Google

Hyperlinked

Unlocking the Potential of Computer Science Careers for Young Girls

A Creative Futures Findings Brief
by Thicket Labs

thicket

Young girls who have seen season one of YouTube Red's original series *Hyperlinked* are now 11% more likely to be interested in Computer Science careers than viewers who have not watched *Hyperlinked* according to research conducted by Thicket Labs. Based on study findings, positive media portrayals of computer science careers and girls who code have the potential to reshape the tech industry, now and in the future.

Hyperlinked is a YouTube Red original series that shows a cool and diverse group of girls with sharp programming skills solving tech problems and everyday middle school issues. Google commissioned Thicket Labs to survey *Hyperlinked* viewers to find out to what extent, if at all, the show might influence young girls' interest in pursuing computer science careers.

Key Findings

- According to Thicket Labs in a commissioned study, viewers who have watched YouTube Red's *Hyperlinked* are 11% more likely to be interested in Computer Science careers than viewers who have not watched *Hyperlinked*.

- *Hyperlinked* is strongly associated with positive perceptions of the field of computer science and encouragement from friends—two of the four major factors that explain a young girl's decision to pursue computer science.

Reversing Trends Through Media Portrayals

Google believes that a more inclusive workforce leads to better products for all users, and is especially committed to reversing the negative trends around women in Computer Science (CS). The [Google CS in Media team](#) partners with content creators and media influencers to increase more diverse portrayals of CS in media content.

Today, women make up just 18% of CS degrees, down from 37% thirty years ago.[1] The Google CS in Media team works to reverse this trend, by influencing the key drivers that motivate young women and underrepresented groups to pursue computer science. Among young girls, encouragement from friends and family, exposure to computer science, self-perception, and perception of the field of computer science are leading factors for choosing computer science as a career. Together, these four factors make up about 60 percent of the career decision.

In 2017, YouTube Red launched *Hyperlinked*, a scripted original series about a group of five friends who come together to create their own website for girls by girls while dealing with typical tween issues involving friends and growing up. The series, which stars tween music group L2M, aims to encourage coding among young girls by prominently featuring coding and tech activities among its storylines.

The series convened a tech advisory board, including Madeline Di Nonno (CEO, Geena Davis Institute on Gender in Media), Kimberly Bryant (Founder and CEO, Black Girls CODE), Rosalind Wiseman (Best selling author of Queen Bees & Wannabees), Jess Weiner (CEO, Talk to Jess LLC) and Michael Cohen Ph.D. (President, Michael Cohen Group LLC (MCG)). This team served as advisors on the series, working with the production team at every stage to make sure that girls in STEM were being portrayed accurately and that the show was modeling positive messages around girls and their relationships with each other.

To evaluate the impact of *Hyperlinked* on its viewers and test whether the show has the potential to influence young girls and underrepresented groups to pursue CS, Google's CS in Media and CS Education Evaluation teams worked with Thicket Labs to field two surveys before and after its premiere and reached a combined 998 TV viewers, out of which 623 had watched *Hyperlinked* on YouTube Red.

A Positive Influence at a Critical Age

Viewers who have watched YouTube Red's *Hyperlinked* are 11% more likely to be interested in Computer Science careers than viewers who have not watched *Hyperlinked*.

Who's Watching *Hyperlinked*

Previous research has found that few TV portrayals of females or characters from under-represented racial/ethnic groups show them engaged in CS.[2] *Hyperlinked* breaks prevailing stereotypes to show young, female middle school students taking active roles in creating websites and engaging in other CS-related activities. *Hyperlinked* has struck a chord with a similar demographic to its main characters.

[1] Corbett, Christianne and Catherine Hill. "Solving the Equation: The Variables for Women's Success in Engineering and Computing." *AAUW*. 2015. Retrieved from: https://case.edu/ideal-n/media/caseedu/idealn/documents/AAUW-Solving-the-Equation-Report-2015.pdf

[2] Smith, Stacy et al. "Cracking the Code: The Prevalence and Nature of Computer Science Depictions in Media." Media, Diversity, & Social Change Initiative, *USC Annenberg*. 2017.

Reflecting Audience Activities and Interests

The five main characters of *Hyperlinked* directly reflect their audience—young, female, friendly, smart, and caring—which is why it's important for their viewers to see them modeling positive choices and behaviors. Middle school is a critical age for social encouragement from friends, and *Hyperlinked*'s five main characters model supportive social relationships for their viewers.

Forecasting the Long-Term Impact of *Hyperlinked*

The bulk of investment that goes into the development of original programming takes place upfront, before audiences have a chance to weigh in. The Google CS in Media program works with content creators and media influencers to use bias busting strategies for creative and business decisions.

Similar to economic modeling, decision modeling analyzes the impact of interdependent social influences as they evolve over time. This type of long-term forecasting is an ideal way to test the staying power of programs like *Hyperlinked*, which attempt to instill long-term change to guide a young person's decisions over the course of years. Modeling conducted by Thicket Labs shows that a sustained impact from watching *Hyperlinked* is projected to stay with viewers over time.

Methodology

We surveyed young TV viewers about their perceptions, affinities, and choices to evaluate whether watching the YouTube Red Original series *Hyperlinked* has an impact on their likelihood to choose Computer Science as a field of study or career. Our evaluation is based on a prior Google-sponsored research study by Thicket Labs that quantifies the factors that influence girls to choose Computer Science as a predictive model. This decision model can be used to generate scores on factors that predict a young woman's likelihood to choose Computer Science. Our evaluation model uses the CS decision model scoring criteria as a basis to simulate likelihood to choose CS in the future.

The *Hyperlinked* evaluation study used two research products developed by Thicket Labs to evaluate the impact of behavior change programs.

- The **Career Decision Quiz** uses decision modeling to quantify and simulate an individual's likelihood to choose an outcome in the future.
- The **Audience & Identity Quiz** uses cognitive mapping to understand how an individual is influenced by character and storytelling choices.

Surveys were distributed to young TV viewers who were the target demographic for the YouTube Red Original series *Hyperlinked*.

- The **Career Decision Quiz** reached 542 survey takers to measure the impact of watching *Hyperlinked* on their likelihood to choose to study or work in computer science in the future.
- The **Audience & Identity Quiz** reached 460 survey takers to measure how viewers related to the characters on *Hyperlinked* in terms of personal identity and preferences. 100% of survey takers had seen *Hyperlinked*.

Because of the complex nature of a big decision like choosing a career, modest increases in several factors going into a decision is more powerful than a large increase in a single input. Thicket Labs specializes in using the science of decision modeling to forecast the long-term impact of social programs on people's perceptions, attitudes, behaviors, and choices. Similar to economic modeling, Thicket Labs' decision models allow for the impact of interdependent social influences to be projected as they evolve over time. Decision models for this evaluation were built from prior Google research on the decision factors that go into choosing CS as a field of study.[3]

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[3] "Women Who Choose Computer Science—What Really Matters." *Google*. 2015. Retrieved from: https://docs.google.com/file/d/0B-E2rcvhnlQ_a1Q4VUxWQ2dtTHM/edit.