Smart Girls in the Twenty-first Century: New Challenges for Teachers of Gifted Girls

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When I began writing *Smart Girls, Gifted Women* in 1979, gifted girls lived in a very different world than the one in which they live now. Although their grades were better than those of gifted boys, they lagged behind them in achievement test scores in mathematics and science. The differences usually became apparent by middle school, when sex role socialization became powerful. Although they were more like gifted boys in their interests than they were like average girls, they had lower aspirations than gifted boys. That is, gifted girls were more likely to be more interested in becoming nurses than doctors; in becoming teachers than professors; and in becoming interior designers rather than architects. While high in self-esteem and confidence at ten years old, they were likely to experience a remarkable decline in these in their teen years. They grew up in a culture where gifted education programs were overwhelmingly populated by white children, and little attention was given to the needs of minority and low-income gifted students. Finally, they grew up in schools that had not yet experienced reduced funding for gifted education, science, and the arts.

All of this has changed for gifted girls today, as Robyn McKay and I summarized in *Smart Girls in the Twenty-first Century*.

The good news is that the achievement gap in mathematics and science achievement test scores has virtually closed. Gifted girls' interests are even more like those of gifted boys than they were four decades ago, with girls' interest in math, science, and technology careers surging. The self-esteem gap has also mostly closed for adolescent gifted girls, although they are still not equal to gifted boys in their confidence in their abilities. Gifted adolescent girls' career aspirations are much higher than four decades ago, with their intended careers reflecting their actual potential. Increasing numbers of gifted young women are entering what were once male-dominated fields, from astrophysics to video game development.

The bad news for gifted girls and women in the twenty-first century is that racial disparities in education and well-being are still pervasive in U.S. culture, and gifted girls of color are still more likely to attend poorly funded schools than their white counterparts. The income inequality gap has risen dramatically, with fewer gifted girls living in families that can adequately meet all their needs for food, housing, and higher education. Sexism continues to be endemic to society, sometimes more

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WE LEARNED THAT IT'S

NATIONAL ASSOCIATION FOR
Gifted Children

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Gifted Females: Part 2

Just last year, *Teaching for High Potential* featured a special issue dedicated to gifted females. The response to the November 2018 issue, through conversation, email, and social media was overwhelmingly positive, alerting us that this topic resonated greatly in the minds of our gifted educators and researchers. As readers know, *THP* is limited in space to just 20 pages, which restricts the number of authors we can feature and oftentimes hampers the ability of our columnists to dig into a topic. As a result, we have decided that there is a need for a sequel.

As stated before, the psychosocial needs and traits of gifted students can differ by gender, specifically in the areas of ownership of giftedness; dissonance between their own belief systems and the actions of others; risk taking; others' expectations; impatience; identity; and sexuality. Although educators have made some strides in recognizing these differences, gifted girls are still faced with a variety of external and internal barriers that can affect motivation and achievement. This sequel to the original special issue will continue to explore the unique challenges still faced by gifted girls as they tackle demands to succeed in our ever-changing world. Let us take a look at the contents.

Barbara Kerr opens the issue with *Smart Girls in the Twenty-first Century: New Challenges for Teachers of Gifted Girls*, which speaks for itself. This is a different world. These are different times. Amber Nickerson and Kristina Henry Collins' article, *Nurturing Culturally-Responsive STEM Talent in Gifted Girls*, seeks ways for educators to reverse the factors that negatively influence young girls' interest and involvement in STEM fields. In *Grayson Girls: Gifted and Goal-Oriented*, authors Melissa Bilash and Alexa Fusselbaugh reflect on Leadership Lunches, a highly successful idea they had, that exceeded their expecta-

tions and opened the door for future directions. *Taking the Creative Leap* presents two strategies intended to counter the negative effects of anxiety and stress. *Special Populations* provides four situations to ponder while considering how to remove the barriers that exist for gifted Black females. *Socially Scientific* shows us that there are ways to sustain girls' interest and increase their confidence in pursuing advanced learning in the engineering fields. *Buried Under Books* tells us of an incredible title, *Hooray for Women!*, that can serve as a catalyst for many more discussions, activities, and further readings. *Taking the Lead* offers five ways to support the success of gifted girls in and out of your classrooms and *The Digital Ecosystem* shares three outstanding resources that can help support the resurgence of females' involvement in computer programming. You will also notice a poem authored by the late Dr. George Betts. Apart from being a scholar and a leader, he was a friend and a poet. George will be missed by all who knew him and of his work.

As we stated in the November 2018 issue's opening, there is no doubt that there has been a great deal of progress in recognizing the accomplishments of talented girls and women, but we still have a long way to go. It is the hope that readers will come away from this sequel with even more resources and ideas, and a renewed sense of understanding and urgency about the needs of the talented young women that are sitting in their classrooms—many whose talents have gone unnoticed for far too long.

NATIONAL ASSOCIATION FOR Gifted Children

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Using Creativity with Gifted Females in Dealing with Stress

Gifted girls can experience multiple sources of stress from a variety of issues. One such issue is overextension, which can manifest in behaviors such as sleeping in class, exhaustion, nervousness, and anxiety (Kerr & Multon, 2015), due to gendered expectations and the demands placed on females by themselves and others. Because they think and feel more intensely than their peers, they may experience stress at higher levels. In addition to expectations, they are typically balancing rigorous coursework and out of school commitments.

Creativity is found to have a positive effect on our bodies (Pennebaker, 1997). By teaching bright females proactive and creative techniques for dealing with stress, we demonstrate how to live more balanced lives rather than merely reacting to stressful situations and experiences. In turn, they are empowered to employ creative processes such as mindfulness, relaxation, and other therapeutic practices. Some of these creative strategies may include journaling, visualization, breathing techniques, body scanning, poetry, guided imagery, creative relaxation, dance/movement, expression through art, and biblio/cinematherapy. As teachers of the gifted, one way we can help gifted girls learn positive mental health is to use these creative outlets to mitigate the negative effects of anxiety and stress. Below are two examples of strategies to aid teachers in demonstrating positive stress management practices in creative ways.

Guided Imagery (GI): A Visualization Technique

GI helps students capitalize on their own creative imagination, while also decreasing stress and increasing feelings of relaxation, empowerment, and perspective taking (Seligman & Reichenberg, 2010). In an eighth grade science classroom investigating force and motion, the teacher verbally guides students through a story purposed to illuminate the motion of objects relative to changes in position and time. The teacher makes sure to assure students of the following:

- The intention of this exercise is to support you in connecting with your thoughts, feelings, and ideas as they relate to force and motion.
- If at any time you feel uncomfortable, feel free to stop the activity and open your eyes.
- This activity will not be graded and is only to enhance understanding and awareness material.

Sample Script: *Allow yourself to sink into your chair. Feel the chair as it wraps around you as you find a comfortable position. Allow your mind to wander. As you feel more comfortable, slowly close your eyes.*

As you become more relaxed, focus your attention on your breathing. Take a deep, slow breath…as you exhale, allow any tension to be released through your breaths.

Now imagine you are taking a relaxing stroll through the woods by your house when you come upon a crane, seated at the edge of a small stream. You hear the sound of the water as it slowly flows over the rocks. You smell the sweetness of the blooms flowering around you. You notice a spider walking around the edge of a leaf as it floats by. You notice a dragonfly landing in the middle of a leaf, watching the spider as they all three move downstream together. Continue to notice all of the sights, sounds, and smells around you, and how everything seems to be in motion. Try to imagine how the dragonfly feels as it moves along on the leaf, watching the spider. How might it describe the motion of the spider? How might the dragonfly describe its' own motion? How would the crane, sitting at the water's edge, describe the motion of the dragonfly, the spider, and the leaf as they pass you by?

Now let your mind move away from the stream as you become more aware of your own body. Take several slow, deep breaths. When you are ready, slowly open your eyes and respond to this experience using words or pictures.

Poetry Lunch Club

Students in a seventh grade advanced language arts class have been completing a unit in poetry. Their teacher, realizing the interest that had piqued for some of the students, especially girls, began a poetry lunch club where female students could come together to experience enrichment around poetry, share original work, and process the meaning of their work. The teacher also synthesizes critical social and emotional topics for middle school girls such as perfectionism, expectation, and feelings of intensity into the enrichment experiences. The girls gather weekly in the teacher's room during lunch with their poetry journals where they eat lunch and read poetry from select female poets, analyzing them, interpreting them, and appreciating their aesthetic complexity. The teacher creates a psychologically safe environment where the young women are able to take risks and share ideas about how to both create and interpret poems. The teacher helps the participants make use of their individual challenges as a way to solve complex emotional problems in their poetry writing. Each week, the girls are given "homework" to create poetry to bring back and share with the group. The teacher leads a debriefing

SPECIAL populations

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Removing Barriers for Gifted Black Females: Four Situations to Ponder

1 A story
Picture this: Young Black female enters a science classroom for gifted students. The other students are White males. She is highly capable, has measured in the top 3% of her peers nationally in science & math and is very excited about the summer course/program ahead. She notices that her peers are quiet, looking at her and looking away…When they get close enough to talk, one asks—ARE YOU SURE YOU BELONG HERE? The classmate's tone was degrading and embarrassing. She had felt that way before in her school when students and sometimes teachers found out that she was 'smart' and loved Science. The boy's question challenged her belief in herself, suggesting she didn't belong in the Science class with the other students—all who happened to be White and Asian boys. The student reported the incident to her mother in a phone call that evening. Distraught and disappointed, her mother encouraged her to go back to class the next day, do her best work, and try to enjoy the experience. She reassured her daughter that she would 'handle it' in a call to the administration and she did. The instructor was alerted.

2 Being a Black Gifted Female is Nothing New
The first published study of a Black student with genius potential was that of an 8 year old girl who lived in Chicago (Witty & Jenkins, 1934). After a lengthy evaluation, the researchers determined that the little girl had an IQ measured over 200 on a series of traditional tests. The study was the first case published documenting proof that Blacks were as intelligent as Whites; that the earlier studies of White superiority were unfounded. Jenkins went on during his studies and afterwards seeking out children in the Black community to participate in his testing, writing articles, and speaking publicly about the presence of giftedness in the Black community.

3 In Schools Today, Black Girls Are Often Invisible, More Severely Disciplined and Poorly Served in High End Programming
It is generally known in the gifted education community that Black students are underrepresented in gifted programs. Recent research has indicated that Black students are four times less likely to be referred for gifted programs when their teachers are white. Black girls and boys are literally counseled out of high-level middle and secondary classes. To complicate conditions in schools for Black girls, according to an extensive report by the Columbia University Center for Intersectionality and Social Policy Studies at Columbia Law School, Black girls are punished at a higher rate than White girls and often victims of school 'push-out' programs that push students into dropping out of school early with little support for completing their education (Crenshaw, Ocen & Janta, 2016). Black girls in uncomfortable classroom situations may also withdraw and not show their potential with their social peers. As with all gifted students, Black females need intellectual peers and to feel a sense of belonging in the academic setting.

4 A Gifted Writer in Post-Juvenile Detention Program
While serving as a gifted coordinator in a mid-sized school district, I received a referral from a keyboarding instructor in a school for juvenile offenders. These students had completed their term of punishment in juvenile detention and were now being educated in this post juvenile program before placement back into their regular schools. The referring instructor had participated in a school wide workshop that I conducted to inform teachers about the strengths of culturally diverse students from marginalized communities, including those from poverty backgrounds, racially diverse communities, and those who were involved in juvenile detention programs. The teacher was very interested in the information shared because she said she often saw traits of giftedness among the population she served. Students in her program were very creative, outspoken about injustices, were highly capable in specific content areas, artistically gifted, and enjoyed word games/debates and critical thinking activities. The student she referred came into keyboarding class each day with a yellow tablet filled with essays, poems, and some very personal journal entries. Keyboarding gave her an opportunity to privately type up her work and place them into a folder. Eventually, the teacher developed a close enough relationship that she could ask if she minded sharing some of her work. Upon reading the student's stories the teacher was so amazed by her writing that she believed the student could benefit from more advanced instruction when she was re-admitted to her regular high school. The referral and assessment was completed by our gifted education staff. The student's verbal subtest score on the district's assessment placed her in the 97th percentile nationally!! With this information, one of my resource teachers was able to set up time to work with her on more advanced content for English, provided her with access to literature, and the student was referred to AP English and History for high school upon re-admittance.

Removing Barriers for Access
As classroom teachers, counselors, and school administrators there are many things that you can do to remove barriers for access to high end programs for Black females and provide

more accessible opportunities to enable them to realize their full potential. Listed below are a few strategies to be considered:

- Provide opportunities for students to engage in discussions with role models who look like them from their own communities who have been successful
- Create a Talent Pool program or Enrichment program for students who are the top performers in their classes to provide support instruction in math, science, and language arts
- Host infinity sessions for Black females to allow them an 'open, non-judgmental' space to discuss their academic and social-emotional concerns
- Collaborate with community agencies, churches, or sororities to develop a Saturday STEM program for females beginning with elementary school. Early and sustained involvement in high end programs is beneficial and prepares students for future advanced classes in high school
- Ensure that all school libraries and classrooms have representative literature or 'mirror books' so that the students can 'see themselves' in the books they read
- Ensure that school district professional learning includes workshops and courses in culturally responsive teaching pedagogies for teachers to modify instruction to meet the needs of a more racially diverse student body
- Design school communities with a 'no bullying policy' and ensure that all students, teachers, and staff know the rationale and how they can support ALL students in a more inclusive, culturally responsive way

- Ensure that gifted and advanced learner programs are central to development of strategic planning for equity, access, and inclusion for the school and district
- Engage students in racial identity workshops led by a Black female professional with expertise in that specific area **THP**

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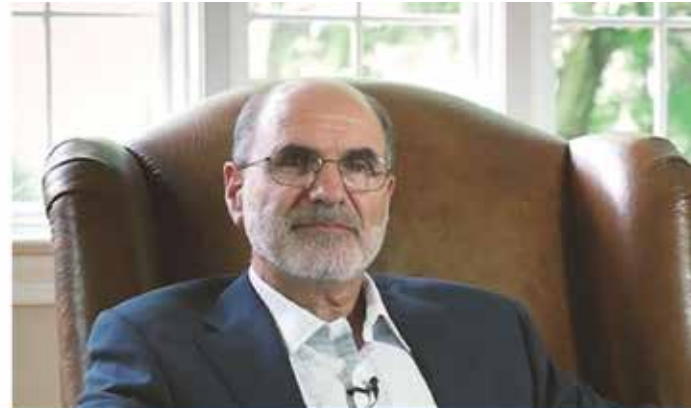
Nurturing Culturally-Responsive STEM Talent in Gifted Girls

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Hope spent the majority of her most memorable childhood moments sitting at the kitchen table in a small 2-bedroom home with her mom and step-dad playing board games, solving logic puzzles, adapting recipes, navigating through "how to" manuals, dissecting auto-mechanic diagrams, and discussing current 'state of the home' affairs. At least once a month, she and her mom proudly glued notebook paper to the back of a 1000-piece puzzle that they had completed that month to hang as art throughout the house.

By age three, Hope had mastered the game of chess. And by age ten, she could take a technical manual of any kind, make sense of its complicated diagrams, and effectively communicate those instructions to anyone wanting to build a physical model of the design. She had done this many times, assisting her step-dad (a self-taught auto-mechanic and race car enthusiasts) in the yard as he built and/or rebuilt cars from frame to functional. Spending time on the road with him, she also collected a huge atlas and maps that kept her attention for hours. Hope recognized, early on, the patterns for numbering for all major highways and mile markers that systematically ran north to south and east to west. If there was something around the house that needed to be fixed, she often engineered tools in an attempt solve the problem.

At first thought, the idea of a young girl and her parents[1] sitting around the kitchen table playing games presents itself as nothing more than typical family time for any American household. However, for Hope—an unidentified gifted girl of color growing up in poverty - the kitchen table served as a playground where many hours of family-based, culturally relevant STEM-learning took place with critical thinking as the central theme of every activity.

This vignette provides an example of day-to-day practices of parent STEM engagement (Collins, 2015) experienced within the home that fosters STEM identity and positive self-concept (Collins, 2018). It was these contextual and gender-neutral STEM experiences—tied to feelings of belonging and family values—that later influenced and fostered intrinsic motivation for Hope's STEM interest, STEM academic success, and STEM talent development in school. As such, there are clear implications for educators to engage students, especially underrepresented students, in contextual STEM talent development. This is particularly important for educators at the elementary school level where cultural discontinuity between the home and the school and/or gender socialization can negatively influence a young girl's interest and persistence in STEM.

Gifted Girls in STEM

Gifted education is important in this discussion of STEM talent development because it offers a "socialized" culture that encourages students to explore STEM activities and take advanced STEM courses. It is commonly expected that gifted students show interest and excel in STEM areas of study. However, gifted girls are still pushed toward careers related to language arts (Collins, Joseph, and Ford, in-press).

In their article "Missing in Action: Black Gifted Girls in Science, Technology, Engineering, and Mathematics (STEM)", Collins, Joseph, and Ford (in-press), synthesized critical issues that contribute to the notable absence of girls in STEM. They found that empirical research generally suggested lack of motivation and ability as issues for underrepresentation, with disproportionate amounts of the research on lower achievement in comparison to majority groups. Little research focused on factors that encouraged motivation and persistence. They reported that "gaps in positive STEM experiences and practices begin as early as elementary school"

which skews perceptions of abilities in STEM by girls by the time they reach high school.

Contextual STEM Talent Development

The Expectancy-Value Theory suggests that students are motivated toward academic tasks and disciplines in which they expect to succeed and find personal value. Therefore, it is important that teachers nurture gifted girls' confidence and interest through successful STEM experience early on to support talent development and persistence throughout the STEM pipeline. STEM talent is commonly associated with the technical skillset (e.g., logical thinking, scientific literacy, domain-specific cognitive ability) developed as a result of persistence and achievement in specific STEM tasks. A student's positive self-concept in STEM, then, has to do with to what extent a student sees herself based on a belief in her ability to utilize her STEM talents to become a STEM innovator. And, for underrepresented students in STEM (i.e., Blacks, Hispanics, and female students) this identity—and motivation to succeed—is centered around social constructs of race and gender.

Collins' (2018) developmental model for STEM identity (Figure 1) offers a framework for understanding internal and external factors that may influence the persistence of gifted girls such as Hope who already showed a high interest in STEM.

According to Collins' (2018) model, teachers and mentors can expect gifted girls to continually evaluate and internalize four basic questions that influence their motivation to learn and persist in STEM:

1. Do I belong in a STEM field? (Reflective Identity)
2. Can I succeed in a STEM field? (Competence/Ability)
3. Do I want to succeed in a STEM field? (Value/Interest)
4. What must I do to succeed in a STEM field? (Assimilation)

The answers to these questions influence how gifted girls come to understand themselves, especially within their own culture (internal/ home environment) and in relation to the institution of STEM training (external/ STEM environment). It is important to note that three of the four questions are a reference to psycho-social, or relating to the interrelation of social factors, individual thought, and behavior issues. This affirms that persistence issues in STEM talent development are often related to issues around belonging, cultural values, and who the student is as socialized beings.

Nurturing STEM Talent in Gifted Girls

Cultural discontinuity and/or lack of awareness for the diverse way in which STEM talents are manifested in underrepresented STEM students can negatively affect the creative thinking, and academic success of underrepresented students as early as 4th grade. This is especially true when family-based or culturally-valued STEM talents are not valued or seen as transferrable to the academic setting. Frasier's (1992) Traits, Aptitudes, and Behaviors (TABS) evaluation tool, commonly used as a culturally responsive tool for identifying gifted students, serves as a great resource and basis for identifying and nurturing STEM talent in underrepresented students in STEM, including gifted girls. Frasier's TAB's offers a description of gifted characteristics that are not traditionally "tested" or measured. Extending Frasier's' TABS for advanced STEM development, Table 1 describes TAB's within the context of higher-order thinking skills (2nd and 3rd column) for the purpose of integrating depth and challenge within a gifted curriculum. Additional insight as to how these traits may be nurtured for STEM skill development within the home or community (4th column) are also offered. The last column may be used by educators at different educational levels to evaluate how these traits might look within the STEM discipline specifically. Once that has been identified, they should align their efforts of gifted and STEM talent development to that which complements the development that is present in the home. This ensures STEM identity development that does not pose a conflict between what is valued at home and what is valued at school.

For example, Hope exhibited advanced interests in maps. She used them as a navigational tool when traveling with her family. Beyond that, she also studies them to recognize directional and numbering patterns of the roads represented on the map. Her step-dad makes sure she has access to maps of all of the states. Relatively, in school, Hope is very good at recognizing ways in which constituent parts are interrelated or arranged. As such, the math teacher could complement her interest and family's developmental strategy by allowing Hope to study topology as part of a geometry lesson as one option. Of course, many problem-based lessons can be developed for several topics in algebra as well. Through these interventions, gifted girls like Hope can see their STEM talents grow and develop. **THP**

Figure 1. Underrepresented Students STEM Identity Model

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[1]The term parent or parental is inclusive of biological and non-biological guardians of children such as adoptive parents, foster parents, and grandparents, and/or other relatives serving within a parental role.

Table 1. Nurturing STEM Talent Development Using Frasier's Traits, Attitudes and Behaviors

Category	Research-based, Reading, & Rigor		Characteristics and Talent Development
Motivation Evidence of desire to learn	Thinks "outside the box" with thorough and complex designs	Manages time and activities for task completion	Fosters an environment to sustain student interest and desire to obtain STEM goal
Interests Intense, advanced interest	Work/product is an extension of individual passion	Explores topics beyond scope of learning (self-efficacy)	Consistently creates situational, unique opportunities for students to engage in STEM activities and development
Communication Skills Highly expressive and elaborative	Work/product is a reflection of experiences	Demonstrates appropriate use of resources and research material	Use culturally expressive and valued symbols to promote STEM exploration (i.e. illustrations, art, song, etc.)
Problem Solving Ability Effective and inventive recognition and problem solving skills	Embraces the process of product development	Develops multiple and alternative methods of solution	Seek opportunities to promote alternate and novel use of STEM skills
Memory Large storehouse of information	Work/product is comprehensive in nature	Possesses a working and appropriate usage of vocabulary	Activates and elicits as many senses as possible to aid in memory and STEM comprehension
Inquiry Questions, experiments, explores	Work/product is a result of knowledge gained	Constructs explanations and generates more questions as a result of research	Asks well-structured questions or demonstrate behavior to elicit STEM inquiry about situation
Insight Quickly grasps new concepts and connections, senses deeper meaning	Creates additional content that enhances required work	Understands the "bigger picture" of conceptual knowledge	Promotes use of "gut feelings" or use of inference as observation tools (street sense); promote divergent and sometimes "confrontational/debatable" STEM thinking
Reasoning Logical approaches to problem solving	Elements of work have a strong correlation and interrelated theme	Provides a clear methodology in problem solving	Intentional use of metaphors and analogies to make STEM connections
Imagination/ Creativity Produces many ideas, highly original, exceptional ingenuity	Represents achievement in diverse formats	Interprets situations/ideas in a unique manner	Use of everyday/ simple material to explain complex STEM concepts; promote characteristics of creativity, especially non-traditional patterns of STEM thinking
Humor Conveys and synthesizes complex ideas in a humorous way	Understands perspective of personal growth in areas of needed improvement	Connects abstract meaning and origin of ideas/content	Uses entertaining approach (story-telling, movies, dramatic etc.) to teach STEM skills

Program Models and Resources for STEM Talent Development

Organization/Program	Description	Find Out More
The American Association of University Women (AAUW): Hands-on STEM packs	Community-based program coordinated by local AAUW chapters designed to teach practical applications of STEM and STEM skills	www.aauw.org/what-we-do/stem-education/stem-programs-for-girls/
Girl Develop It	Non-profit organization that offers opportunities for women to learn coding and software development	www.girldevelopit.com
Girl Start: Girls in STEM Conference, Grades 4-8	Unique annual conference just for girls, including hands-on workshops led by women in STEM	https://girlstart.org/our-programs/girls-in-stem-conference/
Girls Who Code	Offers various programs such as summer immersion programs, summer courses, clubs. etc. all related to coding	https://girlswhocode.com
Girls Who STEM	A free parent resource providing information that includes but not limited to in-depth STEM product reviews, expert STEM advice for girls, etc.	https://girlswhostem.com/best-stem-organizations-for-girls-and-women/
hErVOLUTION	Creates opportunities for women—particularly those from underserved communities—to connect with practical STEM educational opportunities and support like intensive workshops and instructional seminars	www.hervolution.org
National Girls Collaborative Project: Engaging Girls in STEM	Summarizes research focused on what works to engage and support girls in STEM	https://ngcproject.org/engaging-girls-in-stem
Pink STEM	Guided by a vision of breaking the status quo in STEM, coordinates mentoring, tutoring, and field experiences to empower girls and equip them to navigate beyond any under-representation, disadvantage, and/or disability.	https://pinkstem.org
Society of Women Engineers	National organizations with collegiate chapters that offer training and development, networking opportunities, scholarships, and outreach and advocacy activities; its purpose is to encourage more women to consider a career in engineering	https://pinkstem.org
STEM for Her	Provides funding for programs that foster STEM interest through fieldtrips, programs, curriculum development, etc.	www.stemforher.org
Texas State University: STEM GIRLS (Girls Integrating Research in Learning and Service) & PEACE (Pre-engineering, Academic, and Career Exploration) GEMS CAMP	A vertical mentoring program that includes women STEM faculty and girls majoring or interested in STEM at different educational levels. Currently offered as a 10-week program for college level girls and a residential summer camp for high school girls pre-engineering academic and career exploration residential camp for high school girls	http://creativelygifted.wp.txstate.edu/resources/ci5383-mentoring/mentoring matters

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Hooray for Women!
A Year-Round Celebration

As I began to write this column, *Hooray for Women!* written and illustrated by Marcia Williams arrived in the mail. Originally published in 2017 by Walker Books and now available from Candlewick Press, this book provides a wonderful introduction to many women, past and present, and highlights their accomplishments in a wide variety of fields. Using a graphic novel format that moves chronologically through time beginning in 69-70 BCE to the current day, Williams provides two-page comic style spreads on Cleopatra VIII, Boudicca, Joan of Arc, Elizabeth I, Mary Wollstonecraft, Jane Austen, Florence Nightingale, Marie Curie, Eleanor Roosevelt, Amelia Earhart, Frida Kahlo, Anne Frank, Wangari Matthai, Mae C. Jemison, Cathy Freeman, and Malala Yousafzai. Each spread presents the woman in terms of her context, dreams, challenges, and accolades. Williams adds information to each woman's story using jokes, interesting and relevant facts, and a running commentary from two contemporary children, Dot and Abe, who share their insights about how the world has become more supportive of women and their accomplishments.

The book begins on the endpapers with categories that organize the women and their achievements and is a great way to remind us that whenever students are learning in any area, it is important to integrate the names and ideas of women who have contributed to that field of study. Who are and were the female leaders, journalists, environmentalists, thinkers, activists, scientists, athletes, musicians, doctors, feminists, and inventors, etc.?

It is satisfying that in recent years, there have been more biographies featuring women and their accomplishments including a larger number of books about contemporary women such as Ruth Bader Ginsburg, Beyoncé, Katherine Johnson, Malala Yousafzai, Chris Evert, Martina Navratilova, Mae C. Jemison, Jane Goodall, and Temple Grandin. It is also wonderful to see that biography sections of libraries include more titles about women in so many different areas of accomplishment including titles that illuminate the lives of Julia Childs, Frida Kahlo, Ada Lovelace, Anna Pavlova, and others that young people may not know.

In thinking about consciously including women and their accomplishments in the teaching and learning environment, it may be helpful for teachers to ask these questions:

- As you plan to teach "X", who are the women, and what are their challenges and accomplishments, that I might highlight?
- How might you honor women who have contributed ideas in science, history, culture, politics, social change, and other areas?
- Are you showing students that #WomenCan be anything?
- Do the curricular materials feature women as role models and give them credit for their accomplishments and how they navigated challenges?
- Are there opportunities to include contemporary women as well as women from the past?
- In the books that are read, are there real and fictional women of character, strength, and accomplishment?
- What are the conversations about gender and the fluidity of gender in terms of gender not being a barrier to anyone accomplishing their goals and dreams?
- Who are the women that students know? What do they know about these women? How might you extend and/or elaborate on what they know about these women and other women?

In her author's note at the end of the book, Marcia Williams shares that she wishes that her book would have enough pages for every inspirational woman whom she wanted to include. The good and bad news is that there is not enough space for every trailblazer in one book, opening the door for educators to find and integrate lots more.

The index of *Hooray for Women!* includes a wonderful list of women to integrate into conversations and curriculum. Included is a banner for you to check out the names of some of the women that Ms. Williams left out of her book. She was only able to include 100 women in one way or another. As a classroom activity, consider having students create a list of women to know and create trading cards, posters, or infographics for each. Here are some suggestions for you. Happy Reading! **THP**

Featured Title

Williams, M. (2019). *Hooray for Women! More Than 70 Inspirational Women*. Candlewick Press.

Anthologies Featuring A Variety of Women

Hood, S. (2017). *Shaking Things Up: 14 Young Women Who Changed the World*. HarperCollins.

Ignotofsky, R. (2016). *Women in Science: 50 Fearless Pioneers Who Changed the World*. Ten Speed Press. Additional titles include *Women in Sports: 50 Fearless Athletes Who Played to Win*, 2017 and *Women in Art: 50 Creatives Who Inspired the World*, 2019.

Skeers, L. (2017). *Women Who Dared: 52 Stories of Fearless Daredevils, Adventurers, and Rebels*. Ill. Livi Gosling. Sourcebooks.

Yolen, J., & Stemple, H. (2013). *Bad Girls: Sirens, Jezebels, Murderesses, Thieves, and Other Villains*. Charlesbridge.

Examples of Biographies of Women Who May be Lesser-Known to Your Students

Corey, S. (2012). *Here Come the Girl Scouts!* Ill. Hadley Hooper. Scholastic.

Keating, J. (2017). *Shark Lady: The True Story of How Eugenia Clark Became the Ocean's Most Fearless Scientist*. Ill. Marta Alvarez Miguens. Sourcebooks.

Levinson, C. (2017). *The Youngest Marcher: The Story of Audrey Faye Hendricks: A Young Civil Rights Activist*. Atheneum.

Sidman, J. (2018). *The Girl Who Drew Butterflies: How Maria Merian's Art Changed Science*. Houghton Mifflin Harcourt.

Sotomayor, S. (2018). *Turning Pages: My Life Story*. Ill. Lulu Delacre. Philomel.

Whitehead, K. (2008). *Art from Her Heart: Folk Artist Clementine Hunter*. Putnam.

SMART cookies   By Bess Wilson

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Engineering and the Gender Gap: Improving Interest

With advancing technologies, engineering career opportunities are abundant, but there is a lack of employees qualified to meet the increasing demands (Change the Equation, 2012). Furthermore, few females choose to pursue engineering as a career option. A recent report indicated that only 13% of engineers are female and they earn 10% less than their male counterparts (SWE, 2018). Additionally, only 30% of women who have a bachelor degree in engineering are working in the field twenty years later. The report also noted that women feel the need to continuously prove themselves in the field to earn the same respect as males. Good news—there has been a recent increase in the number of bachelor's degrees earned by females in engineering and computer science, up by 54% between 2011 and 2016.

The gender gap in STEM is not new and will continue to be a prevalent problem in the workforce. McCabe, Lubinski, and Benbow (2019) explained that the gap in physical science or inorganic science careers (such as engineering) is typically due to expectations and preferences. Males and females with similar abilities in STEM will often choose different career paths. Males are more likely to seek engineering or computing jobs in comparison to females, who seek more careers in health services. Furthermore, they found that men were more career-focused and tended to work longer hours than women; whereas the women in the study sought a more balanced life between career and family responsibilities. Is it concerning that women want to balance their career and family thus limiting their opportunities for higher profile jobs in STEM and engineering or that their interests lie more in the organic sciences? No, but women should have these opportunities if that is their interest. One study found that if females are allowed to grade accelerate in K-12 schools, they have more opportunities for advancement in STEM careers before they decided to have a family (Clynes, 2017).

Families, schools, and culture often contribute to females' self-perceptions toward STEM, particularly the physical sciences. As a female with an interest in STEM, my family directed me toward teaching because that was the best career for a mother (I was not a mother at the time). As a university student working toward my STEM education degree, my male professor told me that I was smarter than I looked as I outperformed my premed male counterparts. However, I did not have the confidence to seek another degree besides education. I am very happy with my career and I have loved teaching, but career options should be available for consideration.

Schools can help improve females' confidence in the physical sciences and engineering by providing opportunities for these experiences at an early age. Introducing and integrating the engineering design process in all subject areas allows students to develop critical thinking and problem solving skills that are necessary in STEM. Providing students with these opportunities at an early age develops their confidence in STEM that can translate to a greater interest and desire to pursue upper level STEM courses as they progress through school. Additionally, females that are highly gifted should have the opportunity to grade accelerate if appropriate; or at the very least, they should be placed in groups where they can interact and engage with similar ability peers.

Finally, to encourage females in engineering we must recognize and develop their talents through classroom activities, special schools, after school or summer programs, competitions, and informal learning opportunities that focus on STEM curricula and authentic experiences (Subotnik, Edmiston, & Rayhack, 2007). Introducing girls to female engineers provides students a role model and a realistic view of what it means to be a female engineer. Ideally, this can occur face-to-face in collaboration with local industries, but if this is not available, relationships can be formed virtually through platforms such as Skype. Skype education offers programs that provide guest speakers in a number of fields. Since relationships are vital to many females, it is imperative that the experiences are authentic, collaborative, and have a societal impact. Since many females are more interested in organic sciences, using engineering to solve environmental or societal problems would allow females to see the value and purpose of engineering in our lives and potentially in their careers.

In conclusion, purposeful introduction, early exposure, and continuous development in engineering concepts can sustain girls' interest and provide them with experiences that can

> **"Schools can help improve females' confidence in the physical sciences and engineering by providing opportunities for these experiences at an early age."**

improve their confidence in engineering. Developing lessons integrating the engineering design process to solve authentic problems across the curriculum provides opportunities for critical thinking and problem solving that will benefit students throughout their schooling. Start early and encourage our girls in engineering! **THP**

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creative leap

and facilitates collective feedback of the girls' poetry, also sharing-out what they had learned in the process of creating their poetry.

Providing opportunities for gifted girls to use creative processes to solve complex problems, translate their experiences into creative products, use intense emotions, and relate to one another, allows for the development of proactive strategies for dealing with stress. **THP**

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IN MEMORY OF GEORGE T. BETTS
APRIL 17, 1944 – AUGUST 3, 2019

"A lifelong learner is one
who loves the moment,
seeks truth, friendship,
knowledge and wisdom.
This person accepts self and others,
and realizes the chance
to make this a better world.

A lifelong learner discovers new paths
for growth, joy,
knowledge and friendship.
the journey begins today…"

—George Betts, 2003

subtly, in the scientific literature, and sometimes blatantly, in sexual harassment. Although the research combining the results of hundreds of studies have shown clearly that females and males are more alike than different in abilities, personality, and needs, the popular media touted small, singular studies of differences as "proof" of boys and girls having different brains. Many parents and educators continue to believe, despite the preponderance of research, that girls are somehow hardwired for nurturing and support and boys hardwired for aggression and achievement. Gifted girls who hear these messages and internalize them believe that they are inherently less able to create, excel, and attain eminence.

The privilege of attending schools for gifted children or full-time gifted programming is still reserved for a minority of gifted girls, while the majority receive their education in regular classrooms with some or minimal differentiation for their needs. Most of gifted girls in school today in the U.S. have spent their entire lives in schools governed by the rules of No Child Left Behind, subject to frequent, high-stakes testing and often in classrooms focused on succeeding on tests.

Two other striking national trends affect the lives of gifted girls: the early onset of puberty in girls and the increase in depression, anxiety, and other psychological disorders. The age of onset of puberty has lowered, according to the 2009 Shriver Report on the status of girls. This has negative effects on gifted girls for several reasons. As almost all studies of eminent people—from Benjamin Bloom's 1985 summaries of the careers of eminent people in various domains, *Talent Development*, and Mihalyi Csikszentmihalyi's study of highly creative adults—high achievement is nearly always linked to later onset of romantic and sexual relationships. Because gifted girls are entering puberty at an average age of eleven, with many as early as nine, they become subject to social pressures to be heterosexual, thin, pretty, popular, and attractive to boys much earlier. The sexualization of girls in

the media, clothing, and games begins earlier. From the 1980's to the present, a sharp increase in eating disorders has negatively affected gifted girls, whose intelligence makes them very effective at discovering extreme dieting strategies. Finally, sexual harassment begins earlier, and combined with the bullying that many gifted students experience, may make gifted girls feel vulnerable and unsafe even in the classroom.

The second trend is the increase in depression and anxiety in adolescents across Western cultures, with more females seeking treatment than males, as documented by recent international mental health epidemiological studies (see suggested reading). Although Jean Twenge, who studies the characteristics of a national sample of each year's freshman class, laid the blame for increased anxiety and depression on the correlated increase in the use of social media, a deeper look into the lives of gifted young women yields a much more complex story. For example, Max Birdnow's and my recent structured focus groups with a total of 120 creatively and academically gifted adolescents, presented recently at NAGC, found that gifted adolescents named academic pressures as their major source of anxiety and depression, followed by worry about environmental, political, and social issues; followed by bullying and competition, with social media coming in last of their concerns. This was in keeping with the Shriver Report on adolescent technology use that found most girls to be savvy and careful users of social media. In the studies Sharon Kurpius and I did of talented at-risk girls for the National Science Foundation gender equity program, we found that low-income gifted girls and gifted girls of color not only suffered from academic pressures, but also the necessity of working to help their families, assisting in childcare, excelling in athletics, maintaining romantic relationships, and saving for college. Gifted girls today seem to be rushed into adulthood both in terms of early sexualization and early adult responsibilities. Trends in gifted teen's experi-

ences of anxiety and depression seem to be tracking those of adolescents in general, but the additional pressures of gifted girls to achieve in both relationships and academics while feeling responsibility not only for their own families' well-being, but for the future of society, seem to be overwhelming.

Given all these challenges for gifted girls and young women, many educators of gifted students wonder where to start and what aspects of gifted girls' development deserve the most focus. Should they focus on gifted girls' confidence, early sexualization, or mental health? Should they be encouraging STEM aspirations and high achievement, or discouraging girls from being too perfectionistic and overcommitted? Fortunately, there are a few attitudes and interventions at each stage of a gifted girl's development that research has shown to enhance both achievement and well-being. An impressive number of findings have shown that one teacher can make a powerful difference in the life of the bright girl.

At the time I was doing the research for the first *Smart Girls*, the only studies available were one dissertation, one journal article, a chapter in a counseling book, and a few passages of Terman's Genetic Studies of Genius that pertained to gifted girls and women. When Robyn McKay and I did our research for the recent book, there were over 5000 publications devoted to the psychology and education of gifted girls and women. We tried to distill from hundreds of the best studies the ways in which parents and educators could help gifted girls achieve their potential while having fulfilling, healthy lives. What follows are some ideas that seem to have the most support from research, but also that teachers may find to be practical and realistic.

● ***Take early reading seriously.*** Gifted girls are more likely to read early (between 3 and 5) rather than at the average age (between 5 and 7). Never assume that a girl who is reading at age three or four is just memorizing or decoding words without comprehension. Studies of precocious readers have

found that actual teaching of reading may not be necessary. Teachers can help by providing a warm, playful relationship involving storytelling, reading aloud, and word play—and of course, by providing plenty of books!

• *Suggest early admission to kindergarten.* When gifted programs are not available, early admittance to kindergarten may be the best option, although there is great resistance to this in many school districts. Teachers can advocate for gifted girls who are advanced in their school skills and at least equal to their peers in social and emotional development and suggest the *Iowa Acceleration Scale* to assess the readiness a girl has for kindergarten.

• *Allow her to play with older children and boys as playmates.* A smart girl's first friend is likely to be an older girl or boy, because it's hard for her to find friends her age who share her interests. Teachers can help by encouraging gifted girls in their friendships by avoiding sex and age segregated play activities.

• *Let her choose not to be a princess.* Peggy Orenstein tells how Disney's discovery of the marketing power of princesses played into pre-school children's rigid, concrete notions about gender categories. A teacher who notices a bright little girl who resists all the glitter and pink tulle can support her by showing understanding and enthusiasm for the ways the bright girl is trying to define herself.

• *Help her stop hiding her abilities.* Compared to gifted boys, gifted girls may draw less attention to themselves in the classroom. Some smart girls have learned to camouflage their abilities by reducing the number of times they raise their hands or by purposely giving a few wrong answers. Make sure you let her know that you see her, and that you understand what she is doing, and help her find a way to show her knowledge without risking bullying.

• *Preserve alone time for her.* Gifted girls are often pressured to play with others when they prefer to be alone. Although gifted girls are likely to have high achievement, the provision of alone time may improve achievement for girls who are bored in school. Finally, for many gifted girls, books are considered their best friends. Allow bright girls to read when their work is done, and at recess.

• *Watch for changes in behavior that come with puberty.* Even if a gifted girl is maintaining high grades and academic self-esteem in adolescence, she might be experiencing anxiety, depression, and a decline in her social self-esteem about her body. She may be more effective in hiding her distress, so teachers need to spot the signs and offer to talk about it and advocate counseling.

• *Provide additional challenge to gifted girls in middle school.* The focus of many middle schools on heterogeneous grouping and collaborative learning may make middle school difficult for gifted girls. She continues to need advanced opportunities. Teachers should make sure that gifted girls in collaborative groups are not doing most of the work.

• *Encourage her participation in challenging academic out-of-school programs.* Talent Search programs and other high quality, accelerated, and enriched gifted programming during summers may provide the extra challenge she needs in middle school. Girls may be more reluctant than boys to take out of level tests and need special encouragement. Low income girls need information about scholarships such as those provided by the Jack Kent Cooke Foundation.

• *Encourage early preparation and career guidance.* Because gifted girls may strive for medical school, law school, and graduate school, they need to begin planning coursework and exploration activities by freshman year of high school. Teachers can help them find career guidance at local colleges and online.

• *Show high expectations for her.* In poor communities, smart girls strive against the low expectations held for their racial or income group. Their teachers may be their only advocate. Challenge them to high aspirations, help them think about and prepare for college, and help them find mentors.

• *Encourage Advanced Placement, International Baccalaureate, and Honors Programs.* These programs offer an escape from boredom and social competition in high school culture. Encourage her to enroll in AP courses for Calculus, Physics, and Computer Science if she has STEM interests—even if she thinks they are too challenging.

• *Suggest dual enrollment.* Dual enrollment in high school and college may be allowed in many school districts, but parents are often unaware of this option. If a gifted girl has special interests that are not available in high school, suggest college courses to fill the gap.

• *Provide positive portrayals of both romantic love and sexuality.* Relationships in high school should prepare smart girls (and boys) for dual-career lives, egalitarian relationships, and shared domestic tasks. Be a role model for healthy relationships and provide media that feature egalitarian partnerships. For gifted lesbian girls, the process of identity development is fraught with difficulty. Teachers can protect them from bullying and verbal cruelty while affirming their identity.

• *Help her with overcommitment to too many activities.* Teachers can spot the gifted girl who is striving for straight A's and excellence in every possible activity. Encourage her to prioritize and limit her activities to those most related to her career goals.

• *Show her how to find her "flow" and fall in love with an idea.* Help her to make college and career decisions based on her deepest values and her experience of "creative flow" rather than on what she thinks are her academic strengths.

These are just a few of the ways teachers can find, teach, and guide gifted girls. For more information and sources for the research supporting these ideas, here are a few suggested readings. **THP**

Suggested Readings

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Grayson Girls: Gifted and Goal-Oriented

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Melissa Bilash is the Founder and Executive Director of The Grayson School. She is a nationally-recognized expert on education and regularly works with prestigious national organizations and institutions serving gifted children.

Alexa Fusselbaugh joined The Grayson School team after graduating from Chestnut Hill College as an athlete with a degree in Psychology. She coordinates athletics and enrichment programs for our prek-12th grade school.

The Grayson School, which serves only gifted children, is small but mighty, having just finished our fourth year with 71 students in grades K-9. The team of women who founded the school has always been aware of issues of gender inequality in and out of the classroom, and we are determined that girls at Grayson not feel secondary, unheard, or invisible. This focus can be tricky to maintain in a population this small because gender balance can change significantly year-to-year. For example, three girls and six boys comprised the K-1 cohort this year, while, as of this writing, next year's incoming kindergarteners include five girls and one boy.

We wanted to proactively ensure that our girls felt valued and had a safe space to talk about issues that concern them. As a result, we created a seven-week pilot program of "Girls' Leadership Lunches" hoping that we might gain insight into the thinking of these girls and the issues or concerns that might be bubbling below the surface. The plan was to extend or expand the program depending on the results we saw. In the end, like gifted children almost always do, they utterly surprised us, and left us with new insights and some tantalizing new directions to explore.

Ladies Who Lunch

A female staff member—whose own gift is excellent rapport with students—facilitated weekly lunch meetings with two groups: three third-grade girls (whose 2nd & 3rd grade cohort is 2:1 boys to girls) and six 6th-8th grade girls (whose cohort is 3:1 boys to girls). We had different goals for the groups: with 3rd grade, we wanted to address cliques, self-concept, and positive competition; the 6th-8th grade group would focus on external pressures, confidence, and toughness/assertiveness.

At the outset, both groups expressed resistance to the very concept of a single-sex lunch, with a great deal of "Why can't there be boys in here?" and "That's not fair," in addition to, "What if someone doesn't *identify* as a girl?" that we really had not foreseen. Given what we know about gifted children's sensitivity to perceived unfairness and passion for social justice (Clark, 1988), perhaps their response should not have surprised us, but the vehemence and persistence of these reactions certainly did, occupying a good chunk of the first two sessions.

We began the series of group lunches with a buy-in activity, a cake decorating "competition," which was unfortunately so enjoyable as to be a bit distracting going forward. However, once we finally got into the substantive part of our meetings, their enthusiasm shifted into reticence and visible discomfort when prompted to talk about feelings and social interactions. It was obvious that we needed a different approach, one that didn't tackle issues head-on (or involve cake), but instead allowed them to focus on a shared goal.

Taking advantage of the warm spring weather, the 3rd grade girls started by playing frisbee outside. Our theory was that physical interaction would be motivating and put them in a non-academic mindset for our first meeting. However, despite these circumstances, starting the first activity brought everything to a screeching halt; asked to write three things they liked about themselves, the girls were completely flummoxed. These specific girls—who are particularly outspoken, confident, and utterly unselfconscious—only generated one answer between them. This somewhat alarming result was a strong indicator that we needed a new plan; just like the 6-8 girls, we would address social-emotional issues indirectly.

Ladies Who Lunch Turned into Ladies Who Lead

Offering the groups an opportunity to lead by creating something new for the school was the key to getting both groups of girls genuinely engaged. It seems that our girls have leadership just waiting to burst out of them and into life—if they have an opportune target, our best bet is to stay out of their way while they take over the world.

Knowing that these particular 3rd

grade girls were very involved in sports and being active with their peers, we offered them a unique leadership opportunity to form an Athletics Committee to help determine the priorities and goals of our program going forward. Because we were moving this summer into a new location with larger fields and athletic facilities, student input would genuinely be useful in our planning. They were immediately enthusiastic, stalking the advisor through the hallways between meetings because they were unwilling to wait a week to do more. In fact, at the very next meeting, the girls came armed with notebooks and overflowing with ideas about uniforms, sports for each cohort, the advantages of intramural versus interscholastic competition, and schools we could pair up with for competitions and tournaments.

Faced with the (intentionally gender-neutral) question, "What can we do to make our school better?" the 6-8 girls planned and executed our school's first Spring Social, an evening gathering at an off-campus community center with music, food, and games chosen by the girls, who also invited the faculty members they wanted as chaperones. The event was a tremendous success, with nearly all the Middle and Upper School students in attendance. This will likely have a permanent place on our school calendar going forward.

Ladies Who Learn

In the end, we did learn quite a bit from our girls' luncheons, but not what we had initially expected. After the program ended, we realized that there were a few things about our students that, despite all our experience with and knowledge about gifted children, we did not foresee. First, and perhaps most importantly, the students themselves were vehement in their resistance to the idea that they should have a separate opportunity based on their gender, and our bifurcation of the student body as XX and XY did not adequately represent the full spectrum of the gender identities of our student body; future groups will need to be open to all interested students to avoid inadvertently excluding and/or marginalizing someone.

Interestingly, they seemed most surprised about our creation of special lunches addressing gender-specific issues because, to use their language, "that's not a thing." While the world at large is definitely not "post-gender," perhaps these girls actually *are*, to some degree. The 3rd grade girls practically snorted in derision at the very idea that anyone had ever thought girls can't do everything boys can do. They are often the first ones to point out misogyny in primary source material in social studies or in literature in English class (and yes, they use that term as young as 4th grade!). The 6-8 girls were definitely more aware of gender as an issue, but it seemed more tangled up with typical adolescent identity formation and ideas about sexual orientation than about any kind of patriarchal stifling they had experienced from male adults or peers.

Finally, our girls were uncomfortable when we tried to address social-emotional issues directly. They did not lack the vocabulary or metacognitive skills to discuss things; they simply weren't having it. The source of discomfort was unclear—was it embarrassment to discuss personal feelings or reticence to explore emotional topics with this particular adult? All the girls have been at Grayson for over a year (with one exception), so it was not shyness around "new" people. Observation leads us to believe that none of these were likely the answer. We do know that gifted children may be loath to take risks (Frey, 1998), so this form of emotional vulnerability may have been too big of a leap for them. Shifting the groups' focus to leadership opportunities completely changed the dynamic, transforming the girls into vocal and zealous participants. They found the new projects meaningful, which of course is crucial to motivation and achievement (Reis & Hebert, 2008).

The conflict we were trying to mitigate—between the drive for self-actualization and society's expectations for girls—may be effectively dampened via agency and its resultant self-efficacy. The invisibility we were worried about may be far less possible in a micro-grouped class of three students, for example, or in an independent study course of their own design, or when participating in an elective they created and proposed themselves. Perhaps our diligence and conscientiousness about carefully grouping students for optimal academic growth has yielded an unintended positive side effect: our girls may not feel unseen or unheard because their educational environment is intentionally crafted with so much obvious focus on their individual needs that we have, to some degree, blunted the impact of gender imbalance and pressures.

Our "girls' lunches" morphed into "girls' leadership lunches," and the results, if not what we expected, were undeniably positive. Next year, we may instead hold weekly "power lunches" completely free of references to gender, instead offering all our students the opportunity to create something new to contribute to our school culture. Lunch, despite its time limits, seems a perfect time for our students to confidently blaze new trails—and evidently, it's just the right amount of time for them to change their world. **THP**

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taking the LEAD

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Leading Gifted Girls to Redefine Their Definition of Success

Over my time in education, I have been inspired by the gifted girls who I was fortunate to teach. These girls push themselves far beyond expectations, hold leadership roles in schools, maintain involvement in extracurricular activities, and are successful in school. Shockingly though, if you ask these girls if they feel successful, they still feel there is more to do. With this population, I find it is important to help them redefine their definition of success.

How does one define success? The answer can be difficult to articulate. Finding success should be a personal endeavor, however, gifted girls are living in a time when society often dictates what success should look like. Many gifted girls spend years trying to achieve success only to find that others perceptions may not match their own ideals.

I was interested to see where some of the gifted girls from my teaching career had ended up and what they remembered from their educational experience. I reached out to former students, now young adults, and asked them to reflect. One theme that came to light was the impact of caring teachers. One student, Rebecca, stated, "I was very fortunate to have at least one teacher in each grade who supported me and was very patient. I could easily say that I was able to succeed because of something I learned, but in truth, I know it was because no one gave up on me." Our mental and personal well-being are greatly influenced by the quality of our personal relationships. We can never underestimate the importance of one caring teacher in the lives of our gifted girls.

Another theme that emerged was letting go of the expectations of others. The girls I interviewed felt that attending a traditional four year college was "the path" expected and any deviation would be considered a lesser choice. The reality is that utilizing community colleges would have saved money, allowed for more successful transitions, and allowed for trying a course outside of their degree path. One student stated that she wished she had been told, "Just because you start at a community college does not invalidate your success." While the traditional college route fits the needs of a majority of our gifted students, we know that they don't always fit the norm.

For gifted girls, knowing a caring adult is there to provide guidance makes a world of difference for them. In this complicated and often misunderstood world, it is up to us to show them the way, even if only the beginning. They have to start somewhere. In order for gifted girls to find individual success, it is up to us to lead the way for them. I leave you with five ways to support the gifted girls in and outside of your classroom.

1 **Explicitly teach self-care.** Taking time to care for ourselves is the most crucial thing we can do, yet when we are stressed or have too many responsibilities, this is the action item most likely be eliminated.

2 **Be clear with expectations.** If the gifted girls in front of you are anything like the girls I have worked with, then the expectations and goals they set for themselves are far greater than mine. Check in regularly with these girls and have them summarize their own expectations of the assignment.

3 **Meet and Greet!** Bring in speakers who can share what their path through their education and career looked like. Hearing the experience of what others have been through allows for gifted girls to hear that there are many paths to success.

4 **Allow for failure.** Mistakes are how we learn. Gifted girls need to understand that failure is part of success. Instead of becoming crippled when failure hits, help gifted girls foster a growth mindset. Share stories about successful women who overcame failure; Oprah Winfrey was fired from her job as a television anchor, J.K. Rowling's Harry Potter manuscript was rejected by multiple publishing companies, Stephanie Meyer wrote to 15 literary agencies and received 14 rejections.

5 **Present alternate options.** Introduce the multiple pathways to success that exist. These may be nontraditional schooling options, gap year volunteer opportunities, specialized programs and enrichment, and summer immersion programs. **THP**

the DIGITAL ecosystem

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Gifted Girls and Coding

Now that the school year is underway and the holiday season is upon us, I want to challenge you to Winter Break reading. On February 13, 2019, the New York Times Magazine published a feature story titled, *The Secret History of Women in Coding,* written by Clive Thompson. The article's sub-headline asserts that computer programming once had a better gender balance than it does today, then it asks, "What went wrong?" This enlightening piece initially focuses on Mary Allen Wilkes, a pioneer computer programmer and logic designer who was instrumental in developing the LINC computer, the world's first personal computer. After documenting Mary Allen's ground breaking work, and the impressive contributions of other female programmers, Thompson turns the reader's attention to the late 1970s and early 1980s and explores the reasons for the decline of female participation in the computer science field. The author asserts that the primary cause for the change was the advent of the home personal computer and stereotypical perception that only boys were interested in computers. During this period, mass media portrayed computer gaming as a predominately male pursuit and many k-12 schools steered young females away from computer-focused experiences.

After detailing the computer science field's existing gender gap, Thompson describes the renaissance that has taken place over the past few years and culminates by highlighting the results of a 2017 hackathon hosted in New York City by TechCrunch. The winning team consisted of three high school girls who created a virtual-reality app to test children for signs of A.D.H.D.

It is now our time to act. As you make preparations for the second part for the school year, I implore you to read Thompson's article and hope you are inspired to implement at least one program into your existing curriculum that will encourage girls to learn about coding. Depending on your coding and programming skills, this request might feel daunting. However, as we have discussed in previous columns, a robust classroom digital ecosystem is characterized by providing opportunities for students to engage in relevant experiences whereby they expand their digital horizons. Remember, you do not have to be the expert, you only have to be the facilitator. The resources described below can help support a robust digital ecosystem.

Girls Who Code

One resource to explore is the Girls Who Code (girls whocode.com) website. This organization is committed to increasing the number of women who enter the computer science field. Founded by Reshma Saujani in 2012, Girls Who Code helps educators integrate computer programming, robotics, and web design into the secondary curriculum. The website disseminates news stories and promotes coding-focused educational programming that builds a stronger sisterhood of female programmers. While exploring this site, I encourage you to navigate to the *'Start a Club'* page and how you can start a club in your local school.

Black Girls Code

Founded in 2011 by electrical engineer Kimberly Bryant, Black Girls Code (BGC) (www.blackgirlscode.com/) is a nonprofit organization whose mission is to teach young women of color with the necessary skills to fill the expanding number of jobs in the STEM fields. One of the many programs sponsored by BGC is a hackathon where participants design functioning software program products. For BGC, the goal is to empower, "…future generations of tech divas and show the world that black girls can code." As you plan for the next school year, I encourage you to contact this group and collect resources to start a chapter in your school.

TechGirlz

Founded in 2010 by Tracey Welson-Rossman, TechGirlz's (www.techgirlz.org/) mission is to inspire middle school girls to realize their potential by exploring the possibilities of technology focused careers. Middle school is an important time for capturing the imaginations of gifted girls because it is a time when many of them begin to mask their giftedness. TechGirlz offers a variety of programming options that teachers can leverage in ways that make integrating coding into the classroom easy. The most practical approach for teachers of any technology proficiency level is the TechShopz in a Box. This option offers free workshop plans, documents, and guides that allow any teacher to coordinate a hands-on workshop for middle school girls.

Conclusion

For years, the research on gifted girls has concluded that teachers need to broaden the range of activities in which talented girls can explore their talents and learn how to maximize their abilities. As you will learn from Clive Thompson's article, women have been pioneers in the computer programming field. By committing the time before the end of this school year to creating specialized programming that focuses on girls and computer science, you can inspire the next generation of gifted girls to take their rightful place as the torch bearers of innovative coding. **THP**

Northwestern University's
Center for Talent Development

PROGRAMS & RESOURCES FOR EDUCATORS, STUDENTS & FAMILIES

Center for Talent Development

at Northwestern University is dedicated to helping gifted students reach full potential. CTD's pathways approach leads students on a journey of intellectual, emotional and social growth.

CTD provides research-based assessment and advanced enrichment and accelerated, credit-bearing programs for students. For schools and educators, CTD offers professional development, program evaluations, and collaborative programming.

Resources for Schools and Educators

> Professional Development

> Gifted program evaluation

> Policy development and policy writing assistance

> Job opportunities (Summer, Weekend, and Online programs)

Partnership Opportunities

> Enrichment and acceleration programming for students (online, hybrid, weekend, and summer)

> Programs for parents (workshops, webinars, online community)

> Assessment of academic needs and monitoring for growth

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