeed. Girls and minority students are less likely than their white male counterparts to get this time outside of school (Margolis & Fisher, 2002). Poverty prevents many minority students from accessing computers and the Internet at home, and sometimes even at school (Marx, 2016). Girls may also suffer an access gap because of parental expectations: Parents are three times more likely to say they would give a smartphone or video-game device to a son than to a daughter (Bolkan, 2015).

Lack of role models. Underrepresented groups need to see more adults who look like them working in STEM fields so they can envision themselves in similar careers (Eccles, 2009; Koch, Georges, Gorges, & Fujii, 2010).

Lack of relevance of computer science. Girls and minority students often view computer science careers as devoid of social impact relevant to their lives and view technology workers as performing in isolation (Margolis, Goode, & Bernier, 2011). Schools need to help them discover that computer science challenges are often approached in a collaborative and cooperative work environment and focused on solving important societal problems. Schools can provide these opportunities through computer science curriculums, both in school, such as through Exploring Computer Science (www.exploringcs.org) and after school, such as with Girls Who Code (<https://girlswhocode.com>). After-school opportunities show promise for engaging girls meaningfully with technology and helping them develop an interest in computer science careers (National Research Council, 2009).

Insight 4: The "boy problem" involves both gender and ethnicity.

Boys' behavior problems in schools are widely recognized, including disengagement, discipline problems, overtreatment with Ritalin, voluminous referrals to special education services, grade retention, and dropouts. Many attribute this to a conflict between boys' socialization and school culture (Jenson, 2013).

But the boy problem is multifaceted. For example, discipline disparities are far more acute for low-income students; English language learners; and black, Hispanic, and Native American boys (U.S. Department of Education, 2016). Minority males are suspended and expelled at a much higher rate than their peers, with one in four failing to graduate from high school in four years. Removed from school, they are at a heightened risk for becoming permanently entangled in the school-to-prison pipeline (Lewin, 2012). Such

disciplinary inequities reflect the intersection of institutional racism and sexism. Unfortunately, the responses have likewise been fractured.

Some school districts offer male-only environments intended to help boys explore their masculinity in healthy ways. These efforts can take the shape of all-boy charter schools, such as Urban Prep in Chicago, or programs within schools, such as Oakland School District's elective course for male students in grades 3–12, "Mastering Our Cultural Identity: African American Male Image" (commonly referred to as the Manhood Development Program). As one Oakland administrator said, "The No. 1 strategy to reduce discipline issues is engaged instruction ... to elevate their game academically through the lens of brotherhood" (Brown, 2016).

But such all-male or all-female environments can be problematic. Creating "us" and "them" gender cultures can intensify gender stereotyping and has been linked to increased male misbehavior, while academic benefits are unclear (Klein, Lee, McKinsey, & Archer, 2014; Sadker, Sadker & Zittleman, 2009). As a nation with a history of racial segregation, the United States cannot be naïve about the potential psychological, academic, and social dangers of gender separation. Too many school districts approach single-sex public schools and classes as an easy fix for profound educational challenges, especially in poor and minority communities.

The bioethics dictum *Primum non nocere* (First, do no harm) comes to mind. Given recent insights into neuroplasticity, we may be strengthening gender stereotypes and limiting options for all our students. It's way past time to implement a thoughtful, limited, and controlled research effort to sort out the benefits and risks associated with single-sex education.

Insight 5: Gender is not binary; it's on a spectrum.

Whenever the American Dialect Society meets, one of their challenges is to name the Word of the Year. In 2015, that word was *they*, but not the plural pronoun. This *they* is a singular pronoun used when an individual does not identify as male or female, or when the person's gender is unclear (Bennett, 2016).

The term *transgender* refers to a person whose inner sense of being male, female, or something else differs from their birth sex. Although research on the biology of gender is in its infancy, gender spectrum rather than the binary male or female designations might be the most useful way of understanding gender. On some college campuses today, students introduce themselves with a name, a major, and a pronoun of choice—pronouns that include more options than *he* or *she*. Facebook offers 50 different gender identities as options, including *gender fluid* for those whose gender is shifting. At Harvard, students are now allowed to register their preferred pronouns in the computer system, including *he*, *she*, or *ze* (Chak, 2015).

Addressing issues of gender identity at the K–12 level isn't easy. Although some clear progress has been made, the terrain is far from smooth. Some schools prohibit teachers from even mentioning "transgender" or "homosexual," or require them to present these words in negative terms. Many school faculty and staff are hostile to LGBTQA (lesbian, gay, bisexual, transgender, queer/questioning, and advocates) students. Discriminatory policies against these students persist (GLSEN, 2014; Denizet-Lewis, 2009). Such actions put LGBTQA students at risk. Violence aimed at these students poses an ongoing danger, and transgender people are seven times more likely to experience physical violence (Ford, 2015).

Gender identity issues are already testing public schools in a practical arena: school bathrooms and locker rooms. The U.S. Department of Justice Civil Rights Division has determined that transgender students

must be allowed to use the restroom and locker room that corresponds to the gender with which they identify—even if different from their birth sex (Leytes & Mather, 2016). But many states have sued the federal government for the right to require students to do just the opposite. The issue is still being hashed out in the judicial system, and until the courts rule, your school may find itself on the front lines of this culture war. In the years ahead, beyond bathrooms and locker rooms, gender identity likely will touch the heart of instruction, influencing teacher language, the curriculum, and school practices and policies, much as the fundamental concept of gender bias did almost half a century ago.

A Look into the Future

Predictions are risky, but with that caveat, here are a few thoughts about gender issues in the years to come. (Feel free to get back to us in 10 years and tell us how accurate we were.)

If the women representing the United States had been a separate country at the 2016 Olympics, they would have ranked third in the medal count. Those victories demonstrated to the world the power of Title IX in opening public school athletics to women. But Title IX's impact goes well beyond the athletic field. In the years ahead, U.S. progress in expanding educational and career opportunities will serve as a much-needed gender equity lighthouse for girls and women around the world.

Advances in neuroscience will continue to provide a lens to help us better understand the teaching-learning process. Today's cognitive research debunks many of the myths about male-female brain differences. We can expect that additional assumptions about the brain will be debunked by research in the years ahead.

Although racism, classism, sexism, and most *isms* are dealt with separately today, they are in reality quite connected. In the years ahead, we will do a better job of understanding the interconnections and nuances across race, religion, geography, and gender. And then, finally, we may be ready to go beyond these categories to honor the diversity of human experiences, the uniqueness of each human being, and the common humanity we all share.

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Tips for More Gender-Equitable Classrooms

The Sound of Equity. Make wait time part of the classroom routine, pausing for 3–5 seconds of silence after a question or response. A longer wait time not only encourages quieter students to participate (often girls and English language learners), but also promotes reflection for all—including the teacher.

Stereotype Talk. Talk with students about stereotype threat so they can recognize it and

work to negate it. Helpful resources include the [Equity Guide](#) created as part of the National Science Foundation-funded Gender Equity in Afterschool Computer Science Curriculum Project (Grant No. 1232461) and the [Reducing Stereotype](#) website.

The Gift of Failure. Destigmatize failure. The gift of failure strengthens persistence and a growth mindset in students.

Talking Walls. Consider what your walls are saying about race, gender, ethnicity, and who populates different careers. Involve your students in creating their own meaningful displays.

Awareness of Screen Sexism. Teach students (and their parents) critical literacy skills so they can analyze media messages, distinguish myth from reality, and label hurtful and misleading messages. These are skills they can use into adulthood.

Note: For more strategies for creating equitable classroom climates, see *Still Failing at Fairness: How Gender Bias Cheats Girls and Boys in School and What We Can Do About It*, by D. Sadker, M. Sadker, & K. Zittleman, 2009, New York: Scribner.

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