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March 20, 2011

Career Counselor: Bill Gates or Steve Jobs?

Introduction

College students want to know what courses and majors will give them an edge in their careers. But the choices are not always clear, even if you are taking advice from Bill Gates or Steve Jobs.

In a talk to the nation's governors earlier this month, Mr. Gates emphasized work-related learning, arguing that education investment should be aimed at academic disciplines and departments that are "well-correlated to areas that actually produce jobs."

If this was not music to the ears of advocates of the humanities, they quickly found a soulmate in Steve Jobs. At an event unveiling new Apple products, Mr. Jobs said: "It's in Apple's DNA that technology alone is not enough -- it's technology married with liberal arts, married with the humanities, that yields us the result that makes our heart sing and nowhere is that more true than in these post-PC devices."

What do we know about the relationship between college studies and majors and future employment? What gets you a good first job and what leads to career success?

Left to right: Jin Lee/Bloomberg News, Paul Sakuma/Associated Press

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Career Counselor: Bill Gates or Steve Jobs?

Microsoft's founder would invest in fields proved to produce jobs. Apple's founder extols the liberal arts.

Rival Views, Both Right

Updated March 21, 2011, 07:24 PM

Stephen Joel Trachtenberg *is president emeritus and university professor at George Washington University and a partner in Korn Ferry International.*

Is there an *app* for improving America's educational system? Will watching a PowerPoint presentation about the nation's educational challenge help to understand the opportunities and difficulties facing the country?

Two college dropouts, Steve Jobs (Reed College) and Bill Gates (Harvard University) have articulated theories about education. And their viewpoints are as different as are their companies (Apple and Microsoft, respectively), presenting a contrast in style and philosophy.

Flashback to 1983: Jobs and Gates.

Gates hopes to analyze and adjust the education system in order to produce a more efficient and effective learning environment. He advocates sophisticated metrics to measure results. What makes one teacher better at her job than another and how can best practices be shared? Technology enables analysis and is also the delivery mechanism.

Once the education community receives reliable disaggregated research, the policy makers can allocate their limited resources in a fashion that will produce a higher yield. As Gates has said, "...we need to raise performance without spending a lot more."

Jobs is focused more on individual learning and less on systemic education. Technology is his way to get a well-integrated mind flowing in multiple directions. His learning philosophy gives each person the ability to chart his own course. It is less about the structure of the system and more about free will.

Gates' recent speech to the nation's governors stressed assessment, measuring outcomes and tracking students' progress. Technology and benchmarking are joined at the hip. He feels it is worth charting the effectiveness of particular majors with regional job creation. (Does he favor vocational education?)

A discerning mind, one that blends science and Springsteen, is the backbone of the creative spirit: ideas fuel entrepreneurship.

Jobs' approach allows for individual experimentation to find a unique solution to each person's quest. It is the symbol of intellectual multi-tasking. This is a more experimental, integrated search for a holistic view of the universe, one that has multiple access points. Each student becomes his or her own teacher.

My heart is with Jobs (full disclosure: I wrote this on a MacBook Pro). But my mind fully understands Gates' mandate to discover ways to maximize scarce resources to best prepare the workforce. It is beyond noble; it is essential. Gates has contributed millions, perhaps even billions, for the study of education. He is looking for the vaccine to cure education's ailing health. Jobs is tripping our mind with the jazz of life put before us to spark awareness that the more we learn the more powerful we become.

How does this relate to the curriculum of higher education? Keep poetry, architectural history and Russian literature alongside mechanical engineering and agricultural studies. A discerning mind, one that blends science and Springsteen, is the backbone of the creative spirit: ideas fuel entrepreneurship.

Gates is studying the science of education. Jobs is creating the art of learning. I'm sure there is an *app* for teaching arithmetic by watching the heavens and counting the stars.

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The Jobs of Tomorrow

Updated March 21, 2011, 07:25 PM

Brian Fitzgerald *is the executive director of Business-Higher Education Forum.*

In order for the United States to remain competitive and create jobs, the public and private sector are called upon to address increasingly complex problems through innovation resulting from advancement in science and technology. In order to fill these "innovation" jobs, our colleges and universities will need to produce significantly more graduates with degrees in science, technology, engineering, and mathematics -- the STEM fields -- but also equip all students with the additional skills required in the 21st century workplace.

New bachelor's degree holders in computer science, engineering and mathematics are well positioned for high-wage, high-demand jobs. Currently, in fields such as computer science, there are fewer applicants than there are job openings. And forecasts indicate that STEM-related jobs are expected to grow 17 percent over the next decade, with the majority of those jobs requiring a college degree or higher.

New bachelor's degree holders in computer science, engineering and mathematics are well positioned for high-wage jobs.

But a focus exclusively on majors and job openings misses two key points. First, filling these jobs alone is not enough. In addition to superb technical skills, every one of these jobs creates a demand for college graduates with additional skills in business and marketing, for example, as well as soft skills, such as the ability to work in teams, and the possession of communications acumen and analytical thinking.

Second, colleges and universities must prepare students for the jobs of tomorrow. One of the highest in demand -- cybersecurity -- did not even exist a decade ago. Graduates must be lifelong learners improving their skills to match the next generation of jobs.

These points are moot, though, if we continue our systemic slashing of funding for public higher education. Our higher education system has long been the envy of the world, but as proportions of state support for higher education dip into single digits, we risk weakening the entire enterprise -- in all fields -- that undergirds our innovation and economic development.

The workforce -- today's and tomorrow's -- needs highly skilled, well-rounded workers. Students who pursue STEM degrees and also gain the other necessary skills not only will have a bright future, but will sustain ours.

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Just Wait 10 Years

Updated March 21, 2011, 07:25 PM

Edwin W. Koc *is the director of strategic and foundation research at the National Association of Colleges and Employers.*

It can hardly be denied that students who graduate in a career-oriented major like accounting, engineering or computer science have a decided advantage in the job market immediately after graduation.

Data from a host of surveys conducted by the National Association of Colleges and Employers support this conclusion. Graduates in career-oriented majors have a higher probability of receiving a job offer, and are likely to receive a substantially higher starting salary. In 2010, the average offer to a computer science major was $60,473; the average offer for a history major was $38,731.

The advantage possessed by career-oriented college majors may be short-lived.

The advantage possessed by career-oriented majors is that their college training provides them with defined technical skills that are valued in the marketplace. This is particularly true when the skills are in relatively short supply as they are with computer science majors, who currently make up approximately 3.5 percent of all bachelor degree graduates.

Liberal arts majors, by comparison, do not leave college with a particular set of skills. Their programs are focused on providing breadth in knowledge, skills and understanding, qualities that are harder to identify as unique and much harder to market to employers.

But the advantage possessed by career-oriented majors may be short-lived. Once in a career path, the more general skills of communication, organization and judgment become highly valued. As a result, liberal arts graduates frequently catch or surpass graduates with career-oriented majors in both job quality and compensation. A longitudinal study conducted several years ago by the National Center for Educational Statistics found that the wage differentials that existed between career-oriented majors and academically oriented majors were all but eliminated within 10 years after graduation.

In the end, success in the job market is likely less about the specific concentration a student has in college than the development of a range of skills and knowledge that can be applied to a rapidly changing work environment -- the historic goal of a true liberal education.

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The Leaders of Silicon Valley

Updated March 21, 2011, 07:25 PM

Vivek Wadhwa *is a visiting scholar at University of California, Berkeley, senior research associate at Harvard Law School and director of research at the Center for Entrepreneurship and Research Commercialization at Duke University. Follow him on Twitter at @vwadhwa.*

It's commonly believed that engineers dominate Silicon Valley and that there is a correlation between the capacity for innovation and an education in mathematics and the sciences. Both assumptions are false.

My research team at Duke and Harvard surveyed 652 U.S.-born chief executive officers and heads of product engineering at 502 technology companies. We found that they tended to be highly educated: 92 percent held bachelor's degrees, and 47 percent held higher degrees. But only 37 percent held degrees in engineering or computer technology, and just 2 percent held them in mathematics. The rest have degrees in fields as diverse as business, accounting, finance, health care, arts and the humanities.

What makes people successful are their motivation, drive and ability to learn from mistakes.

Gaining a degree made a big difference in the sales and employment of the company that a founder started. But the field that the degree was in or the school that it was obtained from was not a significant factor.

Over the past year, I have interviewed the founders of more than 200 Silicon Valley start-ups. The most common traits I have observed are a passion to change the world and the confidence to defy the odds and succeed.

It is the same in business. In the two companies I founded, I was involved in hiring more than 1,000 workers over the years. I never observed a correlation between the school of graduation or field of study, on one hand, and success in the workplace, on the other. What makes people successful are their motivation, drive and ability to learn from mistakes, and how hard they work.

And then there is the matter of design. Steve Jobs taught the world that good engineering is important, but what matters the most is good design. You can teach artists how to use software and graphics tools, but it's much harder to turn engineers into artists.

Our society needs liberal arts majors as much as engineers and scientists.

*For more thoughts on this topic, read Vivek Wadhwa's post, "**Engineering vs. Liberal Arts**," on TechCrunch.*

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Write Your Way to Success

Updated March 21, 2011, 07:24 PM

Mark Bauerlein *is a professor of English at Emory University and a fellow at the James Madison Program at Princeton University. He is the author of "The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future."*

In a climate of scarcity and accountability, the best rationale for the liberal arts -- that they should be saved for their own sake -- has little weight.

However, humanities departments have nothing to fear from Bill Gates, and Steve Jobs points the way toward their rationale on employment grounds.

Good training always requires more than what will be necessary at any one time on the job.

In the Information Age, as everybody knows, writing is essential in just about every profession -- business, law, science, education, media, etc. Whenever corporate leaders and manufacturers are surveyed about employee skills, writing always comes out near the top. This makes humanities coursework a crucial training ground for careers far from the prose of the Gettysburg Address and the verse of "Paradise Lost."

The truth is that those works of genius have closer relevance to career success than people think. Students and many teachers assume that to learn how to write business documents, legal briefs, scientific abstracts and so on, students should study and write business documents, legal briefs and so on. But good training always requires more than what will be necessary at any one time on the job.

If young people want to shine in the workplace -- and a skillful writer quickly earns the respect of co-workers -- they need to exercise their verbal muscles while still in school, practicing well beyond the standard vocabulary and style of their particular job. That means studying poets and orators who wield the full resources of expression: vivid metaphors, elegant parallels, subtle irony, or picturesque imagery. To master the business memo, they should analyze the couplets of Alexander Pope. To polish the clinical report, they should study the dialogue of Edith Wharton.

Let the English Department announce: "We welcome the evidence Bill Gates solicits. Observe how our best students did in medical school, law firms and investment banks."

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What if You're Bad at Math?

Updated March 28, 2011, 11:28 AM

Amanda L. Griffith *is an assistant professor of economics at Wake Forest University.*

Research has shown that the highest returns in wage premiums go to students who major in engineering, science or business. In times of expansion and technological advances, these fields also grow the quickest.

The reason that technology and business majors earn a wage premium is because they are scarce, so if we make them less scarce the wage premium will disappear, unless there is a large increase in demand for workers with these degrees.

Someone who decides to major in science solely because of the wage premium may not have the skills to take advantage of it.

Perhaps just as important, there's evidence that matching actual skills to a job choice is key in determining wages and wage growth. A talented humanities student who decides to major in science solely because of the wage premium might not receive the full wage premium because his or her skill set may not be well matched to the jobs in that field.

However, data show that students who major in arts or social sciences and double major in a science, engineering or business field can increase their wage premium. The combination of skills learned in the two disparate majors likely creates new job pathways.

Certainly, an increase in funding for science, engineering and business programs would be beneficial for students. But to do this at the expense of the traditional liberal arts fields would be a mistake.

Besides, if more and more students go into technology and business fields, who will write the books or create the artwork to be enjoyed on devices like the Kindle or the iPad?

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Go for Computer Science

Updated March 21, 2011, 07:24 PM

Ed Lazowska *holds the Bill and Melinda Gates chair in computer science and engineering at the University of Washington.*

There are a few facts about education, employability and economic growth that we should keep in mind.

A balanced education serves you best. An artist or philosopher who is not equipped to appreciate the sciences and engineering is crippled, as is a scientist or engineer who is not equipped to appreciate the humanities and social sciences. (Unfortunately, most people in higher education would agree that while a student who arrives to college seeking a science or engineering education gets a reasonable exposure to the arts and humanities and social sciences, the reverse often is not the case.)

The further out you are from college graduation, the less your success is attributable to the field in which you majored, and the more your success is attributable to a set of abilities imparted by any top-tier bachelor's-level education: critical thinking, problem solving, rhetoric, the ability to work in teams, leadership, conflict resolution. The sciences and engineering certainly have no monopoly on imparting these skills.

A balanced education serves you best, but you can get that with a computer science degree.

But let us not fool ourselves about what fields offer job opportunities, create jobs for others and drive the economy. A recent report from the President's Council of Advisers on Science and Technology lays it out clearly.

The expansion and advancement of networking and information technology (NIT) are the most important drivers of economic competitiveness, the report says, not only in the NIT industry, "but to an even greater extent from NIT-enabled productivity gains across the entire economy." Without this growth, "none of our goals in energy, health care, education and national security or other crucial areas will be achievable."

The report goes on to say, "The development and application of NIT-related systems, services, tools and methodologies have boosted U.S. labor productivity more than any other set of forces in recent decades. Advances in NIT, deployed pervasively throughout the U.S. economy, have helped U.S. workers become the world's most productive and have enabled the U.S. to remain one of the world's most competitive economies."

And regarding employment, the report observes, "All indicators – all historical data, and all projections – argue that networking and information technology is the dominant factor in America's science and technology employment, and that the gap between the demand for NIT talent and the supply of that talent is and will remain large."

Data and projections from the Bureau of Labor Statistics included in the report show that networking and information technology was responsible for more than 50 percent of all employment in all fields of science and technology (engineering, the life sciences, the physical sciences, and the social sciences) between 1998 and 2008, and will be responsible for nearly two-thirds of all job growth in these fields between 2008 and 2018.

So what should today's college students study in order to stay competitive? My take: A computer science degree is a great preparation for just about any field.

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When Classrooms Can't Keep Pace

Updated March 20, 2011, 07:00 PM

***Anya Kamenetz**, a staff writer at Fast Company magazine, is the author of "DIY U: Edupunks, Edupreneurs and the Coming Transformation of Higher Education." She blogs at DIY U.*

The answers to global challenges such as climate change and poverty are to be discovered, not found in books. The pace of technology and social change is accelerating, and it's not unheard of for college graduates to find themselves employed in industries that did not exist when they first entered college.

An entire generation of web geeks is functioning more or less self-taught because the classroom can't quite keep up with what they need to know.

What's needed most are a set of educational practices that allow students to seek knowledge independently.

So while math, science and engineering are great -- and there's an argument to be made that technological skills constitute a new form of basic literacy for meaningful participation in society -- it would be foolish to advocate a single, centrally mandated curriculum as the path to prosperity.

What's needed most are a set of educational practices -- whether in the context of the traditional liberal arts, a technical program, or something in between -- that empower students to seek knowledge independently, to collaborate, follow their passions and to connect their knowledge with the real world.

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