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ASCCC STEM Institute – San Diego – 22 February 2013



“Creating and Expanding Robust STEM Pathways”



Agriculture & Natural Resources



Arts, Media & Entertainment*



Building Trades & Construction*



Education, Child Development & Family Services



Energy, Environment & Utilities*



Engineering & Architecture*



Fashion & Interior Design*



Finance & Business*

Industry Sectors





Health Science & Medical Technology*



Hospitality, Tourism, & Recreation



Information & Communications
Technology*



Manufacturing & Product
Development*



Marketing, Sales, & Service*



Public Services*



Transportation*

Industry Sectors – cont'd

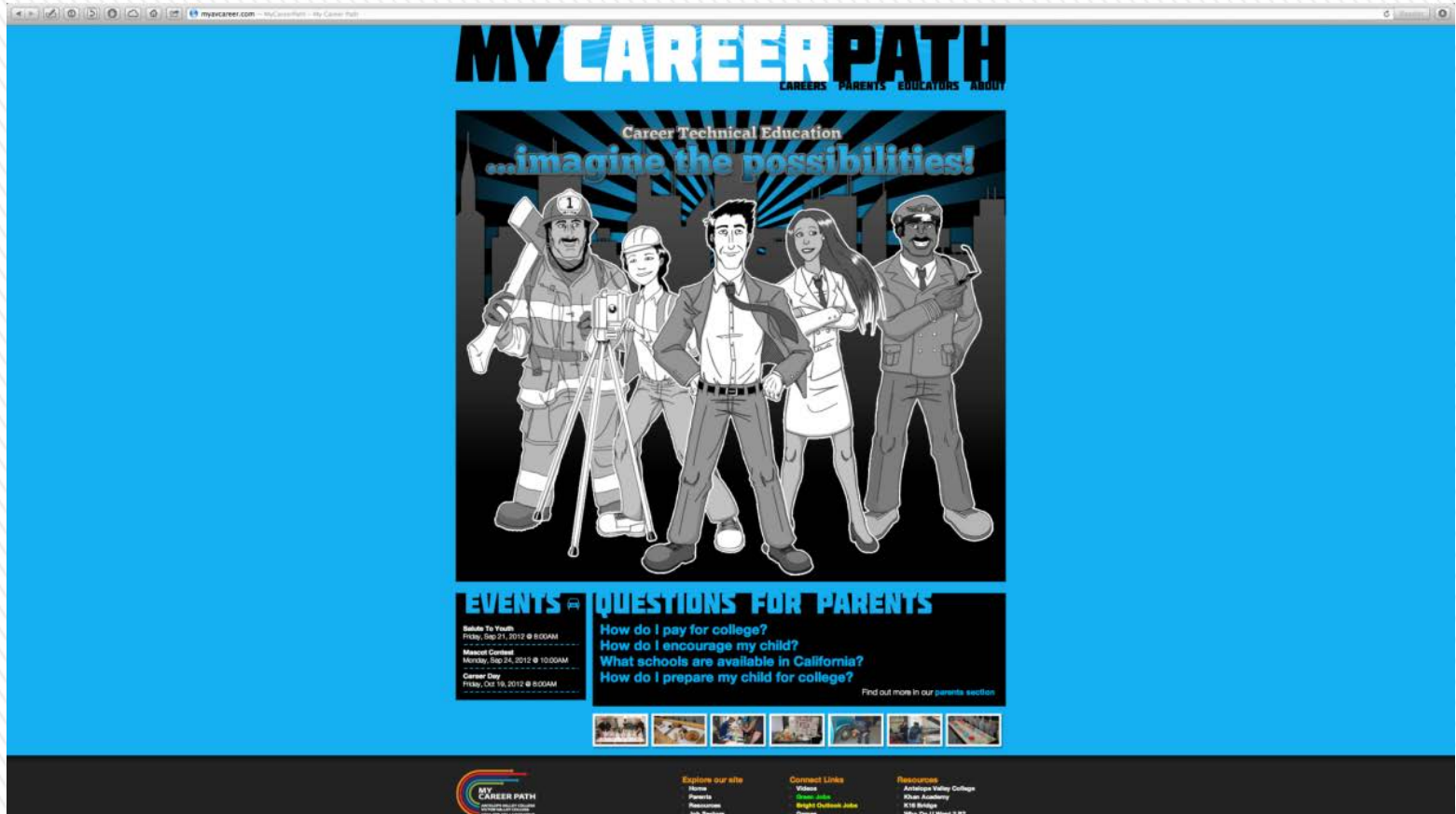


- » SB70 grant, CTE Transitions grant, Perkins secondary and post-secondary funding braided along with private donations and grants to leverage resources for programs
- » Relations among K-16 programs are strong and collaborative
- » Commitment to the success of students in CTE is constant
- » Commitment to CTE among partners is enthusiastic
- » AVC has worked with students to develop [My Career Path](#) website. Take a brief look...
- » Digital World graphic from www.freedigitalphotos.net



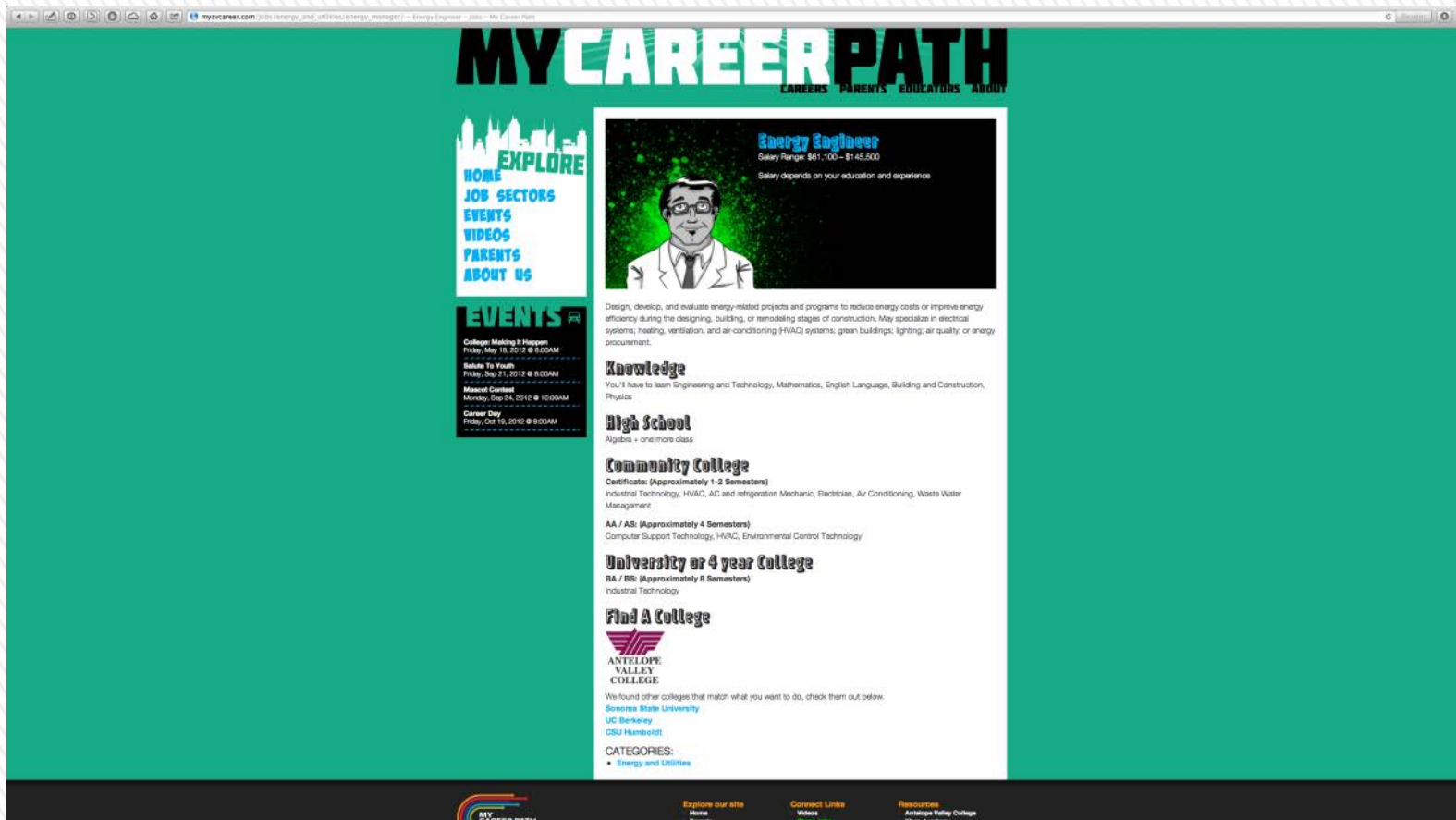
Where We Are . . . >





My Career Path Home





My Career Path



- » Designed by students
- » Reviewed by counselors and teachers
- » Highlighting CTE
- » Will be available shortly
- » Both high school and middle school websites will be available in Spanish



Middle School Career Website



- » AVC developing an island in Second Life (<http://secondlife.com>) as a “CTE Adventure” for exploration of the pathways
- » Used by counselors
- » Used by teachers with small groups
- » Linked to STEM
- » Using articulation throughout the path



Virtual Worlds



» AVUHSD

- > Medical (adding Biomedical Sciences in Fall 2013)
- > Dental
- > Pre-engineering (PLTW/GTT) and CAD
- > Construction
- > Automotive
- > Fire Tech
- > Forensic Science
- > Arts, Media & Entertainment
- > Agriculture and Natural Resources (including Vet)



STEM Pathways



- » One area of emphasis in the SB70 regional collaborative grant
- » 2010-2011 academic year, Psomas FMG worked with AVUHSD/AVROP as part of its solar panel installation project at the sites - [Psomas AVUHSD Case Study](#)
- » Five-day solar curriculum project with Palmdale High School Building Construction Technology and Algebra I courses
- » Psomas extending curriculum to include more expository writing, activities – see handout for information



Solar Pathway



- » Facilitated connection between theory and application in high school courses – significant test gains, particularly in the Algebra course
- » [Psomas PHS Solar Collection Project Site](#)
- » Solar Education Foundation CCSS-aligned writing project and essay contest
- » Solar Energy Curriculum Pilot Project Video



Solar Pathway

» FAST Academy projects:

- > “Little Green Planet” – Skills USA national gold and bronze
- > Sustainable House



- » Connection to regional community college pathway
- » Industry connections
- » Green symposia



» Engineer Checking Solar Panel picture from www.freedigitalphotos.net by worradmu

Solar Pathway



- » “Grow your own” initiative for the “Aerospace Valley” begun in 2003
- » AFRL began EPA’s with local school districts & colleges
- » MSET partnerships – business, industry & government with K-14 education – expanded to K-16
- » Collaboration with others – Pasadena Education Foundation, TIES, etc.



Pre-Engineering Pathway



- » AVC and AVUHSD/AVROP renewed an articulation Memorandum of Understanding in 2006
- » Approximately 40 AVUHSD/AVROP courses are articulated with approximately 45 AVC courses through the credit-by-exam mechanism
- » Nearly 3,000 high school/adult ROP students are eligible to receive articulation credit annually
- » CATEMA System adoption beginning 2012-2013



Articulation Agreements



- » AVUHSD - Project Lead the Way © curriculum begun at Lancaster HS 2003, Highland HS 2004, Knight HS 2006, Quartz Hill HS 2009; Antelope Valley HS (GE) and Palmdale HS (FAST) 2012; SOAR HS – STEM focus; Tehachapi HS; Sierra Sands USD
- » AutoCAD, Engineering, and Engineering Technology (including composites fabrication) sequences at AVC; partner with industry
- » Lancaster University Center begun in 2004 - CSULB-AV degree completion programs in Mechanical and Electrical Engineering – <http://www.ccpe.csulb.edu/splash/engineering/>
- » Photos from www.freedigitalphotos.net F-22 by Tom Beach, Spaceplane by Victor Habbick



Pre-Engineering Pathway



- » Summer Gateway Academy sessions; gov't/industry sponsors
- » Extension of pathway down to middle school level (Gateway to Technology) – Sierra Sands USD, Lancaster SD, Palmdale SD/TPAA, Westside USD, SOAR Prep Academy, Jacobsen MS – Tehachapi, Tropic MS - Mojave; private school efforts
- » AVC STEM Grants
- » AFRL/AFTC Nat'l Defense Education Program STEM insertion initiatives
- » STEM events/activities for students (robotics, rocketry, Science Olympiad, Super Science Saturday, MEEC, etc.)
- » Industry participation through STEMPosia, tours, professional associations, etc.



Pre-Engineering Pathway



» AV STEM 2012 video

Pre-Engineering Pathway



SB1440

Students
Transferring using
Articulation
Agreements

New Legislation



Perkins

Anticipation of competitive secondary/post-secondary consortia for portion of funding under new re-authorization (CTE Blueprint – US Dept. of ED)

New Legislation





Solar

- Solar farms
- Residential
- Sales
- Maintenance



Engineering

- Civil
- Aerospace
- Mechanical
- Electrical
- Electronic



Computer Drafting

- Drafting
- Engineering
- Technician



Nursing

- R N
- LVN
- Respiratory Tech
- EMT

Jobs/Workforce Development



Co-op Work Experience

- Limited at AVC
 - SunPower
 - Verengo
 - Joe's Heating and Air

Internships

- Edwards AFB
- NASA
- Lockheed
- City of Lancaster
- AV Hospital
- California State Parks

Regular Employment

Meeting with companies 900+ in JPC Database

Matching students skill sets and training to opportunities

Student Experience

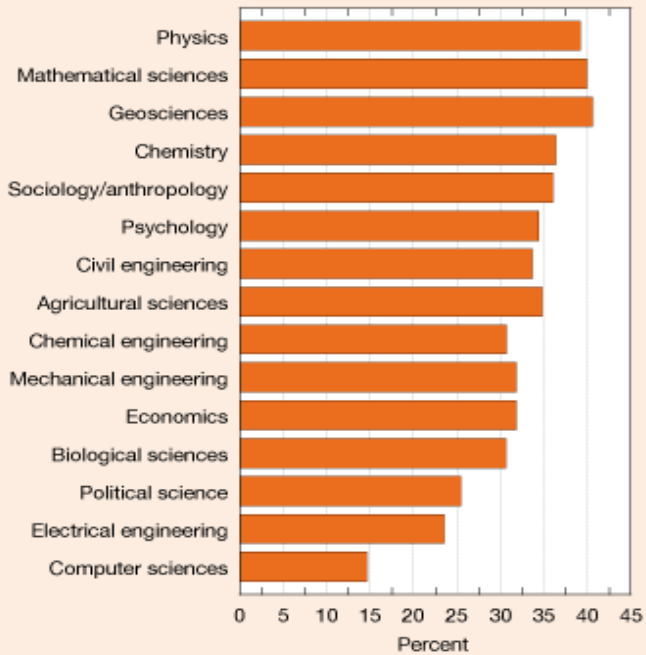




Real World



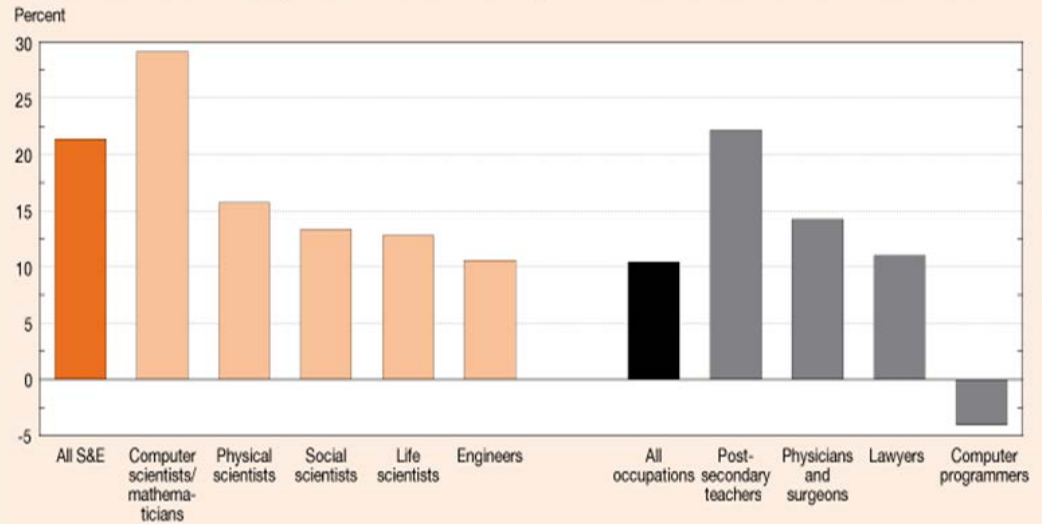
Figure 3-25
**Employed S&E degree holders older than 50,
 by selected field of highest degree: 2006**



SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT) (2006), <http://sestat.nsf.gov>.

Science and Engineering Indicators 2010

Figure 3-A
Bureau of Labor Statistics projections of increase in employment for S&E and selected other occupations: 2006-16



BLS = Bureau of Labor Statistics

SOURCE: BLS, Office of Occupational Statistics and Employment Projections. See appendix table 3-1.

Science and Engineering Indicators 2010

Future



- » Increasing industry need for qualified workforce in STEM areas – greying workforce
- » US focus on increasing STEM graduates and jobs to kick-start the economy
- » Creating and expanding pathways to meet regional workforce demands with home-grown STEM workforce
- » Approximately 7,000 AV region students involved in STEM courses and activities – expected to increase to nearly 13,000 within the next two years



Tie it all together >





Q&A



- » Tom O'Neil – loneil@avc.edu
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- » Diane Walker – dwalker@avhsd.org
 - > <http://avstemcenter.blogspot.com>
- » <http://myavcareer.com/about/>
- » www.avc.edu/stem
- » www.avdistrict.org
- » www.avrop.avhsd.org
- » <http://www.ccpe.csulb.edu/splash/engineering/>

Contact Info

