

## The Silicon Valley Disconnect

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I could credit most of my academic achievements to a single Facebook message. What helped me get into a top tier college, decide my major, and identify prospective careers could be whittled down to ten simple words. Jeffrey Yu, then a senior in high school, sent me these ten words during my junior year of high school, telling me about a summer program he participated in before. Among all the interactions I had in high school, this message was by far the most genuine instance of encouragement, especially at schools like Independence, where it is easier to acquire marijuana than a teacher's attention.

All Jeffrey said was, "Howdy Cinderz. How dat SIMR app coming along? Hmm hmm?"

Despite the amusing nature of the message, Jeffrey revealed to me an opportunity that fulfilled a first-generation and low-income (FGLI) teenager's dream: the Stanford Institutes of Medicine Research (SIMR) internship was a paid summer position to perform cutting edge scientific research at Stanford. Interestingly enough, a target demographic of programs like these were the Bay Area minorities, and, as a Vietnamese, FGLI female interested in STEM, I was an ideal candidate. The only reason I did not consider applying to SIMR before was that it seemed *too good to be true*.

With the number of high school opportunities in Silicon Valley growing exponentially, we could ask ourselves why FGLI students require so much luck to encounter these programs. Given the rampant connectivity of the Bay Area, the only problem is *awareness*. The solution for bridging Silicon Valley's poorest students to its most valuable opportunities does not have to be extravagant. Something as simple as Jeffrey's personalized words of encouragement could do it. The underlying question is: how can we deliver a ten-word equivalent to every FGLI student?

This lack of exposure is all too common at schools like Independence High. Home to more than thirty-five hundred students, Independence sits in one of the many ignored and impoverished pockets of Silicon Valley. Students here proudly call themselves Sixers, a tribute to their beloved Sammy the Seventy-Sixer mascot, and most of them are FGLI. Notably, the average Independence student participates in a small handful of

extracurricular groups on campus. These clubs provide potential opportunities for meaningful experiences, but due to the sheer size of the groups, the personal value gained by one's participation is often diluted. The numerous volunteering opportunities and leadership positions lose their allure as students end up carrying out many similar tasks, removing any potential feeling of significant individual contribution. With weak incentives to participate despite the abundance of groups, students feel little social pressure to take advantage of the value in extracurricular activities, and there is no bridge for students to seek or pursue more enriching opportunities.

Being FGLI means having few connections to academic resources. Most students exist on what I term “the educational plateau,” a static mentality that leaves students with vague aspirations of getting more satisfaction out of their schooling, but not knowing how to ask for resources or even what to ask for. Students may want to go to college but lack an academic compass to guide them. Others want to apply their learning to something meaningful but cannot find the right medium. Even as a resource-savvy student with admirable grades, I could not envision much to work towards. In a decade of schooling and more than ten thousand hours of instruction, I was not taught to aspire for anything more than passing my next quiz. I had refused to think differently until Jeffrey revealed something beyond Independence’s borders. His ten words were more effective than any counselor’s efforts, making him the best asset I had. There are simply not enough Jeffrey Yu’s to go around.

“It’s a diamond in a haystack.” No words can better describe the paradoxical nature of Independence than those of Mr. Hien Doan, a resident AP Statistics teacher. On a Friday afternoon in mid-November, we sat in his small classroom, a windowless space meant for thirty desks, but currently holds thirty-six, with whiteboards covered in skewed bar graphs and a scribble that read, “Miguel was here.” He sat calmly shuffling some graded quizzes to hand back the next week. Despite the negative light cast on large, under-resourced, minority majority schools, Doan is proud to be an Independence teacher. Like many of the educators here, he considered moving schools multiple times before. However, upon closer examination of the quality of the student community and the students’ potential, he decided to stay, admitting to an undeniable sense of school pride. Students echo the same attitude. It is almost as if surviving the challenges here brings a valiant sense of being a real Sixer. The effect is long-lasting: I still wear my high school shirt proudly around my college campus.

Doan is one of the few teachers on campus who is outwardly disturbed by the lack of opportunity for Independence students. He thought back to the time when he blissfully had not noticed. After a school district budget misallocation in 2010, he was forced to look at student academic data more closely. What he saw changed his idea of teaching permanently: not only were students failing both math and science during

their freshman year, but also this academic behavior was strongly indicative of general school disengagement and a decreased likelihood of graduating. As Doan says, “The students have great potential, but no direction ... Equality [in education] is equal chances – it’s options.” Evidently, these options are more easily discussed than found.

The sharpest students will put their search engine skills to the test to find their own high school summer programs, usually compiled and discussed on the popular college admissions forum *CollegeConfidential.com*. These forums are home to anonymous teenagers with competitive attitudes, as members post odds of admission to programs and colleges based on others’ shared GPAs and SAT scores. Without impressive grades, the voices of discouragement for FGLI students begin to grow, and only the strongest persevere. Four years after his participation in SIMR, Jeffrey told me that College Confidential was where he first heard about SIMR only after “sift[ing] through haters who said I wouldn’t have a chance.”

At a time where math theorems and celebrity tweets are a click away, we imagine that everything students could ever need can be found online. As of December 2016, a search for “high school summer program” on Google generated 173,000,000 results. As promising as the vast number of opportunities is, there are almost too many options – it becomes an information overload. In a 2015 study, Michael Brown, a doctoral candidate, and Nicole Brown, Ph.D., who studies computer-mediated communication at the University of Michigan, investigated the utility of online college information for FGLI students. They conducted one-on-one interviews with high school students in urban and rural areas in Michigan, asking how students accessed college information, who provided external guidance, and how the information led to changes in academic behaviors. They found that information leads to action most when it can be properly filtered by a “knowledgeable translator,” an individual familiar with students’ academic and socioeconomic background. Brown suggests that FGLI students could use not only a mentor-like figure, but also a network of individuals who can facilitate a low-stakes environment to find relevant academic information easily (Brown, 2016).

Independence thinks it has programs in place to lessen this information overload for its students. Well-known federally and state-funded academic intervention programs such as GEAR UP and Achievement Via Individual Determination (AVID) have their names splayed across vinyl banners hung in their assigned classrooms. At best, they provide a homeroom for students, field trips to college campuses and guest speakers every now and then. These college-based programs provide academic safe havens for some students and serve their purpose only to an extent. These interventions attempt to disrupt student’s academic behaviors. In home room, students work in groups to finish homework, write down their hourly schedule, and receive a sign-off sheet for teachers to confirm that students are passing their class. This approach is built on

the assumption that there is something inherently wrong with the way students prioritize and perform in school. Following this model, any interests outside verb tenses in Spanish and geometric sequences are of little value.

To help students better tap into the wealth of opportunity, some form of academic *supplementation* should be provided. I am defining “supplementation” here as additional resources to support students’ learning identities, contrary to distorting them. For example, instead of discouraging video game interests, there is an opportunity to show students how they can begin designing the games they love. However, AVID and GEAR UP programming are not designed well enough to serve the students this way. When asked about his thoughts on these programs, Doan rubbed his forehead and said emphatically, “[Students] need someone to point them to an opportunity, and say, ‘You, do this.’”

Less than twenty miles away from Independence stand the some of the most successful billion-dollar technology companies and the most selective universities in the nation. Under the shiny façade of their highly sought-after internships and luxurious workspaces, companies such as Facebook and Google have been under fire. They have been criticized for having a workforce that does not reflect the diversity of the nation, not to mention within the Valley (Lewontin, 2015). With over fifty percent of their employees revealed to be white, the tech giants have been making attempts to ameliorate the lack of color (How white is my valley, 2015). They have designed programs geared towards high school students, their way of encouraging more tech career choices from youth. Tech Day at Google, a pilot program this year, was a one-day event that invited high school students to learn coding basics on the Googleplex campus in Mountain View. TechPrep is a website created by Facebook to introduce computer science as a viable career option for young students. Local universities also do their share of high school outreach. SIMR, the program I attended thanks to Jeffrey, and Raising Interest in Science and Engineering (RISE) are both paid internships at the Stanford School of Medicine, also seeking to empower disadvantaged high school students from the Bay Area.

The reward of attending these programs could be immense for FGLI students. For many, participation is the first meaningful opportunity to begin practicing what schools teach. This opportunity follows the “expectancy-value model,” as explained by Pamela Aschbacher, director of research at Caltech’s Precollege Science Initiative. The model links academic decisions to “expectations for success and the value [students] ascribe to the options they perceive as available.” Aschbacher, along with researchers Erika Li and Ellen Roth, studied why high school students who were once interested in science, engineering, or medicine sophomore year lose interest by the time they apply to colleges. After a longitudinal study of high school students over three years, she found that, at the end of high school, “many [students still interested in these fields] could trace

their career interests to positive experiences in activities they saw as relevant to these jobs” (Aschbacher, 2009). Positive work experiences that reinforce applicable classroom lessons allow students to develop competence and construct stronger identities. However, as far as publicity and outreach go, word of these opportunities does not reach far enough. I only heard about SIMR through speaking with Jeffrey. When asked about program outreach, a SIMR representative stated that the program sends an email to counselors of schools within a sixty-mile radius. The distance between Stanford and my school is twenty-five miles.

Counselors are expected to share these types of emails with the student body, and administrative organization varies widely across schools. Lynbrook High in West San Jose composes a monthly updated list of internships and volunteer positions on their website page. At Independence, the opportunities come sparingly in the form of copy-paste bulletins on the school online portal. Minimal titles and vague descriptions with buzzwords like “pre-med” and “engineering” are virtually meaningless for FGLI students with no exposure to these fields. Many internships have hidden application fees, require independently arranged airfare, room, and board, or ask for scores from the PSAT, a practice SAT test administered only once a year. These are details that academic counselors are normally responsible for, but with a portion of students who may not graduate every year, their energies are reasonably diverted away towards them. Thus, the search for opportunity is continuously hindered by the lack of knowledgeable translators at school.

It was almost four in the afternoon when Doan and I began to diverge from his fervent opinions on the public education system. We both took a moment to check our notifications, absorbing any update from our respective friend groups. Apparent from our scrolling, social media has an unspeakable power of disseminating information. Alan Daly, professor of Education Studies at the University of California, San Diego, examines the importance of these online social structures in his book *Social Network Theory and Educational Change*. The book is a collection of studies on social network analyses and their relation to either changing or stagnant positions in education. He writes that the old saying, “It’s not what you know, it’s who you know,” can be challenged by the intricate social networks facilitated by sites like Facebook and Twitter. Gone are the days of word-of-mouth. Daly adds, “The importance of social structure, position, and the quality of ties has a direct influence on the types of knowledge and information an individual receives” (Daly, 2010). A better sentiment would be: “Who you know defines what you know.” And as a FGLI student, I did not know anyone.

Unsurprisingly, social networks are often homogeneous: we are friends with people who share the same values and interests, leading to natural redundancy. Notably, individuals with more heterogeneous networks are more likely to encounter non-redundant information, a phenomenon called the “Strength of Weak Ties.” In surveys of high

school students in Michigan, Dr. Yvette Wohn, an assistant professor at the New Jersey Institute of Technology, found that, unique to first-generation students, information about college delivered through latent ties in their social media lead to greater action in college application procedures. She hypothesized that this phenomenon is due to the rarity value placed on this information, which would be otherwise unavailable from parents at home or counselors in school (Wohn, 2012).

Before we jump to conclusions about social media and applications that could potentially solve everyone's problems, we have to consider the failures of many social media-based ideas: lack of user consideration. Many schools and companies in the Silicon Valley already have Facebook pages and Instagram profiles to reach more high school students. The social media-based information is already present. However, just because this information exists in a more FGLI-friendly format does not mean that these students have any incentive to engage with what companies and institutions can offer. There is no personal click.

We can now begin to see that the informational disconnect is a multi-front fight. FGLI students are insulated from the world beyond Independence and are left on an educational plateau with no incentive to pursue anything more. Silicon Valley companies and nonprofits with summer programs are seeking diversity in their participants with inadequate efforts. Lastly, there are the Independence school staff and programs, focused on graduating students and not designed to bridge this information disconnect. Social media may provide a unique, accessible medium for students themselves to begin overcoming this deficit. What is needed perhaps is more of a personal incentive for overcoming online social barriers to begin to connect to potential "knowledgeable translators." Social media facilitates a low-stakes environment to form and strengthen ties outside of one's immediate network. Unfortunately, FGLI students may not be familiar with strengthening latent ties or what the reward is for doing so due to the lack of experience with role models in their lives (Schwartz et al., 2016). Websites like Facebook allow students to identify potentially valuable connections, providing access to interpersonal online actions to the furthest ties and a sense of proximity to them. We can use this idea as a starting point for developing a tech-based solution for an Independence student's lack of awareness.

However, not all weak ties can provide useful, new information. A successful model requires individuals with familiarity in the students' backgrounds and the programs themselves; being the "knowledgeable translator" requires prior experience. The more commonalities found between the student and translator, most easily an alumnus, the more inclined and comfortable a student will feel in reaching out to seek new information (Leonardi, 2015). Taking advantage of the current social network infrastructure, one can begin growing an online community directly intended to give students access to new knowledge and provide

real, relatable examples of success.<sup>1</sup> This community platform could allow cohesive information sharing online, which is also a positive contrast to the informative, while also discouraging, College Confidential forums.

A few weeks ago, I had the chance to sit down with Jeffrey. We retreated from the encompassing palm trees of Stanford's campus and took refuge at a Bare Bowls in downtown Palo Alto. Just as he does every time we reunite, Jeffrey asked me what I have been doing lately.

"I'm trying to get a better idea of how to help kids at Independence access things like SIMR."

He turned toward me, eyebrows raised. "That sounds like a lot of work," he said with a smile. Having spent the last year trying to accomplish this very idea, I nodded, but I wanted to remind him of the idea's simplicity. I asked him, "Did you know that message you sent back then about SIMR kind of changed my life?"

With a look of disbelief and a smirk, he uttered, "Wait, really? That's so cool."

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<sup>1</sup> Examples of success can include Independence alumni with similar backgrounds who have been effectively influenced by these programs through past participation or similar experiences.

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