

STEM Depiction Opportunities

Inspiring a diverse generation of science, technology, engineering, and math (STEM) innovators.

STEM Workers Supply vs. Demand Mismatch: STEM fields are essential to America’s economic growth and global competitiveness; however, there is currently a mismatch between the supply and growing demand for STEM-skilled workers. Today there are over **half a million unfilled jobs** in information technology across all sectors of the economy, which reinforces the notion that [computer science](#) has become a basic requisite for 21st century jobs. Economic projections indicate that by 2018, there could be **2.4 million unfilled STEM jobs**. The STEM employment gap is further compounded by persistent diversity challenges, as women and minorities, who comprise 70% of college students but less than 45% of STEM degrees, represent a largely untapped talent pool. In order to sustain American innovation, there is an opportunity to tackle this issue from all angles—from inside the classroom, to workplace culture, to entertainment media.

Hope for the future—power of STEM and storytelling interface: Popular entertainment media is powerful—it can influence the public’s perceptions towards STEM by shaping, cultivating, or reinforcing the “cultural meanings” of STEM fields and careers. For example, as a result of the introduction of various fictional CSI crime shows in 2000, the public became fascinated with the science behind crime-scene investigations. Termed the “**CSI effect**,” the positive, dramatic portrayal of forensic science resulted in significant increases in forensic science program applications at universities, with **undergraduate and graduate degree enrollment in these programs almost doubling from 2000 to 2005**. Because children and teens often consume large amounts of entertainment media, media presents a valuable opportunity to supplement the work of America’s STEM teachers by providing information and role models that can inspire students to persist in STEM studies. In addition, positive STEM imagery and messaging can help enable exploration of STEM, guide parents on how to provide support, and illustrate the connection between classroom study and the array of STEM careers.

Current Representations of STEM in Entertainment Media: However, in depictions of STEM professionals in family films, men outpace women 5 to 1, and when it comes to portrayals of computer scientists and engineers, men outpace women 14.25 to 1 in family films and 5.4 to 1 in primetime. Rather than continue to normalize inequality through these stories, the entertainment industry has an opportunity to paint the picture of an inclusive STEM workforce the Nation aspires to achieve, and reflect the exciting aspects and social impacts of STEM jobs. Targeted efforts by the entertainment community to increase positive STEM content holds great promise to promote significant and sustained changes.

OVERARCHING GOAL: To support the inclusion of diverse and compelling STEM images, stories, and positive messages in mainstream entertainment media in order to help promote greater diversity in the STEM workforce.

There are three main goals for STEM-related depictions in entertainment media:

- (1) Include diverse STEM role models (past and present).** Expand portrayals of STEM professionals by incorporating **character flips** or adding diverse **characters (including female, minority, and people with disabilities, among other underrepresented groups)** who use STEM in their jobs or have STEM jobs. Role models play an important role in shaping the future aspirations of youth and adults alike—they can help students envision themselves as STEM professionals, enhance perception of STEM careers, and boost confidence in studying STEM subjects.
- (2) Highlight the breadth of STEM careers and societal impacts.** Effective depictions emphasize **social impacts** and **exciting** aspects of STEM work, inspiring students to tackle pressing challenges of the 21st century in the United States and abroad. Stories could also illustrate the range of STEM jobs and **rebrand “middle-skill” jobs**, e.g., software development, advanced manufacturing, and healthcare technicians. Portrayals of youth participation in **outside-the-classroom STEM activities** (e.g. coding camps) underscore the importance of informal STEM learning.
- (3) Debunk STEM stigmas and misconceptions.** STEM is often perceived as **boring, too difficult, and “not for everyone.”** Plot elements could reinforce that intelligence and aptitude for STEM is not a fixed trait determined by qualities such as ethnicity or gender, but rather is developed through effort, practice, and persistence. Tactics to overcome **stereotype threat**, in which members of underrepresented groups may fear that their performance will confirm negative stereotypes about their group, can also be addressed. In addition, portrayals of **parental engagement** in nurturing their children’s natural curiosity and STEM interests can help empower parents to feel less intimidated by STEM. Finally, depictions of **effective STEM teachers** who convey enthusiasm about STEM and employ **active learning** strategies in the classroom can also inspire viewers.