Careers, College, Dollars and STEM

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According to the U.S. Labor Department, job openings have trended upward since their series low in July 2009 during the recession. As of April 2016, there are 5.8 million job openings in the United States, which surpasses the pre-recession peak in April 2007, of 4.8 million, and the highest number since the government started tracking job openings in 2001. There were 5.3 million job openings in January 2001.

According to the Manufacturing Institute, over the next 10 years, 3.5 million manufacturing jobs will need to be filled. Because of the skills gap, a shortage of workers with the necessary technical skills, more than 2 million of those jobs are expected to remain unfilled. That's 2 million unfilled jobs potentially available! As Baby Boomers retire, they will account for almost 2.7 million job openings created in manufacturing over the next decade. The balance of openings is because of the expected growth in our businesses.

With plenty of job openings, finding a great career has probably never been easier. And yet, shop owners I speak with say they continue to struggle to find people for their high-tech manufacturing operations. What can explain this? The prevailing belief that a four-year college degree will assure employability is one area that might be leading talented candidates down the wrong career path.

College wages have failed to grow for college graduates. The hourly wage of a young college graduate, $17.94, according to the College Board, declined 2.5 percent from what a typical college grad would have made in 2000. Add to this that the cost to obtain a four-year college degree has risen faster than family incomes, and the college student and their family finds themselves paying more—much more—for a diminished return. According to the College Board, the inflation adjusted cost of tuition, fees, room and board increased 129 percent for public schools from 1983-1984, to the 2013-2014 enrollment year. Median family income increased only 16.8 percent over the same period.

Here are some facts to consider before deciding on a four-year degree:

- Only 44 percent of students enrolling in 2007-2008 actually completed their degrees in four years.
- The average time to get a bachelor's degree was five years and 10 months.
- Of the recent college graduates, 10.5 percent are not employed.
- Since 2004, the average debt burden of student borrowers has increased 92 percent, according to the College Board.
- Average student loan debt reported to be $28,400 in 2013. This is likely to be an underestimate as it does not include private loans not arranged through the school.
- Is the degree you are considering in a STEM field? If not, why not?

STEM — Real Employment Assurance

Sixty percent of those manufacturing jobs mentioned above as "likely to remain unfilled" are attributable to a shortage of skills, specifically STEM (Science, Technology, Engineering and Math) skills. According to the big data firm Burning Glass, in 2013 there were 2.5 with entry-level job postings for each new four-year graduate in STEM fields, compared with 1.1 postings for each new graduate with a bachelor's degree in non-STEM fields. Forty-eight percent of all entry-level jobs requiring a bachelor's degree or higher are currently in the STEM fields of study. STEM is where the jobs are for college grads.

But not all STEM jobs require a bachelor's degree. At the sub-bachelor's level, 24 percent of entry-level jobs are in STEM fields. According to Burning Glass, 1.3 million out of 5.7 million job postings in STEM fields did not require a bachelor's degree.

STEM jobs offer a substantial salary premium. Burning Glass reports that the average advertised salary for entry-level

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STEM jobs requiring a bachelor's degree or higher was $66,123, compared with $52,229 for non-STEM jobs. Four-year STEM degrees earn a 26-percent premium over non-STEM graduates. But for sub-bachelor's degree-level job entrants, associate's degrees or on-the-job training, the premium was 28 percent, or $47,856 for STEM jobs versus $37,424 for non-STEM jobs.

According to a study in Colorado by College Measures, reported in the Wall Street Journal, associate's degrees in nursing, industrial production, fire protection and engineering all generated starting salaries above $60,000. The average starting salary of a graduate with a bachelor's degree in Colorado in any field was $38,860. Results were similar in Texas and Arkansas. Demand for STEM skills explains the difference.

Indiana's Commission for Higher Education issued its first "Return on Investment Report" and found that after a year in the workforce, on average, graduates with an associate's degree earned more than graduates with a bachelor's degree. First-year earnings for those with associate's degrees were $35,026 versus $30,466 for those with bachelor's degrees. After 5 years, they were still virtually tied. Those with associate's degrees earned $41,072 versus $42,395 for bachelor's degree holders.

Looking across all jobs, STEM jobs account for 38 percent of total online postings, but they only account for 16 percent of total employment. The Bureau of Labor Statistics predicts that STEM jobs will grow 55 percent faster than non-STEM jobs over the next decade. The demand for STEM talent is real.

Career Certainty = STEM

If someone you know is uncertain about career prospects, undecided about committing to four or five years and 10 months of college and loans to cover it, and unsure about whether they will find a job once they get that degree, the facts in this article make it clear that the answer to career uncertainty is STEM. Millions of jobs currently open require STEM skills. Millions of anticipated job openings will require STEM skills. Our precision machining companies offer great careers with interesting work, competitive salaries and plenty of opportunities to advance and grow skills. Many provide educational assistance as well.

If someone you know is looking for a great career, a career with a long-term future, ask them to consider STEM fields such as industrial production, precision machining and quality assurance. If you understand what the numbers in this article say about the demand for skills, it should be an easy decision to make. Check out the PMPA's Comprehensive Career and Training Database at **pmpa.org** to find training opportunities near you.
PMPA Career Database:
short.productionmachining.com/CareerData

2 GREAT BLOGS! | YOURCAREERFACTS.COM
PMPASPEAKINGOFPRECISION.COM

HOT TOPICS

PMPA members support one another through email Listserves, where they can solve problems, share advice, sell excess material and equipment, and learn about new developments and opportunities. Here is a list of topics that were recently discussed:

- Production drill press
- ROI on visual measuring machines
- Protective sleeve netting for parts
- Indexable drilling on a Swiss lathe
- Bar feeder service
- 440C stainless heat treaters
- Peck drilling attachment
- Machinability data/experience with C932 bronze
- Internal tread milling issues
- CAM software options

PMPA CALENDAR

For the latest chapter meeting information, please view the "Events" listed on our homepage at **pmpa.org**. If you have any questions about PMPA conferences or meetings, please contact Monte Guitar, director of technical programs, at 440-526-0300 or **mguitar@pmpa.org**.

Annual Meeting
October 21-25, 2016
Westin Hilton Head Island
Resort & Spa
Hilton Head, South Carolina

Management Update Conference
March 3-5, 2017
Hilton Nashville
Nashville, Tennessee

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