Fourth Industrial Revolution

What is iQ: smartparent?

iQ: smartparent is an Emmy-winning multimedia television and web series designed for parents that will empower them with new knowledge, tools, and abilities to successfully guide their children through the changing landscape of digital media and technology. It's a growing community of caregivers, national experts, educators, and parent bloggers who want to understand the opportunities and challenges of media as it relates to the development of their children. *iQ: smartparent* was created by WQED Multimedia in 2012.
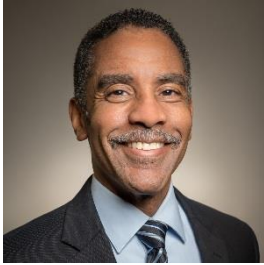
About this Episode

Experts say we've arrived at the Fourth Industrial Revolution… and it requires a fusion of hands-on skills *and* high-tech knowledge. Breakthroughs in innovative technologies are already re-shaping the way we live… but what do these changes mean for today's young people? According to one report, 2/3 of today's five-year-olds will, in about 15 years, find themselves in jobs that don't exist right now. This episode of *iQ: smartparent* provides insights and action plans to help families understand and prepare for the jobs of the future.

Discussion Questions

1. Automation is everywhere. Where do you see examples of automation in your job or life?

2. It is a common myth that manufacturing is dull, dirty, and dangerous. How can we change the perception of manufacturing? Where can students find opportunities to be exposed to different job opportunities in fields they may have not considered before?

3. We are all guilty of using technology passively to pass the time or to do something mindless, but what are some ways we can use technology resourcefully to make us smarter in our everyday lives? Is there some way you can use technology differently from how you usually use it to be more productive?

4. Throughout the episode, the guests talk about being lifelong learners to keep up with the job market. How can you inspire children to be lifelong learners? In what ways are you a lifelong learner? How can you and your children be curious, critical, and engaged with technology?

5. Our guests talked about creative destruction and transformation of jobs. What are your thoughts on how jobs may change and the idea that new jobs will be created when some jobs are eliminated due to automation?

6. Why is it important for workers to be aware of policies at their companies and to be able to get their voices and opinions heard?

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About the Guests

Dr. Byron Clayton is the Chief Executive Officer of Advanced Robotics for Manufacturing (ARM). Founded at Carnegie Mellon University in January 2017 and now operating as an independent non-profit, ARM is a national, membership based consortium dedicated to asserting U.S. leadership in manufacturing by accelerating the commercialization of innovative robotic technologies and empowering American workers to obtain advanced manufacturing jobs. By lowering economic, technical, and operational barriers, ARM and its members help manufacturing enterprises of all sizes adopt robotic solutions and hire a labor force prepared to work collaboratively with robots. With close to 200 member organizations, ARM is leading 29 projects to achieve its mission, with 20 more projected to start in 2019. ARM's membership consists of manufacturers of all sizes, academic institutions and community colleges, technology companies, and economic development organizations. Prior to his appointment as ARM CEO in January 2018, Dr. Clayton served as the President and CEO of Research Park Corporation (RPC), an economic development organization serving Baton Rouge, Louisiana. Dr. Clayton also previously led regional innovation clusters in printed electronics, advanced energy, and water technologies while based in Northeast Ohio, and has more than 25 years of experience developing, commercializing, and implementing advanced manufacturing systems and software.

Tom Mitchell is the E. Fredkin University Professor at Carnegie Mellon University, where he founded the world's first Machine Learning Department. Mitchell's research lies in machine learning, artificial intelligence, and cognitive neuroscience. His current research includes developing machine learning approaches to natural language understanding by computers, as well as brain imaging studies of natural language understanding by humans. His Never Ending Language Learner computer program searches through web pages 24/7 as it teaches itself to read. His projects have been featured on CBS's "60 Minutes," PBS's "NOVA Science NOW" and Werner Herzog's 2016 feature documentary, "Lo and Behold." More recently, Mitchell has explored how machine learning, and information technology in general, will affect jobs. He co-chaired a study by the National Academies of Sciences, Engineering and Medicine that produced a 2017 report on technology and the U.S. workforce. Mitchell earned his undergraduate degree in electrical engineering at Massachusetts Institute of Technology and his Ph.D. in electrical engineering with a minor in computer science at Stanford University. He has published and lectured extensively, including at the World Economic Forum's prestigious Davos conference.

For more information about Mitchell's work:
- o www.cmu.edu/bme/People/Faculty/profile/tmitchell.html
- o www.cmu.edu/risk-reg-center/people/tom-mitchell.html

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Rachel Korberg is a Program Officer at the Ford Foundation where she leads a portfolio of grants, partnerships, and investments that aim to build a more just and inclusive future for workers. Previously, Rachel was an Associate Director at the Rockefeller Foundation where she led economic opportunity initiatives. Earlier, she worked in impact investing, strategy, and evaluation, including as a vice president of a boutique investment firm and as a research assistant to a former World Bank President. Rachel has a Master's Degree in Global Affairs from Yale University. She proudly serves on the Board of the Stonewall Community Foundation and lives in New York City with her wife and young daughter.

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Online Resources

WQED *Future Jobs* initiative www.wqed.org/future-jobs/resources

What's So Cool about Manufacturing – Video Gallery www.whatssocool.org/

Advanced Robotics for Manufacturing (ARM) Institute http://arminstitute.org/

Carnegie Mellon University – The Fourth Industrial Revolution
www.cmu.edu/news/stories/archives/2016/january/the-fourth-industrial-revolution.html

Georgetown University – Center on Education and the Workforce
https://cew.georgetown.edu/

Georgetown University – Center on Education and the Workforce – *Reports and data*
https://cew.georgetown.edu/publications/reports/

Bureau of Labor Statistic – Occupational Outlook Handbook www.bls.gov/ooh/

O*NET Online – Occupational searches, data, and resources www.onetonline.org/

The Good Jobs Project: Good Jobs That Pay Without a BA https://goodjobsdata.org/

American School Counselor Association – Position Statement on Career and Technical
Education www.schoolcounselor.org/asca/media/asca/PositionStatements/PS_CTE.pdf

Advance CTE
- CTE Fact-sheets – Know the Issues https://careertech.org/fact-sheets
- Resources https://careertech.org/resources
- Understanding *Strengthening Career and Technical Education for the 21st Century Act (Perkins V)* www.careertech.org/perkins

National Association of Manufacturers www.themanufacturinginstitute.org/

National Association of Manufacturers – Top 20 Facts about Manufacturing
www.nam.org/facts-about-manufacturing/

National Research Center for Career and Technical Education www.nrccte.org/

NACTE – National Assessment of Career and Technical Education – *Report to Congress*
www2.ed.gov/rschstat/eval/sectech/nacte/career-technical-education/final-report.pdf

National Center for Education Statistics – CTE surveys and statistics
https://nces.ed.gov/surveys/ctes/

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Pew Research Center – The State of American Jobs
www.pewsocialtrends.org/2016/10/06/the-state-of-american-jobs/

JFF - Making Work-Based Learning Work
https://jfforg-prod-
prime.s3.amazonaws.com/media/documents/WBL_Principles_Paper_062416.pdf

The Center for Apprenticeship & Work-Based Learning
https://center4apprenticeship.jff.org/work-based-learning/

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