

Chapter 47

Girls Building Androids and Robots: Equality in STEM With the Media Program *Annedroids*

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ABSTRACT

*There is still a considerable degree of catching up to do in regards to fostering gender equality within areas of STEM (Science, Technology, Engineering, and Math). Children's leading medium, television, could offer role models of girls with competence in STEM areas, but unfortunately television programs often miss this chance. The children's television series *Annedroids* is a notable exception. This chapter provides insight into how children can be educated about gender equality in STEM with the aid of gender-sensitive media programs such as *Annedroids*. The chapter examines data from a reception study which was conducted under the leadership of the International Central Institute for Youth and Educational Television (IZI) with 6- to 12-year-old children in the United States and Canada ($N = 301$). The research is enhanced by a conversation between Dr. Maya Götz, Head of IZI; Dr. Diana Nastasia, a contributor to the IZI research; and J. J. Johnson, the program's creator.*

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Nick, an 11-year-old Afro-Canadian boy, is new to the neighborhood, moving in opposite a mysterious scrap yard. Shania, his bubbly, slightly overweight new friend, tells him that they sometimes have strange power cuts and that things disappear behind the high walls. Nick breaks into the scrap yard through a secret door and is discovered by an enormous robot which chases him, captures him, and takes him to his creator. The robot's creator stands before Nick in dungarees and a welding mask, clueless as to what to do with the intruder. "It is impolite to spy on people," she says and raises her welding mask. "You are a girl," realizes Nick to his astonishment. "You are a boy," replies the 11-year-old inventor, Anne, matter-of-factly.

INTRODUCTION

There is still a considerable degree of catching up to do in regards to fostering gender equality within areas of STEM (Science, Technology, Engineering, and Math). The stereotypical assumption that STEM is – by gender – a strength of boys (Moss-Racusin, Molenda, & Cramer, 2015; Watt & Eccles, 2008) still prevails, in spite of extensive research documenting that gender differences in STEM ability and achievement are impacted by cultural practices rather than biological factors (Halpern et al., 2007; Myers, Jahn, Gailliard, & Stoltzfus, 2011).

Research evidence has also shown that gender models are of key importance for challenging this stereotype (Maltese & Tai, 2011; Shapiro & Williams, 2012). There is a need for positive role models in public discourse, to bridge girls' and women's reduced presence and experience in STEM fields (Margolis & Fisher, 2002) by depicting how they quite evidently and competently know, apply, and even invent technologies.

The media - especially children's leading medium, television - can make a vital contribution to providing such role models. Children use the symbolic material that the media offer in their everyday lives, and integrate parts of it into their perception of themselves and the world (Götz, 2014). Reference in symbolic material to girls' STEM-related talents can help develop interests related to STEM and trust in one's own ability regarding STEM activities (Jacobs, Davis-Kean, Bleeker, Eccles, & Malanchuk, 2005; Cvencek, Meltzoff, & Greenwald, 2011). A highly relevant task of children's media programs would be to foster gender equality by creating counter-stereotypical imagery which shows that girls can be savvy in what concerns technology and can, for instance, be involved in building and operating androids and robots.

Yet, unfortunately, the reality is different. A worldwide analysis of over 26,000 main characters of children's television shows reveals that, so far, it is still an exception that girls and women media characters apply science and technology at all (Götz & Lemish, 2012). Another analysis of children's knowledge programs in the United States, Great Britain, and Germany also reveals that, although STEM fields are in a dire need for girl and women contributors, in the media, female characters involved in STEM appear only in exceptional cases; and, if they do appear, they serve as "accessory parts" (Schlote, 2013). Examinations of children's television and prime-time television have shown that women are extremely rare in roles of scientists and technology experts, and if they are cast in such roles, then they are stereotyped and sexualized (Chimba & Kitzinger, 2010; Dudo et al., 2011; Steinke et al., 2007). Unfortunately, so far, children's television misses to a great extent the mission of fostering gender equality in regards to STEM. One notable promoter of this mission is the series, *Annedroids*.

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