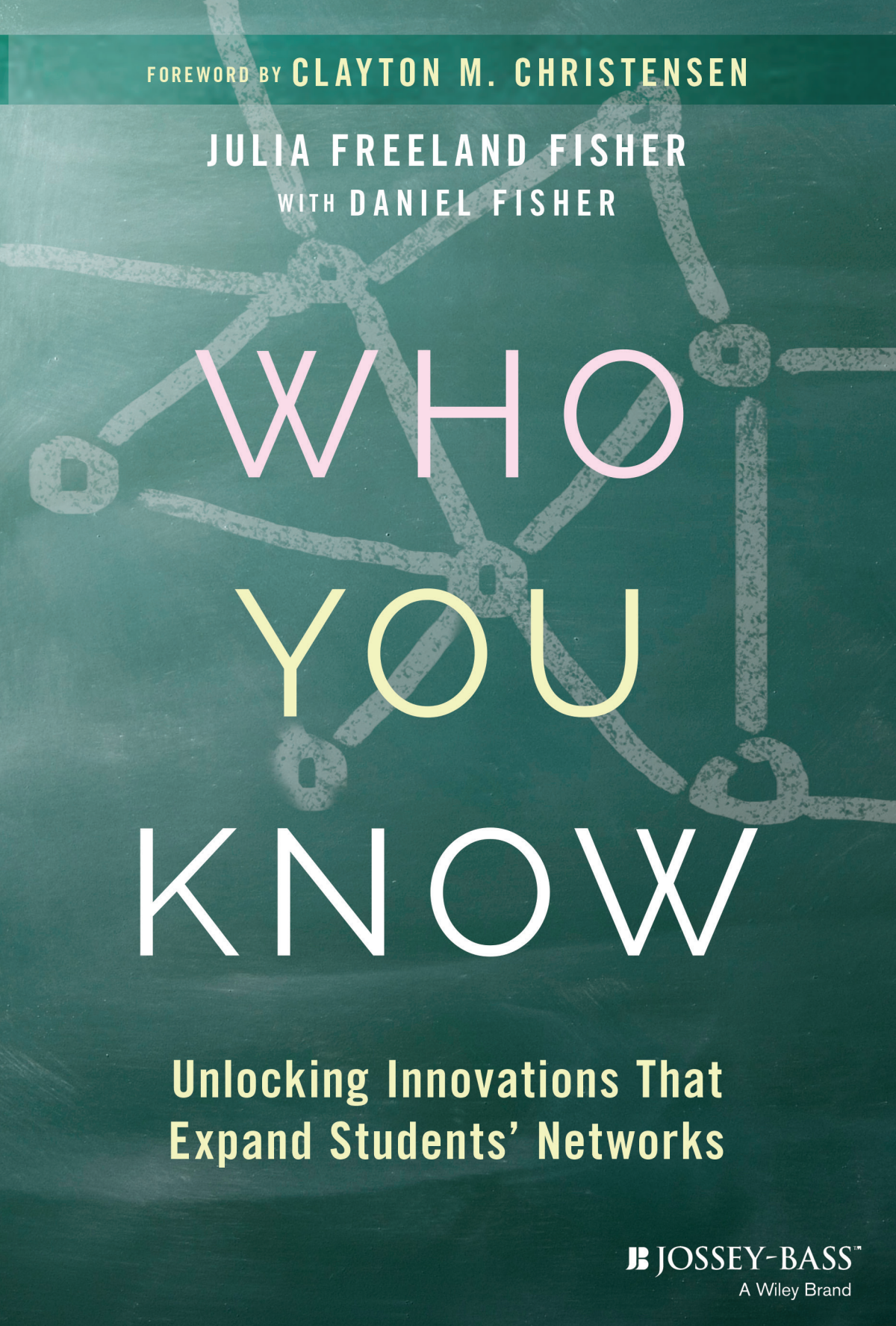


FOREWORD BY **CLAYTON M. CHRISTENSEN**

JULIA FREELAND FISHER

WITH **DANIEL FISHER**

An abstract network diagram in the background, consisting of several interconnected nodes (circles) and lines (edges) in a light green color, set against a dark green background. The nodes are of varying sizes and are connected by lines of varying thicknesses, creating a complex web-like structure.

WHO YOU KNOW

**Unlocking Innovations That
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CHAPTER FOUR

Edtech That Connects

How New Technologies Can Disrupt Students' Networks

Reaching beyond Your Inherited Network

Little about Sabari Raja's early life portended a future as a rising-star educational technology CEO. Raja was born in rural India to parents without college degrees and raised on a coconut farm. She attended a traditional Indian boarding school, where academic work fostered little connection to the outside world.

But Raja happened to have an uncle who was a successful businessman. So successful, in fact, he had built a large electronics manufacturing company from scratch. For the young and precocious Raja, her uncle's story hinted at possibilities that transcended the boundaries of her life on the farm. But working in business still seemed beyond reach. "It was something to aspire for, but it wasn't the same for me," Raja said, "I was just a girl from a small rural town."¹

Nevertheless, during summer holidays, Raja began spending time with her uncle at his factory in Bangalore, the Silicon Valley of India. By sheer luck, the commute to the factory would prove as powerful as her efforts to study the actual business. Raja recalls making that drive one morning when her uncle pointed out BioCon India. The company spanned a sprawling campus that she'd seen countless times before, but had escaped her interest until then.

"I remember him pointing out the car window and asking me, 'Do you know who started that company? Her name is Kiran Mazumdar-Shaw. She's the first female entrepreneur in India to start a biotech company.'"

For Raja, this seemingly offhand comment ushered in a world of possibilities that previously felt out of reach. “Oh my God,” she recalled thinking. “A woman can actually do this! Where I had come from, it just wasn’t like that.” Driven by this rare glimpse into a different sort of future, Raja never looked back. After earning an engineering degree and a master’s in computer science, she went on to work in Texas Instruments’ Education Technology division, and acquired an MBA along the way.

Later, these experiences would find new resonance. While living in the Dallas–Fort Worth area, she became involved in engaging girls in STEM. At a meeting convened by the Dallas Chamber of Commerce to discuss ways to improve STEM outcomes, she began to realize the crux of the issue. “People around the country were gathering to have these conversations, and most often they came down to students having access to industry experts and role models,” she said.

But Raja was concerned that many of these programs were prone to flawed designs. They were time-intensive, didn’t always match the skills of professional mentors to student learning objectives, and tended to focus too heavily on older children. “Could we leverage technology to address these gaps?” Raja wondered. Exercising the entrepreneurial instincts that had taken root on the commute in Bangalore, Raja cofounded Nepris, a platform that beams industry professionals into classrooms over video chats to bring real-world context to curriculum. Arguably a single point of reference had changed the course of Raja’s life: a woman could run a company. In a nod to her experience, Nepris departs from traditional mentorship models. “Our vision,” Raja said, “has not been to forge stronger one-on-one connections.” Rather, the objective of Nepris is to enable *as many connections as possible*, with the aim of integrating industry relevance into everyday learning. With this new approach, Raja hopes to open up new horizons for more students like her.

Networks as a Gateway to Opportunity

Raja’s story underscores a fundamental truth about opportunity: much depends on our *inherited network*. Our inherited network is the social infrastructure into which we are born and that forms around us when we

are young. Across both strong- and weak-tie dimensions, inherited networks are fundamentally bounded.

Like Raja, for instance, children born into rural families to parents who have no college education may inherit a network of family and friends employed in a limited number of jobs across a similarly limited number of industries. Inherited connections are by no means negative or bad influences. They can provide all sorts of critical supports, love, and care. And these networks can propel young people into certain careers, particularly if they hope to work in industries or functions that resemble their parents'.

But as students grow older, they may find that the reach of their inherited network is limited along the dimensions that family and neighborhoods pass down. Raja, for instance, had connections to many farmers, but only a few businesspeople. Through her weak ties, she also knew, or knew of, many men leading enterprises, but no women.

Contemplating such limitations can verge on fatalistic. Are our inherited networks simply defining our destiny from the very start?

Luckily, new innovations are defying these boundaries. As Raja's own journey illustrates, new opportunities—even from seemingly tenuous, distant connections—can come along to open new doors and perspectives. And with the rise of technology, tools like Nepris make forging these connections far more feasible and affordable.

Is Technology Disrupting Our Social Networks?

New technology alone, however, will not disrupt the limitations of inherited networks. As it turns out, some of the most popular networking technologies on the market today actually *sustain* our existing networks—rather than fundamentally disrupting them. To appreciate this distinction we must first understand two different forms of innovation: sustaining innovations and disruptive innovations.²

Sustaining innovations make a product or service perform better in ways that customers in the mainstream market already value. For example, Apple's consistent improvements on the iPhone mark a sustaining trajectory. To satisfy its customers, the company continues to create state-of-the-art tablets and phones, adding better and better cameras, data plans,

processing speeds, and applications. Sustaining innovations serve the existing customer, just better—and usually at a marginally more expensive price. Companies pursue these sustaining innovations at the higher tiers of their markets because that is what has historically helped them succeed. By charging the highest prices to their most demanding and sophisticated customers, companies can achieve the greatest profitability.

However, by doing so, companies unwittingly open the door to disruptive innovations that take root at the bottom of the market.

Disruptive innovations create an entirely new market through the introduction of a new kind of product or service. Disruptive innovations may appear worse initially, as judged by the performance metrics that mainstream customers value. But over time, these innovations improve, in turn attracting increasingly demanding customers.

Apple's early personal computers offer a clear example of disruptive innovation. Early PCs were not nearly as powerful as the minicomputers that dominated the 1970s. But they offered distinct benefits: first, they were markedly cheaper. Apple computers sold for only \$2,000 apiece compared to the quarter-million-dollar price tags on minicomputers. Moreover, they required far less expertise to operate. Only data science experts could operate minicomputers, but kids and hobbyists were able to tinker with the more rudimentary early PCs.

Unlike a sustaining innovation, PCs didn't address the next-generation needs of leading customers in existing minicomputer markets. Instead, they had other attributes—namely, affordability and accessibility—that enabled new market applications to emerge. From there, PCs improved so rapidly that they ultimately could address the needs of customers in the mainstream of the market as well. Over time, personal computer companies like Apple overtook—or *disrupted*—leading minicomputer companies like Digital Equipment Corporation (DEC). By then, Apple could offer a smaller, cheaper machine that was “good enough” for many of DEC's former customers.

All told, disruptive innovations take products or services that start off costly, centralized, and requiring particular expertise and make them widely accessible, affordable, and foolproof.

At first blush, existing social networking technologies like Facebook or LinkedIn may appear to follow this pattern of disruption. In a short time,

they have radically expanded the number of friends and acquaintances in our digital Rolodexes. Connections online are far less expensive than face-to-face connections, shrinking constraints on our networks historically posed by time and distance. They are not “as good as” face-to-face connections in terms of emotional connection or allowing people to touch. But they compete on new dimensions of convenience and affordability.

But mainstream social networking sites have actually done little to disrupt the *fundamental composition* of our networks. This turns out to be the case for a couple of reasons. First, evolutionary scientists have discovered that our brains can only handle so many strong ties or friendships. Technology doesn’t alter our brain’s bandwidth for relationships. In other words, there are actual biological limits to how far our strong-tie personal networks can be disrupted, no matter how cheap it becomes to form and maintain those strong-tie networks from afar.³

But what about our weak-tie networks? Social media sites do allow users to expand the number of weaker ties and mere acquaintances they can *maintain* at a time. We may not be in close contact with many former friends or colleagues. But social networking sites make it less likely that they will leave our orbit entirely. Social networking platforms thus appear to be disrupting what’s known as the *decay rate*—the rate at which we tend to fall out of touch absent reconnecting—of our existing friendships across geography and time.

But even this newfound ability to keep in touch with weak ties does not address the fundamental limitations of inherited networks. By and large, social networking sites have become repositories for our offline strong- and weak-tie connections—rather than tools to form wholly new networks. For example, according to Pew Research Center, the average Facebook user knows 93 percent of her Facebook “friends” in real life.⁴ There is little to suggest that networking sites have extended the reach of those people’s networks to new people whom they *might not otherwise meet*.

In short, mainstream social networking technologies have certainly disrupted how we maintain connections—and the number of geographically diverse weaker connections we can maintain at once. But by and large these offer only sustaining innovations relative to the composition of our offline networks. There is less evidence that they have disrupted how we form *new connections* in the first place or even more so, *with whom*.

Facebook founder Mark Zuckerberg has himself grappled with this pattern in recent years. As he shared in a May 2017 post, “Facebook has been focused on helping you connect with people you already know. We’ve built AI systems to recommend ‘People You May Know.’ But it might be just as important to also connect you with people you should know—mentors and people outside your circle who care about you and can provide a new source of support and inspiration.”⁵

Luckily, entrepreneurs in education are starting to build tools to do just that.

New Technologies Disrupting the Limits of Inherited Networks

How might technology be a tool to transcend the limitations of students’ inherited networks? This will not come about if students simply sustain their networks on platforms like Facebook and LinkedIn. Instead, students will need access to innovations that activate whole new connections that would otherwise not arise in their lives.

A small but growing market of edtech tools is bringing these connections to schools. Like all potentially disruptive innovations, these new technologies are getting their start by targeting pockets of *nonconsumption*, where students’ alternative is nothing at all. In many cases, these areas of nonconsumption manifest as relationship gaps between wealthy and low-income students. As described in chapter 1, these gaps show up in all sorts of ways. Some are increasing at troubling rates along such dimensions as residential segregation, parental time, and enrichment spending. They reveal situations in which relationships are proving out of reach due to the geographic or social limitations of young people’s inherited networks.

Since 2014, we’ve been attempting to capture any and all tools that break through these limitations and enable students to forge new connections. A free, searchable market map of tools and platforms that we’ve found is available online at www.christenseninstitute.org/whoyouknow.

What do these disruptive innovations look like? Some are starting to offer students more relatable, frequent guidance. Others offer engaging conversations about career opportunities and real-world examples. Still

others offer new channels to academic support and motivation online. In the next sections, we provide a few examples of the entrepreneurs and models at the forefront of the field.

On-Demand Advice: Multiplying Access to Relatable Guidance

As discussed in chapter 1, many students find themselves with limited access to college guidance counseling. Short of a major overhaul in how we allocate school resources, these gaps remain an inevitable by-product of cash-strapped guidance departments. In the meantime, however, a small group of disruptive technologies that offer affordable, accessible online and blended guidance counseling are beginning to crop up.

One such effort is Student Success Agency, cofounded by two college classmates, E. J. Carrion and Michael Benko. Carrion was the first in his family to graduate from college. After college, Carrion decided to pay it forward and spent a summer working with Teach for America, helping high school guidance counselors in the Southside of Chicago. As the summer progressed, he became increasingly alarmed by the area's abysmal ratio of students to counselors—at the time approximately 1,000:1.⁶

Unsurprisingly, schools had tried to compensate for these shortages by constructing more efficient processes. The result was highly streamlined but entirely impersonal: students dutifully lined up en masse outside offices and spent no more than ten minutes with their counselor, answering the same few questions and receiving the same brochures. As one of Carrion's colleagues put it, the result amounted to little more than “drive-by counseling.” Counselors were left limited time and leeway to customize advice or resources to students' particular circumstances.⁷

Where many might see despair, Carrion saw a corner of the education system ripe for innovation. Enter Student Success Agency (SSA). SSA connects high school students to their own personal online “agent” who helps guide them through the college application process. SSA's agents consist of current college students recruited from around the country. Agents are paid hourly, and typically work between five and ten hours per week, minimizing overhead costs while still providing on-demand advice and support. The SSA model hinges on pairing accessibility with accountability. Agents regularly check in—rather than merely providing “drive-by”

advice—over the course of the entire school year. SSA's proprietary software tracks interactions between student and mentor, assuring student safety while collecting data on engagement, progress, and outcomes for school and parent use.

Although SSA is still in its early days, the organization's results appear promising. Some observers have estimated that the average high school student receives only thirty-eight minutes of interaction with their guidance counselor per year. Instead, students who participate in SSA spend an average of thirty-eight minutes with e-mentors *per month*.⁸

Carrion and Benko are not the only entrepreneurs expanding access to advice and support online. For example, iCouldBe is an online mentoring program founded in 2000 that brings online volunteer professionals into schools serving at-risk middle and high school students.⁹ Through partnerships with large employers like AT&T, iCouldBe recruits online mentors from companies. These mentors guide students through an eighty-one-activity curriculum designed to support their academic success, postsecondary educational planning, and career planning. Mentors are not traditional mentors; in most cases, they never even meet the students in person.

Like SSA, iCouldBe does not purport to replace teachers or guidance counselors in schools, or face-to-face mentors in communities. Instead, the program views these albeit limited online relationships as critical sources of encouragement to help students through the organizations' curriculum aimed at increasing self-efficacy and preparation for twenty-first-century jobs. At the same time, interacting with online mentors offers students practice opportunities for forging and strengthening relationships in their offline lives. About one third of the curriculum explicitly emphasizes networking skills by training students in how best to leverage relationships to achieve their goals.

The model has a proven track record. Researchers from Drexel University found that iCouldBe students demonstrated an increase in decision-making abilities and self-perception of their abilities to cope in school and life. In a separate study, mentees also showed enhanced career aspirations.¹⁰

SSA and iCouldBe are two examples of a growing supply of online tools expanding students' access to different forms of mentorship and guidance. They effectively increase the amount of time and information on offer to students who would otherwise receive scarce minutes with a counselor.

Brief Encounters: Scaling Access to Industry Professionals

Online guidance models like Student Success Agency and iCouldBe hinge on repeated interactions with the same adult over the course of multiple semesters or even years. But some connections can occur in even shorter cycles. Brief, one-off interactions can still give students new snippets of information. This can be especially powerful when it comes to offering career exploration opportunities. Students can connect with professionals working in industries into which their existing networks offer few inroads.

Tools like Nepris bring industry professionals directly into classrooms to do just that. Similarly, other tools are combining rich project-based curriculum with outside experts. For example, the Seattle-based nonprofit Educurious offers project-based courses in which experts work with students through video chat to discuss real-world problems together.

Other companies are aiming to expose students to professionals and career guidance by crowdsourcing accurate career advice in a more highly targeted and expansive manner than chance encounters—or random Google searches—afford. For example, the Boston-based start-up Career Village addresses a fundamental information matching problem: according to Career Village, although 85 percent of low-income youth in the US use Google to search for answers to questions about how to improve academic performance, forge career paths, or select a college, the answers they find on the internet are often too confusing, too cookie-cutter, or both.

By contrast, Career Village connects high school students to a network of more than fifteen thousand industry professionals who provide tailored academic, college selection, and career advice. Career Village leverages a Q&A format to enable students to ask for advice, and crowdsources answers from those professionals to answer student queries within twenty-four hours. To date, the company has provided career advice on more than eight thousand topics to more than two-and-a-half million students.¹¹

More Supports: Increasing Academic Help and Spurring Motivation

Of course, investments in relationships that help students access college guidance or career advice may do little to move the needle on outcomes without similar investments in relationships that directly support academic success.

Although individualized academic support and tutoring can have profound effects on academic performance, traditional forms of tutoring are prohibitively high cost for many schools and for most students.¹² And in most classrooms, teachers struggle to provide ongoing, reliable tutoring and academic supports to each individual student. As a result, students spend the vast majority of their time in school missing out on sustained, one-on-one academic help from adults. Most obviously, online tutoring companies are stepping into this void, by starting to offer students brief encounters with tutors and other academic supports during and after class time that students might otherwise spend working alone. By some estimates, the global K-12 online tutoring market is expected to grow more than 12 percent between 2017 and 2021.¹³

Besides a clear boom of online tutoring companies that employ or crowdsource paid tutors, other models seeking to scale tutoring keep costs low by tapping volunteer networks. For example, CNA Speaking Exchange connects native English speakers from retirement homes in the US to students learning English at CNA schools in Brazil. Students connect remotely with the seniors for brief conversations in English.¹⁴ Like online tutoring models, these chats complement more formal, face-to-face instruction happening inside CNA's brick-and-mortar language learning centers.

Of course, educators will be quick to point out that relying on cheap or free labor may offer *more* interactions, but may threaten the quality of instruction that students typically receive through live teaching. But in some models, less skilled volunteers are providing *nonacademic* supports, such as encouragement and motivation, that can still yield academic gains.

This is precisely the idea behind another innovative effort, Granny Cloud, which beams “grannies” into an innovative school model called the School in the Cloud.¹⁵

The School in the Cloud is itself a disruptive innovation that emerged from an experiment conducted by theoretical physicist and professor Sugata Mitra. While working as a scientist at a Delhi computer company, Mitra was asked by his boss to research the viability of public computers. Something of a radical thinker, Mitra literally made a hole in a wall, threw a computer in it, and made it available to the illiterate Indian children

growing up outside his office in the Delhi slums, where formal schooling was rarely on offer. He then sat back and watched with awe as the curious children rapidly progressed from merely moving the mouse around the screen to creating Word documents without the aid of a keyboard.

Inspired by the surprising results, Mitra began conducting more advanced experiments. Delighted to see the progress children were making, Mitra built on his original model with one key modification: a woman to act as a “grandmother” to offer encouragement as the children learned. With this human intervention—designed to encourage and motivate the students, not to “teach” or deliver any content—the children’s scores on a test Mitra administered increased by 67 percent, matching those of students’ in one of Delhi’s high-performing schools.¹⁶

Granny Cloud was born. An online web of adult supports (they’ve moved beyond only older women, but the term “granny” stuck), Granny Cloud is part of Mitra’s latest effort, Self Organized Learning Environments (SOLEs).¹⁷ In these environments—some of which resemble brick-and-mortar schools and others of which look far more informal, like his initial hole in the wall—volunteer “grannies” Skype in to offer children a welcome dose of unconditional encouragement.

Charting a Disruptive Path Forward

For some, the idea of a virtual granny may sound beyond the pale or downright ridiculous. Many will look at tools like Granny Cloud, Nepri, or Student Success Agency with a healthy dose of doubt that technology can replace face-to-face relationships. Can we deliver the tender encouragement of a grandmotherly figure over videos, across continents? Can a video chat really replace a nurturing hug or a meaningful moment of personal advice? Can online meetings really generate the sustained supports and shared experiences that successful face-to-face, year-over-year mentorship often involves? Are tools that yield simply *more* connections or time with mentors yielding the results we care about?

These are valid concerns. But they are precisely the sorts of questions people ask when disruptive innovations are afoot. Disruptive innovations don’t compete head on with existing solutions or relationships in

students' lives. Rather, they offer access to groups of customers typically shut out of a mainstream opportunity or market. From there, the innovations improve over time. Apple's earliest PC computers were hardly impressive compared to the expensive and sophisticated mainframe and minicomputers that dominated the 1960s and 1970s. But Apple's early PC customers didn't care. Instead, hobbyists and children were delighted that they could afford a contraption that they could use for basic word processing and computing. Over time, Apple then shepherded the PC upmarket—improving its technology to eventually serve the needs of more demanding customers with higher processing speeds and storage volume.

Children, of course, are not widgets; their development and success hinge on more than engineering the right circuitry or software. But Apple's case illustrates the nonintuitive nature of disruptive innovation: the most crucial innovations of tomorrow may not look impressive compared to state-of-the-art products of today. Instead, by offering access and affordability previously unimaginable, they can eventually move upmarket to serve more demanding customers.

The same goes for technology-enabled mentoring, expert, and support systems that are beginning to expand student networks. In the present moment, these early models of online or blended interactions pale in comparison to face-to-face relationships. They are short, at times impersonal, interactions. They often connect students to people from entirely different worlds, with limited time to address those differences. It's therefore tempting to scoff at the quality of the interactions and their modest contributions to academic and nonacademic outcomes alike.

But given the gaps they are currently filling in the market, these technology-enabled interactions need not compete head on with state-of-the-art face-to-face supports. They are not attempting to deliver the same value as strong, face-to-face ties in students' lives. Instead, they promise to offer *new* connections in circumstances where the current alternative is nothing at all. They can allow students who otherwise *might never meet* an engineer or lawyer to connect with working professionals. They can fill advice gaps for those students who have shockingly limited access to college guidance in high school. They can step in to encourage and motivate students learning in isolation to persist when curiosity wavers, providing a gentle nudge to press onward.

By initially targeting those circumstances in which students struggle to access human supports, these innovative tools stand to expand and diversify students' networks—disrupting, over time, the stubborn limitations of *any* students' inherited networks.

Borrowing from the sociology literature on social capital, these technologies are tending to get their start by offering weak ties. This is particularly powerful when we recall the so-called strength of weak ties. Even relationships with less intimacy, trust, and familiarity can provide crucial, plentiful sources of new information and opportunities otherwise inaccessible through some students' immediate networks.

And like any tale of disruption, the story doesn't end there. Once new models like these take root, they may start to reshape all sorts of interactions, particularly as technology improves. Soon, for instance, using 3-D cameras or holographic imaging, students will be able to connect with mentors in ways that more closely mimic face-to-face interactions. Such technology could allow students to meet with mentors thousands of miles away in fully virtual meeting spaces.¹⁸

Improving Quality, Monitoring Safety

These improvements will of course need to be accompanied with vigilant privacy and safety practices. Many of these tools already perform the background checks similar to those that schools regularly perform regarding in-person visitors.

For tools like Nepris and Educurious, companies have taken pains to ensure that adults and students are never interacting online alone. Those tools that allow for one-on-one interaction also apply web filters that can monitor the content of student-adult interactions and flag any potentially inappropriate content. These filters catch risky behaviors such as sharing locations or personal information that could threaten student privacy or safety. Some have gone even further to protect students' identities. For example, iCouldBe uses avatars instead of photos to protect student privacy. As filtering technologies improve, more programs will likely move to video-based interactions and chats.

At the same time, tools can start to leverage data not just for the purposes of ensuring safety but to dive into the science of connecting to improve the *quality* of interactions. Many of the organizations we've discussed in this chapter have begun using data analytics to identify predictors of successful mentee-mentor interactions. For example, with over a decade of data on mentor and mentee interactions, iCouldBe has worked with data scientists to begin to unpack the variables (such as frequency of interaction) and communication styles among both children and adults that tend to yield the best results.

These analytics could be applied in much the same way that learning analytics can drive understanding of how students learn. As better data becomes available on interactions between students and mentors—the length and style of a mentor's advice to a student, for example—we can begin to better design online and offline interactions to accelerate the formation of trusting relationships.

Diversifying on the Basis of Similarity

These disruptions in turn stand to radically change how young people form and maintain diverse weak-tie networks. In many cases, these may remain only weak ties in students' lives. In other cases, those ties that prove most helpful or salient to a student's interests or needs could be maintained over longer periods, in time transforming into ever-stronger connections with people whom students otherwise might never have met.

Diversifying students' networks may sound all well and good. But we've all met people outside our existing networks with whom we didn't click. There's a reason, after all, that we may not have known each other in the first place. Maybe we lived worlds apart and wouldn't have had much to say to each other even if we'd met. Or maybe we wouldn't have really liked one another, resenting or fearing our differences. Recall that traditional social media has done little to expand people's offline networks to include people whom they otherwise might not meet. New tools designed to forge relationships beyond students' inherited networks will face a steep slope of difference.

This poses something of a paradox: focusing on expanding students' diversity of ties could run counter to the well-studied phenomenon of

homophily. Birds of a feather flock together: people trust others who are *like them*. Given that similarity breeds connection, how much can we realistically hope that students and adults from different worlds—professionally, geographically, or culturally—could start to forge productive connections, especially in the course of a brief, online encounter?

To resolve this conundrum, we can look to an age-old source of truth: beer advertising. In April 2017, savvy executives at Heineken took advantage of the political divisiveness sweeping much of the Western world. Europe was reeling in post-Brexit chaos, and France was teetering on the eve of a heated presidential election. And in the US, political debates about the direction of the country had reached a fever pitch as president Donald Trump's first one hundred days were nearing their close.¹⁹

Capitalizing on the tensions of the moment, Heineken released a video titled “An Experiment: Worlds Apart.” In the video, regular people with wholly opposing views on everything from climate change to gender politics were brought together. As the film starts rolling, pairs of strangers meet in an abandoned warehouse and receive instructions. First, they must share five things about themselves and identify three things they have in common. Then they are told to work on a project together, building what turns out to be a rudimentary bar. After that, each pair must watch video interviews of one another expressing their political viewpoints. Only then is it revealed that the individuals who have started to get to know one another hold diametrically opposing views on divisive political issues like the environment and gender.

They are then offered the chance to sit down to discuss their differences—of course, you guessed it, over a beer. Each pair accepts the opportunity. By the end, climate deniers are hugging environmentalists and agreeing it would be fun to engage in healthy debate. A man opposed to transgender rights is exchanging phone numbers with a transgender woman, hoping to stay in touch.

No one's point of view has taken a complete 180 in the short time they've known one another. The video is not so much about changing people's minds or even necessarily eliminating bias. The pairs are, for the most part, agreeing to disagree. But they are doing so with a hint of respect and a smile grounded in some sort of shared humanity.

Of course, Heineken would like you to come away convinced that beer is the single ingredient that can lubricate the social tensions plaguing the twenty-first century. All we need to weave our polarized societies back together is to belly up to a bar to share a cold beer with strangers, right?

But beyond that not-so-subtle message, the brilliance of the ad is that it captures the power of harnessing—rather than abandoning—the phenomenon of homophily even in circumstances of profound difference. Seemingly unlike people *can* connect—even if they don’t agree on everything or bring the same life experiences to the table. But breeding new connections that engender even a modicum of trust requires shedding light on shared experiences, tastes, or characteristics. And oftentimes, these get lost. Without prompts or projects that require collaboration—such as sharing five things about yourself or constructing a makeshift bar from scratch, to name a few—similarities between strangers can remain concealed behind more visible traits.

Designing Tools with Homophily in Mind

For anyone steeped in the literature on effective mentorship, Heineken’s message is hardly new: establishing trust between mentors and mentees has long been emphasized in the youth development world. Absent protocols and processes that establish trust, connecting young people with adults—face-to-face or digitally—risks engaging in what we’ve heard Janice McKenzie-Crayton, a longtime crusader in the mentorship world, call “cymbal mentoring”: crashing a mentor and mentee together like two cymbals in a marching band, harboring some blind hope that a relationship sticks.

In fact, that hope-for-the-best approach can have dire consequences. Young people who experience negative or curtailed mentoring relationships show marked *decreases* in their sense of self-worth and academic ability.²⁰

Emerging technology tools that expand students’ access to new weak-tie connections could yield equally harmful and counterproductive results. Without attention to the right design, they risk digitally “crashing” adults and young people from different backgrounds together without scaffolds and supports to nurture trust. Tools, after all, are just platforms. They

could either function as conduits for new, positive interactions *or* as forums where misunderstanding and discrimination play out in spades. The risk, then, of not addressing difference and discrimination head on is that young people would in turn find themselves facing an even worse outlook (by the sheer volume of interactions made possible through new tools) than they did in a less networked world.

To mitigate these risks, edtech tools must embrace homophily by surfacing similarities between people even in digital environments. They must also take pains to address head on the ways that implicit bias could creep into interactions between students and adults from different backgrounds. What might this look like?

For starters, the process of matching students and adults can take similarity into consideration. Platforms like iCouldBe, for instance, allow students to pick their mentors based on shared careers, hobbies, and interests. Other tools offer conversation protocols designed to surface similarities among participants. For example, in a pilot to help third-graders forge relationships across different cultures and geographies, Educurious partnered with the nonprofit Empatico.org to allow students to work on projects through virtual environments. To begin these projects, students were instructed to engage in conversations that produce “me-too moments.” Pairs begin describing themselves to one another until they are able to say “me too.” A me-too conversation might go something like this:

DAN: Hello, my name is Daniel.

JULIA: Hi, I’m Julia. [She can’t say “me too” because her name isn’t Daniel.]

DAN: My middle name is Thomas.

JULIA: My middle name is Frances. [Still not me too.]

DAN: I was named after my great-grandfather.

JULIA: Me too!—Francis was my grandfather’s middle name.

A me-too moment represents a jumping-off point for nurturing empathy and trust. Small moments like these may seem frivolous. They are, after all, just a sliver of a person’s whole identity. But they are important footholds. Absent such designs, tools that might otherwise chart a disruptive course risk merely reinforcing existing inherited networks by organizing new relationships along the usual dimensions—race,

culture, or creed—or by crashing people together despite their apparent, unassailable differences and producing negative interactions.

Of course, surfacing similarity is only one crucial design consideration if tools are aiming to create new, positive connections in young people's lives. But new tools designed to fundamentally expand students' networks will likely need to embrace other approaches, aimed at surfacing and addressing implicit bias and setting the stage for interactions grounded in mutual respect for one another's background and culture.²¹

A New Design for Schools

Innovative technologies could be game-changing. Tools like those described in this chapter could allow schools to invest meaningfully—and at an affordable price tag—in their students' networks. The shifts that new technologies offer are not without risk. But given the current landscape of opportunity gaps, these tools' upside potential is enormous. Limited inherited networks and mere chance encounters need no longer spell students' fate. Powerful webs of technology-enabled connections that diversify young people's networks are increasingly within reach.

Paired with integrated supports described in the previous chapter, schools have at their fingertips both innovative architectures to integrate social supports, and disruptive tools to expand students' social capital. If schools are truly society's "great equalizer," they must pick up this mantle and redesign themselves to better function as both caring and networking hubs. They must design themselves to be far-reaching—rather than merely embryonic—communities. In our next chapter, we explore several schools that are doing just that.

KEY TAKEAWAYS

- An individual's inherited network is the social infrastructure into which she is born and that forms around her as the natural outcome of inherited circumstances.
- Inherited networks are bounded and impose limits on life outcomes for all young people, but particularly threaten to limit social mobility

- for students from low-income backgrounds. Closing the opportunity gap requires disrupting the limitations of inherited networks.
- Fortunately, a powerful supply of technology-enabled tools that can diversify young people's networks is increasingly within reach. These tools are targeting pockets of the education system that have long gone neglected: widespread access to industry experts in the real world; frequent access to college guidance and support; and ongoing, tailored academic support and encouragement for individual students.
 - To forge these connections, innovations that stand to increase students' social capital can leverage the concept of homophily to diversify on the basis of similarity. This could increase the likelihood that new relationships will flourish on the foundation of mutual respect and trust.
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Notes

1. Author interview with Sabari Raja, November 28, 2016. All subsequent quotes from Raja are also from this interview.
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21. Studies of the sharing economy have begun to explore methods of combating bias and discrimination that arise in online communities and marketplaces. This will be a crucial research and policy topic as more tools like those in this chapter scale. For example, see Abrahao, B., Parigi, P., Gupta, A., & Cook, K. S. (2017). Reputation offsets trust judgments based on social biases among Airbnb users. *Proceedings of the National Academy of Sciences*, 114(37), 9848–9853. doi:10.1073/pnas.1604234114

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