



Friday Institute Education Brief

Middle School Girls and STEM: Using digital tools to close the gender gap

Although female and male students perform equally well on [standardized math and science tests](#), the middle school years prove to be a pivotal time when girls lose confidence and [interest in science, technology, engineering and math \(STEM\)](#). The [reasons](#) for this downward trajectory are endless; lack of role models, peer pressure, little to no parent support and misconceptions of what actually constitutes a “STEM professional”, to name a few. Nevertheless, these challenges present middle schools with a grand opportunity to intentionally change the tide and promote STEM to middle school girls in newfound ways.

The Professional Learning and Leading Collaborative (PLLC) team at the Friday Institute for Educational Innovation serves K-12 educators by providing research-based, job embedded models to support pedagogical shifts in digital learning and instruction. The PLLC team has successfully partnered with various schools across North Carolina as they implement STEM teaching and learning. The work begins with extensive strategic planning, leadership support, data-driven decision making and professional learning. Through this work, schools dive deep into the instructional strategies that encompass equitable STEM teaching and learning. As a result, teachers afford students the opportunity to not only engage in high-quality STEM learning but also to empower them to become critical thinkers, creative problem solvers and global citizens.

Practical Suggestions

First, it's important for girls to experience the true depth and breadth of STEM. A great place to start is with digital tools such as [Made with Code](#), [Girls who Code](#) and [STEM like a Girl](#). These programs are designed to engage and excite girls about STEM through activities such as coding trees for the White House Christmas Tree Lighting. These sites can be used by teachers and parents of middle school girls to shed misconceptions of STEM and encourage girls to build new positive identities.

Next, project-based learning (PBL) is a common instructional strategy used to teach and reinforce skills associated with STEM, (e.g., problem-solving, critical thinking and curiosity). Teachers can utilize these [downloadable posters](#) of women innovators to spark new project ideas that may attract girls. Additionally, they can present students with real-life stories like that of [Leah Wyrick](#) whose mother was diagnosed with cancer. After undergoing a double mastectomy, Leah watched her mother struggle with post-surgery bras that were uncomfortable, ill-fitting and sometimes caused bruises. Though only a high school senior, Leah worked with her mother's surgeon to create the Resilience Bra, designed specifically for post-surgery recovery. Stories like Leah's highlight the use of skills outside of what is typically considered STEM and could empower girls in middle school to have the freedom to create without limitations.

Lastly, [research has revealed](#) that the gender gap in STEM can be attributed to girls' lack of exposure to careers and role models in STEM. Teachers can utilize social media and other digital tools to expose middle school girls to the diverse range of professionals in STEM. For instance, teachers can find potential guest speakers and mentors for girls on LinkedIn. For a fee, teachers can use [Nepris](#) to bring professionals into their classrooms via video calls to provide students with feedback on projects, provide an authentic audience for PBL presentations or simply discuss career options. With parent permission, teachers can encourage girls to learn more about prominent STEM practitioners and follow popular hashtags such as #WomenInSTEM and #GirlsInSTEM on Twitter. Most notably, all three platforms have the power to expose middle school girls to careers conventionally associated with STEM (e.g., civil engineer, computer scientist or marine biologist) as well as “non-conventional” careers in textile design and cosmetic chemistry.

By providing opportunities for girls to see themselves in STEM, teachers can create a culture of inclusivity and individuality. These changes could alter the trajectory of girls who enjoyed STEM in elementary school but whose interest faded during the pre-teen years. The intentional use of digital tools in middle schools has the potential to prepare and inspire the next generation of great female designers, builders, thinkers and creators.

About the Authors



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