Abdul Siddiqui

Current Position: Electronics Engineer   **Years of Service:** 23 Years

Currently the resident subject matter expert in software architecture development for systems and productlines at US Army Program Executive Office for Simulation, Training and Instrumentation (PEO STRI), Orlando, FL. He is the lead for Configuration Management and Information Assurance Security Officer for Program Manager Digitized Training and leads the effort to certify and accredit the Digital Range Training System.   **The Engineering Mentor and STEM Coordinator for PEO STRI.**

Was the Software Engineering Manager for the Bradley Fighting Vehicle System, US Army Tank Automotive Command (TACOM), Warren, MI. Resident Software Engineering expert for the A3 BFIST, M7 BFIST, Linebacker, Knight, MPU common software and FS3 system efforts.

SME: 25th Annual Software Engineering Workshop, "Reusable Architecture", Software Engineering Laboratory, Goddard Space Flight Center, NASA, November, 2000.
SME: The First Software Product Line Conference, "Architecture Reconstruction and Product Lines", Carnegie Mellon Software Engineering Institute, Denver, Colorado, August, 2000.
SME: "Army Workshop on Lessons Learned from Software Upgrade Programs" , Carnegie Mellon, Software Engineering Institute, CMU/SEI-2001-SR-021, Nov 2001

NAVAL POSTGRADUATE SCHOOL, Monterey, CA; Master in Software Engineering , 2000

The Engineering Design Process
&
Today's Design Challenge!!

THe Goal

To solve a problem by developing, improving or using an existing technology

"How High Can you Go"

What is the Problem….?

→ Buddy is too small

You need to solve this problem. What do you want to know before you start?
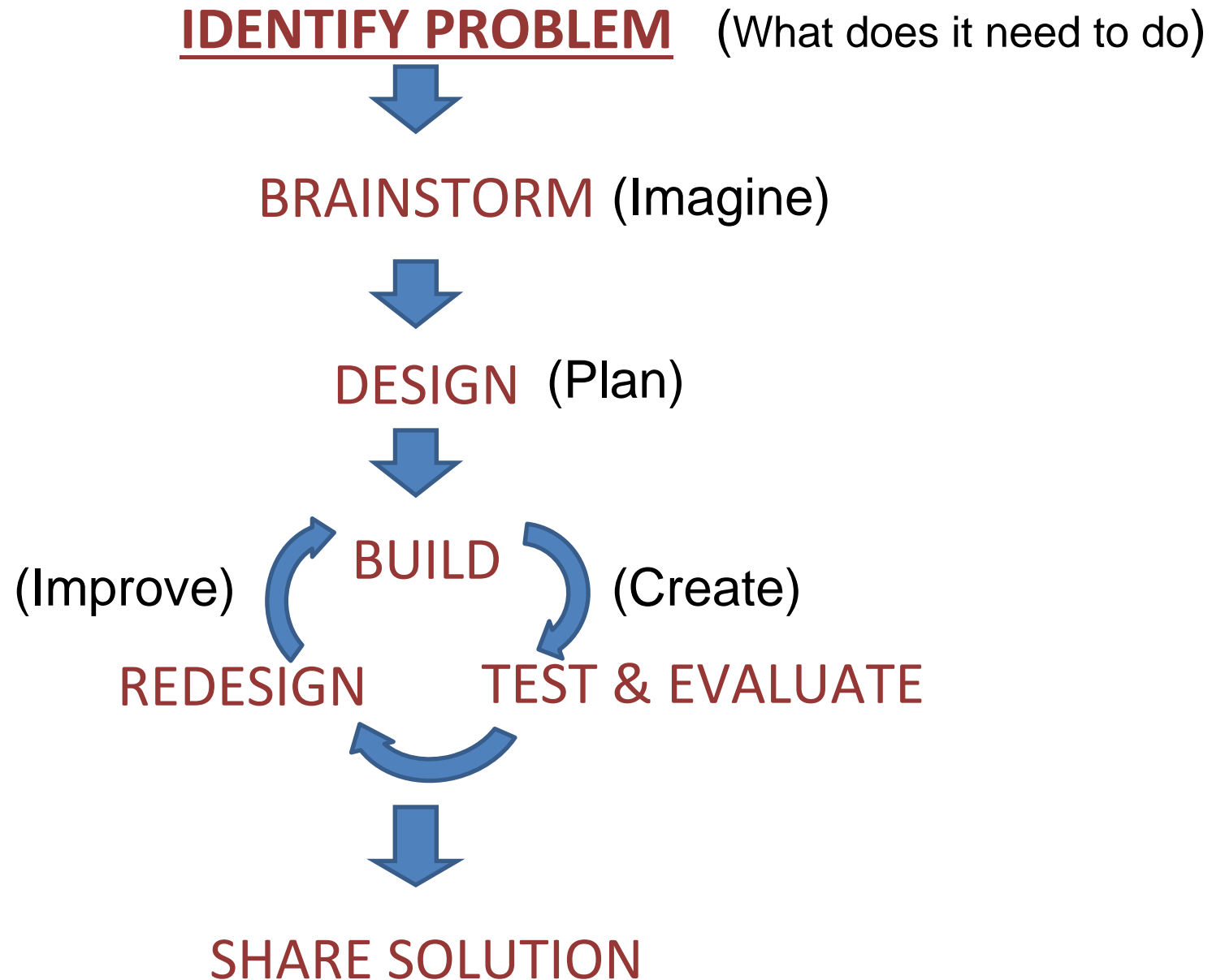
→ Materials
→ How high?
→ Time?

Success….?

→ Aim to elevate statue at least 2 feet
→ Support the statue for at least 10 sec.

Engineering Design Process

<u>IDENTIFY PROBLEM</u>   (What does it need to do)

BRAINSTORM (Imagine)

DESIGN (Plan)

(Improve) BUILD (Create)

REDESIGN TEST & EVALUATE

SHARE SOLUTION

Engineering Design Process

IDENTIFY PROBLEM (What does it need to do)

⬇

BRAINSTORM (Imagine)

⬇

DESIGN (Plan)

⬇

(Improve) BUILD (Create)

REDESIGN   TEST & EVALUATE

⬇

SHARE SOLUTION

SHARE SOLUTIONS

- ➤ What's the best feature of your design? Why?

- ➤ What were the different steps you did to get your project to work?

- ➤ What was the hardest problem to solve?

- ➤ Did you have to do something a few times to get it to work? What?

- ➤ If you had more time, how would you improve your project?

How do move from one step to the next ?

Engineering Design Process

IDENTIFY PROBLEM

BRAINSTORM

DESIGN

BUILD

REDESIGN   TEST & EVALUATE

SHARE SOLUTION

Engineering Design Process

IDENTIFY PROBLEM

⬇

BRAINSTORM

⬇

DESIGN

⬇

BUILD

REDESIGN   TEST & EVALUATE

⬇

SHARE SOLUTION

✓ What are some different ways to tackle the challenge?

✓ Off-the-wall suggestions often spark GREAT ideas. How creative can you be?

Engineering Design Process

IDENTIFY PROBLEM

⬇

BRAINSTORM

⬇

DESIGN

✓ What brainstormed ideas are really possible given your time, tool and materials?

✓ What are some problems you'll need to consider & solve as you build your project?

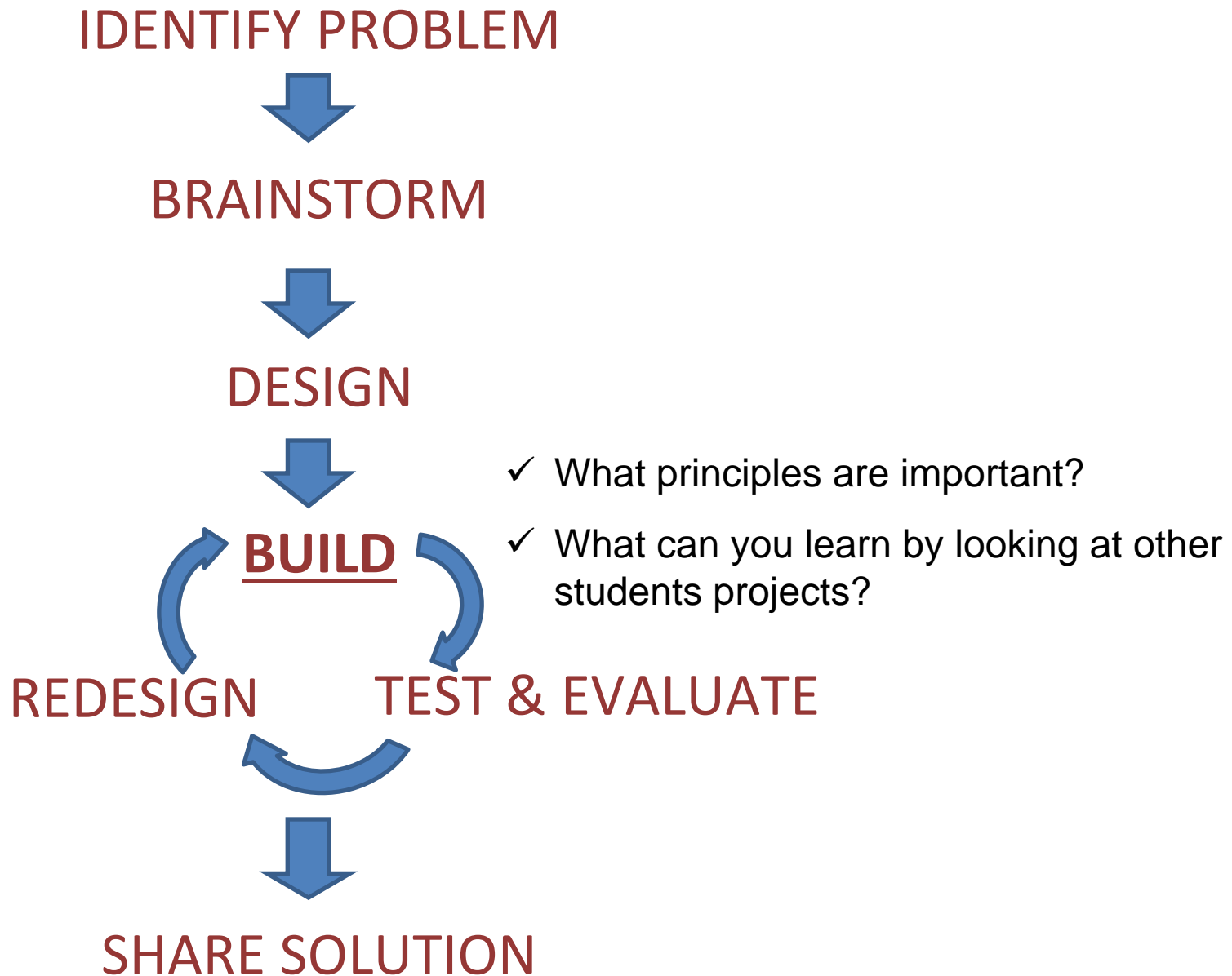✓ How can a sketch help with your design?

⬇

BUILD

REDESIGN ⟲ TEST & EVALUATE

⬇

SHARE SOLUTION

Engineering Design Process

IDENTIFY PROBLEM

⬇

BRAINSTORM

⬇

DESIGN

⬇

BUILD

✓ What principles are important?

✓ What can you learn by looking at other students projects?

REDESIGN ⟲ ⟳ TEST & EVALUATE

⬇

SHARE SOLUTION

Engineering Design Process

IDENTIFY PROBLEM

⬇

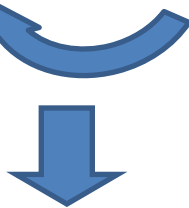BRAINSTORM

⬇

DESIGN

⬇

BUILD

REDESIGN   **TEST & EVALUATE**

✓ If the design did not meet the Challenge what should you change?

✓ Why is it a good idea to keep testing a design?

✓ Remember the problem/goal? How will you know if you've been successful?

SHARE SOLUTION

Engineering Design Process

IDENTIFY PROBLEM (What does it need to do)

⬇

BRAINSTORM (Imagine)

⬇

DESIGN (Plan)

⬇

(Improve)   BUILD   (Create)

REDESIGN   TEST & EVALUATE

⬇

SHARE SOLUTION

SHARE SOLUTIONS

➢ What's the best feature of your design? Why?

➢ What were the different steps you did to get your project to work?

➢ What was the hardest problem to solve?

➢ Did you have to do something a few times to get it to work? What?

➢ If you had more time, how would you improve your project?

WHAT'S AN ENGINEER?

Engineers dream up creative, practical solutions and work with other smart, inspiring people to invent, design, and build things that matter. They are changing the world all the time.

Engineers get to imagine the future and design for it.

Engineering is about thinking through problems, finding solutions, and helping people.

The best part of being an engineer is the creativity that's involved and the satisfaction that comes from solving hard problems.

Every day I see things that could be made better by just applying some good engineering know-how.

WHAT DO ENGINEERS DO AT WORK?

Think creatively. Engineering is an ideal outlet for imagination and creative problem solving – the perfect field for independent thinkers.

Work with great people. Engineering takes teamwork. As an engineer, you'll be surrounded by smart, creative, inspiring people.

Solve problems and design things that matter. Engineers improve peoples' lives by tackling problems, improving current designs, and coming up with solutions no one else has thought of.

Change the world and make a difference. Among many other pursusts, engineers develop systems that save lives, prevent disease, reduce poverty, and protect our planet.

HOW DO ENGINEERS MAKE THE WORLD A BETTER PLACE?

Here are some things engineers do to help improve people's lives.

* Create more fuel-efficient cars
* Design a lighter bike frame
* Invent a more powerful superglue
* Create satellites that detect drought around the world
* Develop state-of-the-art cell phones
* Invent artificial retinas for the blind
* Develop a feather-light laptop
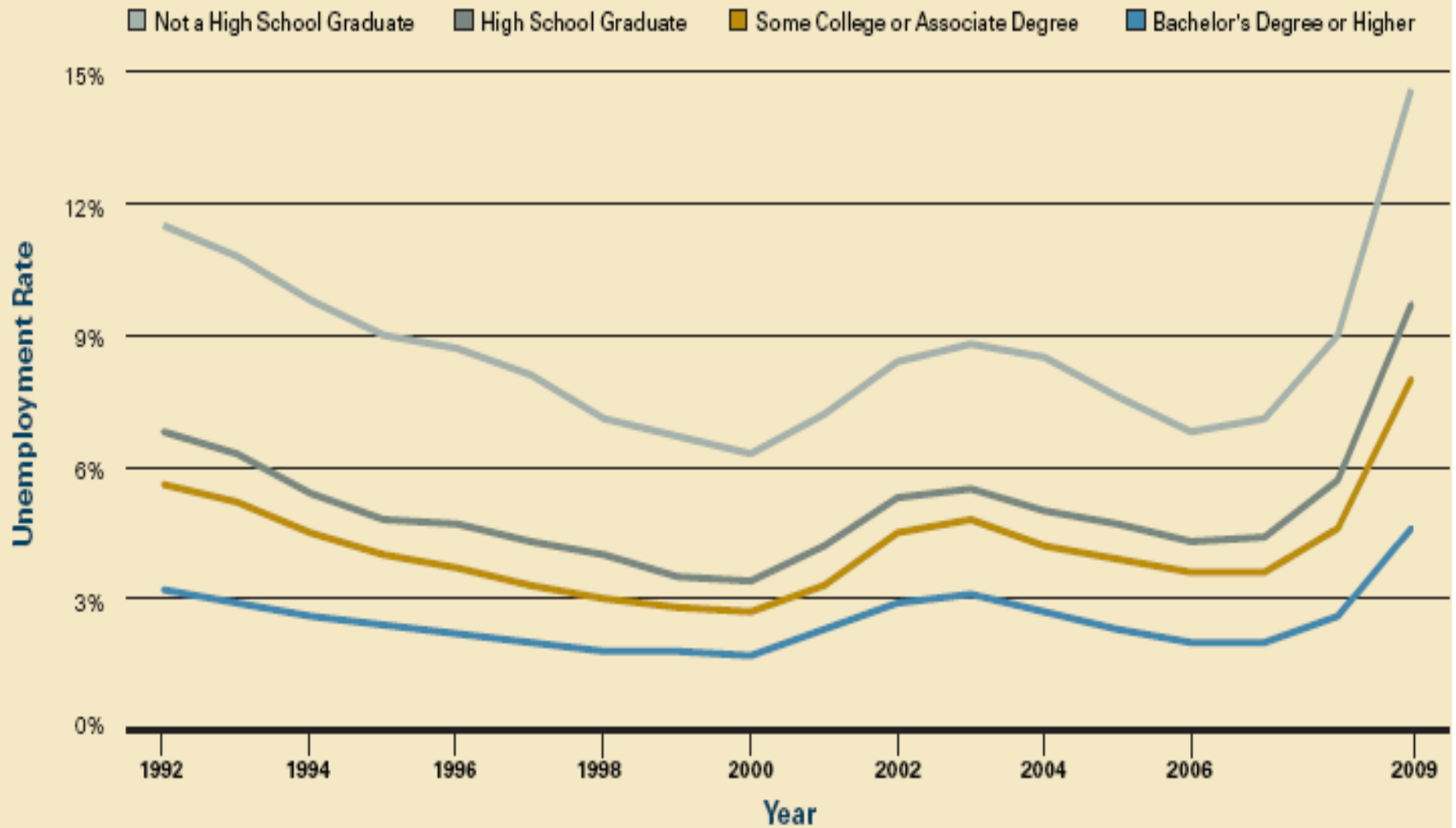* Design clothing that repels mosquitoes

FIND OUT MORE

For more great reasons to become an engineer, fun projects, and profiles of engineers doing innovative work, visit the following Web sites:

Engineer Your Life at engineeryourlife.org
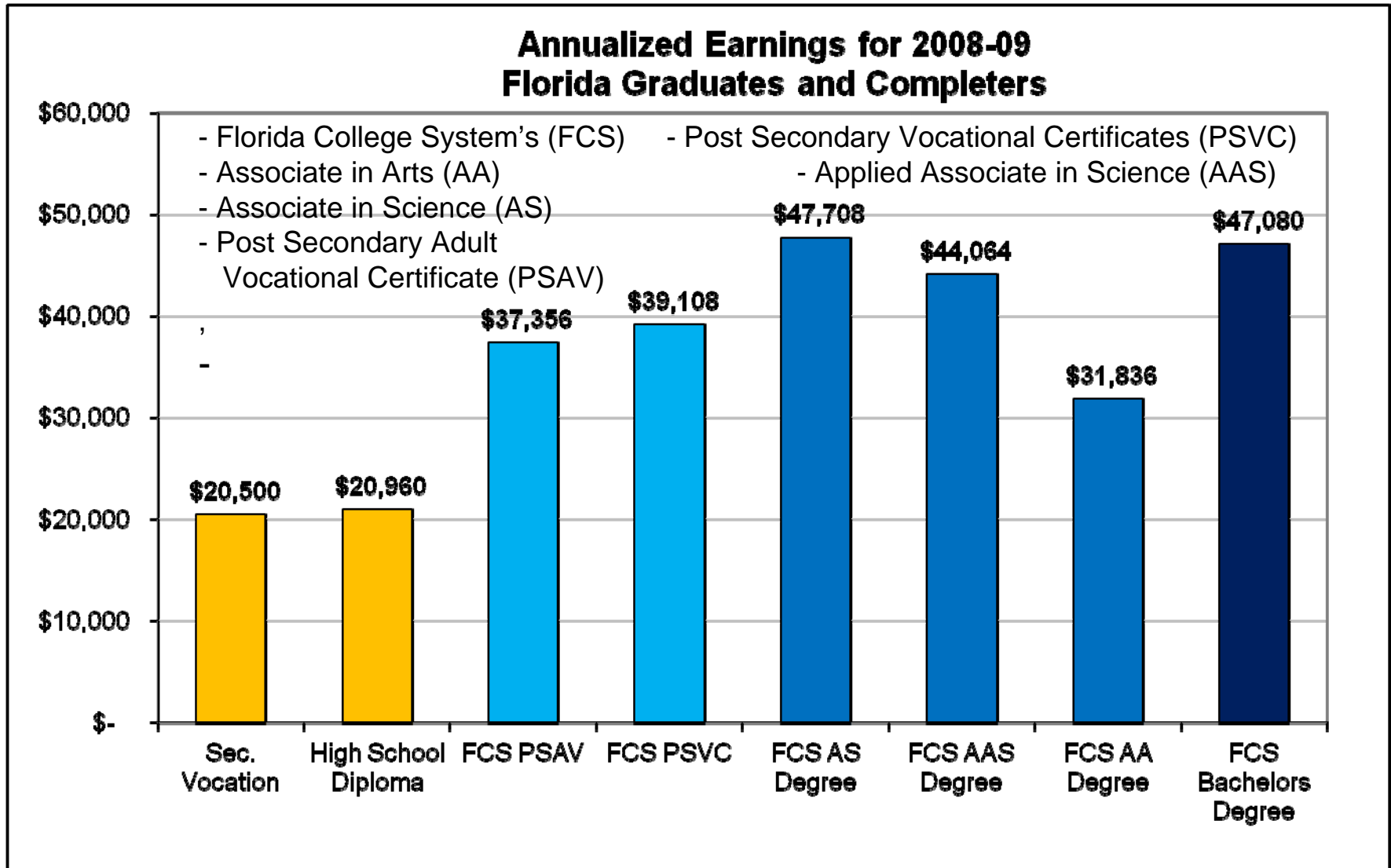
Discover Engineering at discoverengineering.org/jome.asp

Unemployment Rates by Education Level

Unemployment Rates Among Individuals Ages 25 and Older, by Education Level, 1992–2009

Legend: Not a High School Graduate · High School Graduate · Some College or Associate Degree · Bachelor's Degree or Higher

Source: Bureau of Labor Statistics, 2010d.

Targeted Degrees Pay!

Annualized Earnings for 2008-09 Florida Graduates and Completers

- Florida College System's (FCS)
- Associate in Arts (AA)
- Associate in Science (AS)
- Post Secondary Adult Vocational Certificate (PSAV)
- Post Secondary Vocational Certificates (PSVC)
- Applied Associate in Science (AAS)

Category	Earnings
Sec. Vocation	$20,500
High School Diploma	$20,960
FCS PSAV	$37,356
FCS PSVC	$39,108
FCS AS Degree	$47,708
FCS AAS Degree	$44,064
FCS AA Degree	$31,836
FCS Bachelors Degree	$47,080

Source: FETPIP Annual Outcomes Report, Fall 2009 Data
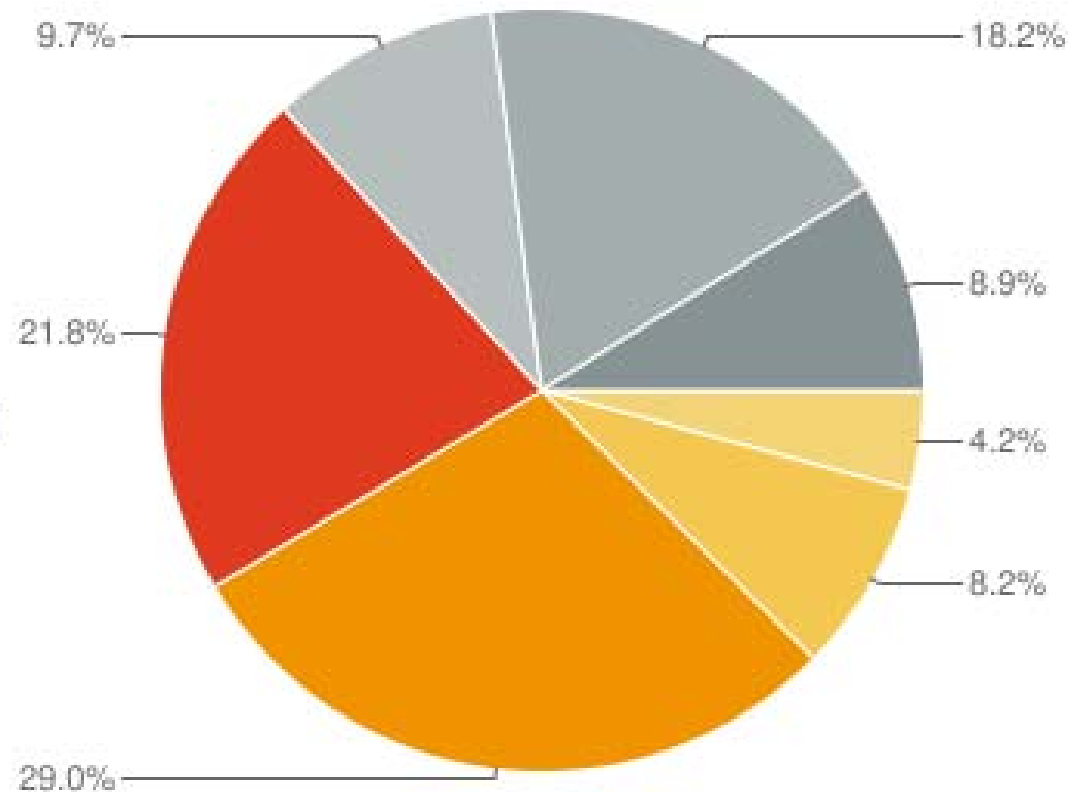
Trained Workforce

- **58% of Jobs in Florida will require a two or four year degree by 2018 (Lumina, 2010)**

Making a Transition

Levels of Education
for Florida
AGES 25-64

- Less than ninth grade
- Ninth to 12th grade, no diploma
- High school graduate (or equivalency)
- Some college, no degree
- Associate degree
- Bachelor's degree
- Graduate or professional degree

9.7%
18.2%
8.9%
21.8%
4.2%
8.2%
29.0%

(Lumina, 2011)