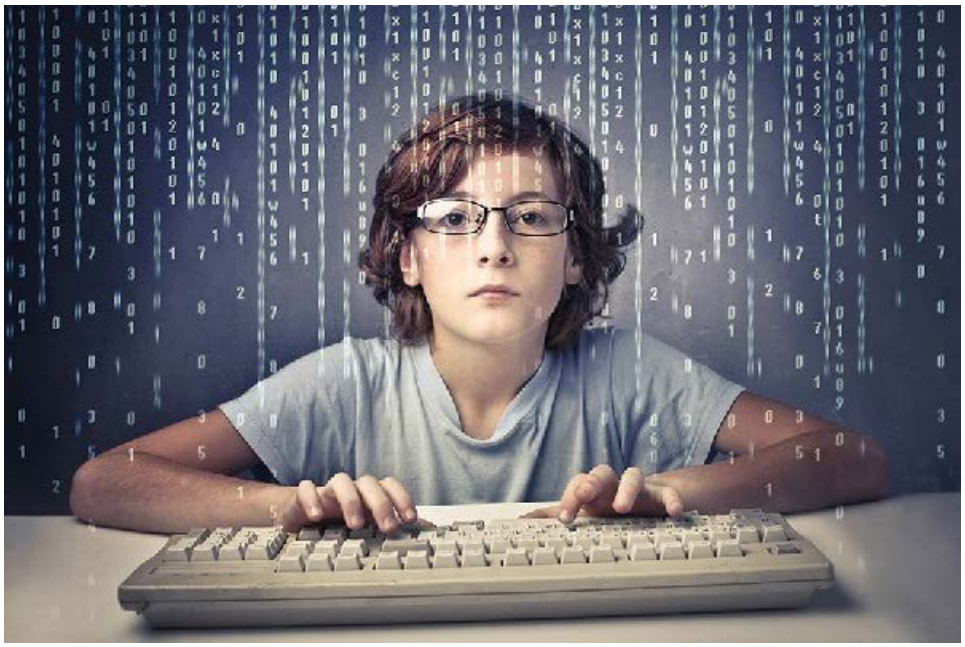
INNOVATION



Are We Teaching for the Jobs of the Future?

Many schools are emphasizing typing and programming skills to prepare their students for the workplace of the future, but it isn't just about being able to code.

By: Rachel Norris

Tour any IT department and you will find a web of servers and routers that store and disseminate information while firewalls and security systems keep the information safe. To most of us, this tech world is something we know we need and rely on, but have little knowledge of in terms of how it operates.

Should this disconnect of layman understanding of the tech world continue on a wide scale we could see a debacle in the workforce with a lack of qualified technicians. Luckily, there are schools and companies confronting this for new generations of students.

Because IT is growing at twice the rate of other industries, the value of providing such a resource to students is clear. By 2020, there will be more than 850,000 more jobs related to computer systems administration than there are today.

A whole host of careers depend on a strong knowledge of IT, including programmers, database administrators, server administrators, application administrators, network engineers, security specialists, and web designers, just

to name a few. Each and every major corporation relies on infrastructure technology in the form of switches, routers, load balancers, VLANS, SAN storage, storage arrays, firewalls, and miles of copper and fiber wiring.

Further, 67% of tech-related jobs will be outside the tech sector. As more companies rely on the Internet, decision-makers at those companies will need more than rudimentary technical knowledge.

An overview of IT is difficult to find in most schools today. In 2013, nine out of ten K-12 schools in the US did not offer computer programming classes. Traditionally, IT has been learned on the job through hands-on experience or through an array of somewhat uncoordinated college classes. These classes teach specific components of IT such as system engineering, development, and coding, but very few programs exist that truly integrate the teaching of these skills with a perspective on the big picture. In small classes held in libraries and schools, we have begun to see for profit companies, non-profit organizations, communities, and schools fill these gaps.

An alliance of sorts is forming around IT. While top-down efforts to prioritize IT have been slow - 24 states do not currently allow computer science classes to count towards high school graduation credit - teachers and administrators have found that non-profits and members of the private sector are willing to help. Private companies are interested in creating the talent they will need in the next decade, and the list of non-profits dedicated to resources for student coders continues to grow. Savvy educators across the country are taking full advantage of these opportunities.

In Seneca College for example, multiple computer science classes use a free platform to create websites which soon become battlegrounds, as students use virtual firewalls to protect their sites and then try to hack each other's virtual machines. Another class uses the platform to teach students how to set up Apache web servers on Linux machines. The course includes deploying WordPress and then using access controls to lock down the configurations.

The fact that students can learn to code online for free is widely known, thanks to movements like Hour of Code, a one-hour introduction to computer science as well as Code.org and Code Academy. Other organizations move beyond coding to teach other facets of infrastructure technology, much like Yellow Circle, launched in 2014.

Many small classes are held in libraries and schools—students study in pairs using recertified MacBooks donated by Mac to School through its 'Give Mac" program. These students are using a platform created by the San Francisco-based Yellow Circle, under the eye of their teachers. This type of cross-sector partnership is demystifying Infrastructure Technology for students as young as eight.

Using Yellow Circle, students are learning things such as how to build a virtual

data center, including virtual servers, routers, and firewalls along with other components of computer systems that can all be manipulated virtually. Additionally, the environment allows students to build and test their own apps in a digital "sandbox." The program is fully supported by donors, including private companies like Mac to School, allowing each of the courses offered to stay completely free for individual students as well as educators.

Fortunately, students don't need any fancy equipment to learn these skills. All they need is a computer and internet access—which is now broadly available in most libraries or schools—while the backend is handled by the non-profit.

Yellow Circle's work is indicative of a wider movement. Code Academy has taught more than 24 million students to date, and tens of millions more use Code.org. Yellow Circle is developing school district-level partnerships, so that every high school with a technology club will be able to use the platform to teach students IT infrastructure—at no cost. Additionally, they are encouraging schools without technology clubs to start clubs.

"If schools or colleges had classes utilizing a service such as ours when I was in school, I would have been ahead of the game," stated Albert Cisneros, Chief Technology Officer of Yellow Circle. "We want students and educators who are interested in STEAM to leverage our service to build virtual environments and get a better understanding of how to solve the problems of the world today. My hope is that this increased understanding will provide a foothold for future innovations in IT."

Nonprofits are spearheading a revolution of how children learn, and schools and communities are taking advantage. Partnerships between companies, non-profits, and district are creating more knowledgeable, more flexible, and more innovative digital natives.

This is the transformation of education for the world of today—and tomorrow.

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