

Technologies that Meet Unique Needs



Introduction

On a daily basis, we all benefit from technological tools designed to make our lives easier: Typing has removed the challenge of decoding colleagues' bad handwriting, email enables faster communication, and apps simplify tasks from finding a parking space to shopping for groceries. But for some people, technologies play a *vital* role in developing skills or overcoming obstacles to daily tasks. **Sometimes, technologies are intentionally designed to meet special needs. Other times, technologies that were developed for general use are adopted in niche ways beyond what the developers could have imagined to meet the needs of others.**

Today's case focuses on technologies that meet unique needs. In part 1, you will watch Neil Harbisson as he explains a technology created just for him; Neil was born without the ability to see any color, but his world has become much brighter thanks to a new technology. The "eye" Neil uses to experience color is an example of assistive technology. The National Center for Learning Disabilities explains: "Complex, high-tech tools as well as common, more low-tech devices are all examples of *assistive technology*. The purpose of these teaching and learning tools and assistive technology devices is to help people work around specific deficits rather than fixing them. They are intended to help people with learning disabilities of all ages to reach their full potential, giving them greater freedom and independence along the way."

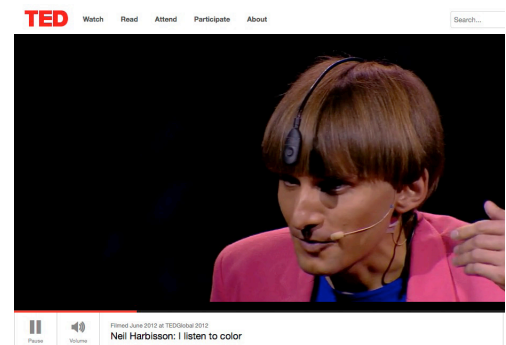
In part 2, you will read mom Judith Newman's article, "To Siri, With Love." Newman describes how her son — who has autism — became friends with Apple's Siri (yes, the virtual assistant!). Siri was not developed specifically to engage kids with autism, but you'll see that Siri is well-suited for Newman's son.

The Case: Part 1

Assistive technologies enable kids and adults with special needs to work around individual challenges and thrive. Advances in technology have led to major advances in assistive technologies that can help both kids and adults with a wide range of different needs. (Depending on how much time you have, you can watch up to 2 minutes, 5 minutes, or the full 9 minutes.)

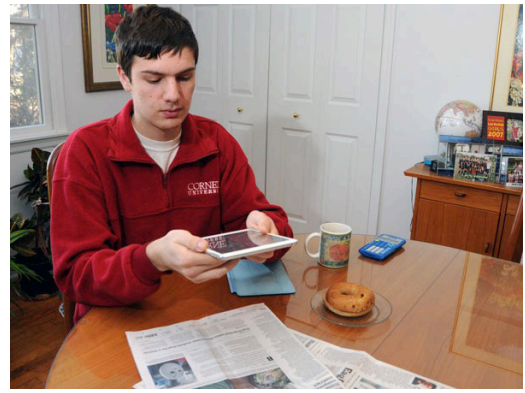


http://www.ted.com/talks/neil_harbisson_i_listen_to_color?language=en



Neil Harbisson's struggle – and the device he uses – are quite unique. However, there are certainly more common perception and processing challenges that are also helped by assistive technologies. For example, dyslexia, which is the most common learning disability, is a reading disorder that alters the perception and processing of symbols. Assistive technologies facilitate reading and writing for students with dyslexia in a variety of ways. Brian Meersma, who is now a freshman at Cornell, is severely dyslexic. In an article about Brian in *The Inquirer*, he is shown with an iPad in hand, scanning a newspaper story (picture below). The app is an example of a text-to-speech translation software, meaning that it will convert the text into audio and allow Brian to listen to the content.

Dragon, a speech-recognition software, is another assistive technology that helps kids with dyslexia thrive. A child (or anyone!) using Dragon can speak his or her answers to homework questions — or even a full-length essay — and have thoughts translated into typed text. Other tools, like a pen with a recording feature to audio-record class notes, make studying more feasible for students with or without dyslexia who write slowly.



Consider

- What stands out to you about Neil Harbisson's talk or the example of AT for dyslexia?
- What are the most helpful technologies you use in your adult life? What makes them so great?
- Do you think there are any drawbacks to using assistive technology in either Neil's case or Brian's case?
- What are some of the ways technology has changed learning and school from when you were a kid?
- Neil says, "At the start, though, I had to memorize the names you give for each color, so I had to memorize the notes, but after some time, all this information became a perception. I didn't have to think about the notes. And after some time, this perception became a feeling." Can you think of other ways that technology has changed the way you think or feel? Are there any ways your use of technology has become automatic in the way Neil describes?

The Case: Part 2

"To Siri, With Love: How One Boy With Autism Became BFFs With Apple's Siri." Judith Newman

Just how bad a mother am I? I wondered, as I watched my 13-year-old son deep in conversation with Siri. Gus has autism, and Siri, Apple's "intelligent personal assistant" on the iPhone, is currently his BFF.

(...) It all began simply enough. I'd just read one of those ubiquitous Internet lists called "21 Things You Didn't Know Your iPhone Could Do." One of them was this: I could ask Siri, "What planes are above me right now?" and Siri would bark back, "Checking my sources." Almost instantly there was a list of actual flights — numbers, altitudes, angles — *above my head*. I happened to be doing this when Gus was nearby. "Why would anyone need to know what planes are flying above your head?" I muttered. Gus replied without looking up: "So you know who you're waving at, Mommy."

(...) Gus speaks as if he has marbles in his mouth, but if he wants to get the right response from Siri, he must enunciate clearly... She is also wonderful for someone who doesn't pick up on social cues: Siri's responses are not entirely predictable, but they are predictably kind — even when Gus is brusque. I heard him talking to Siri about music, and Siri offered some suggestions. "I don't like that kind of music," Gus snapped. Siri replied, "You're certainly entitled to your opinion." Siri's politeness reminded Gus what he owed Siri. "Thank you for that music, though," Gus said. Siri replied, "You don't need to thank me." "Oh, yes," Gus added emphatically, "I do."

Siri even encourages polite language. Gus's twin brother, Henry (neurotypical and therefore as obnoxious

as every other 13-year-old boy), egged Gus on to spew a few choice expletives at Siri. “Now, now,” she sniffed, followed by, “I’ll pretend I didn’t hear that.” (...) Gus almost invariably tells me, “You look beautiful,” right before I go out the door in the morning; I think it was first Siri who showed him that you can’t go wrong with that line.

(...) For most of us, Siri is merely a momentary diversion. But for some, it’s more. My son’s practice conversation with Siri is translating into more facility with actual humans. Yesterday I had the longest conversation with him that I’ve ever had. Admittedly, it was about different species of turtles and whether I preferred the red-eared slider to the diamond-backed terrapin. This might not have been my choice of topic, but it was back and forth, and it followed a logical trajectory. I can promise you that for most of my beautiful son’s 13 years of existence, that has not been the case.

The developers of intelligent assistants recognize their uses to those with speech and communication problems — and some are thinking of new ways the assistants can help. According to the folks at SRI International, the research and development company where Siri began before Apple bought the technology, the next generation of virtual assistants will not just retrieve information — they will also be able to carry on more complex conversations about a person’s area of interest. “Your son will be able to proactively get information about whatever he’s interested in without asking for it, because the assistant will anticipate what he likes,” said William Mark, vice president for information and computing sciences at SRI.

(...) Ron Suskind, whose new book, *Life, Animated*, chronicles how his autistic son came out of his shell through engagement with Disney characters, is talking to SRI about having assistants for those with autism that can be programmed to speak in the voice of the character that reaches them — for his son, perhaps Aladdin; for mine, either Kermit or Lady Gaga, either of which he is infinitely more receptive to than, say, his mother. (Mr. Suskind came up with the perfect name, too: not virtual assistants, but “sidekicks.”)

Mr. Mark said he envisions assistants whose help is also visual. “For example, the assistant would be able to track eye movements and help the autistic learn to look you in the eye when talking,” he said. **“See, that’s the wonderful thing about technology being able to help with some of these behaviors,” he added. “Getting results requires a lot of repetition. Humans are not patient. Machines are very, very patient.”** (...)

Consider

- What stands out or surprises you about this story?
- What are some of the benefits of Gus using Siri that Judith Newman describes in her article?
- Could other kids benefit from the same type of interaction?
- Looking back at your own childhood, what tools do you think you would have found to be helpful? What digital tools do you think might have been problematic?
- Do you ever use technology to help you with different aspects of parenting? How do you decide what role to let technology play in your kids’ lives?
- What makes you most excited about raising kids in a world with modern technology?

Technologies that Meet Unique Needs

When looking for Assistive Technology tools for your own child, do not rely on the idea that one size fits all! Think about the following questions as you consider which tool is best suited for your child's unique needs or challenges.

1. What are the child's specific needs or challenges?
2. What are the child's strengths? How could those strengths be utilized with the AT tool?
3. In what type of environment will the child be using the AT tool? How might different environments or elements within those environments affect the use of the AT for your child?

If you are looking for technologies that have already been reviewed by educators, check out some of Graphite's Top Assistive Technology reviews.

Top Assistive Technology for Speech Difficulties

<https://www.graphite.org/top-picks/top-assistive-technology-for-speech-difficulties>

Top Assistive Technology for Reading

<https://www.graphite.org/top-picks/top-assistive-technology-for-reading>

Technologies that Meet Unique Needs

Digital Dilemmas are brief hypothetical situations and corresponding questions designed to foster cross-generational conversations about different aspects of adolescents' digital lives. Use this fictitious scenario, based on real-life stories, to spark a conversation at home with your children and open up the discussion about these very important topics.

Meeting Kids' Unique Needs

Hayden had trouble taking notes, so his teacher gave him permission to use a computer during class, even though she normally didn't allow devices in her classroom during most subjects. Hayden felt like the computer really helped him take notes and pay attention, but he felt funny being the only one with a laptop. Plus, some of his friends said he didn't really need it, and he kind of understood what they meant, since it's not like he was totally unable to learn without it. He told his teacher thanks but he wasn't going to use the laptop anymore. But she saw how much of a difference it was making in his grades, and she urged him to reconsider.

- 1. Do you ever find that technology helps you or makes your life easier? What are some examples?
- 2. Why do you think Hayden's friends were bugging him about using the laptop?
- 3. Do you think it's OK for some kids to use technology in a classroom but not others? Would it bother you if you were a student in Hayden's class and he was using a laptop?
- 4. Do you know anyone who uses technology to overcome something that is challenging for him or her? What would it be like for that person if he or she wasn't allowed to use a special device or tool?
- 5. What could Hayden's teacher do to help this situation? What do you think Hayden should do?

<http://www.ncld.org/students-disabilities/assistive-technology-education/overview-assistive-technology>