To Preserve and Protect
Masters of Technology Training in High School

VM Workshop 2018
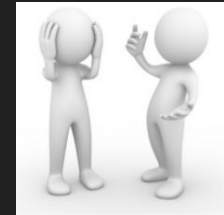
Mission statement:

Provide a relevant and up-to-date self-study and self-paced training and education curriculum, and optional certification programs, so a person of any age, gender, or socioeconomic background can learn to master technology, and that can specifically be used immediately in the K-12 space to advance a student's skill development and overall knowledge of computer science, and longer term to produce the next generation of tech-savvy entrepreneurs, inventors, innovators and business leaders.

The Vision for K-12 Students

Provide up-to-date self-study courses to teach students how to master technology LONG BEFORE they graduate high school, enabling them to become a functioning business and/or IT professional before college.

Rationale: By propelling students beyond just mastering video-games to mastering certain technologies, and doing so in a manner that shortens the path to accomplishment while providing satisfaction and building confidence, we will motivate students to seek further computer science and/or computer information systems education, and to start their own businesses.
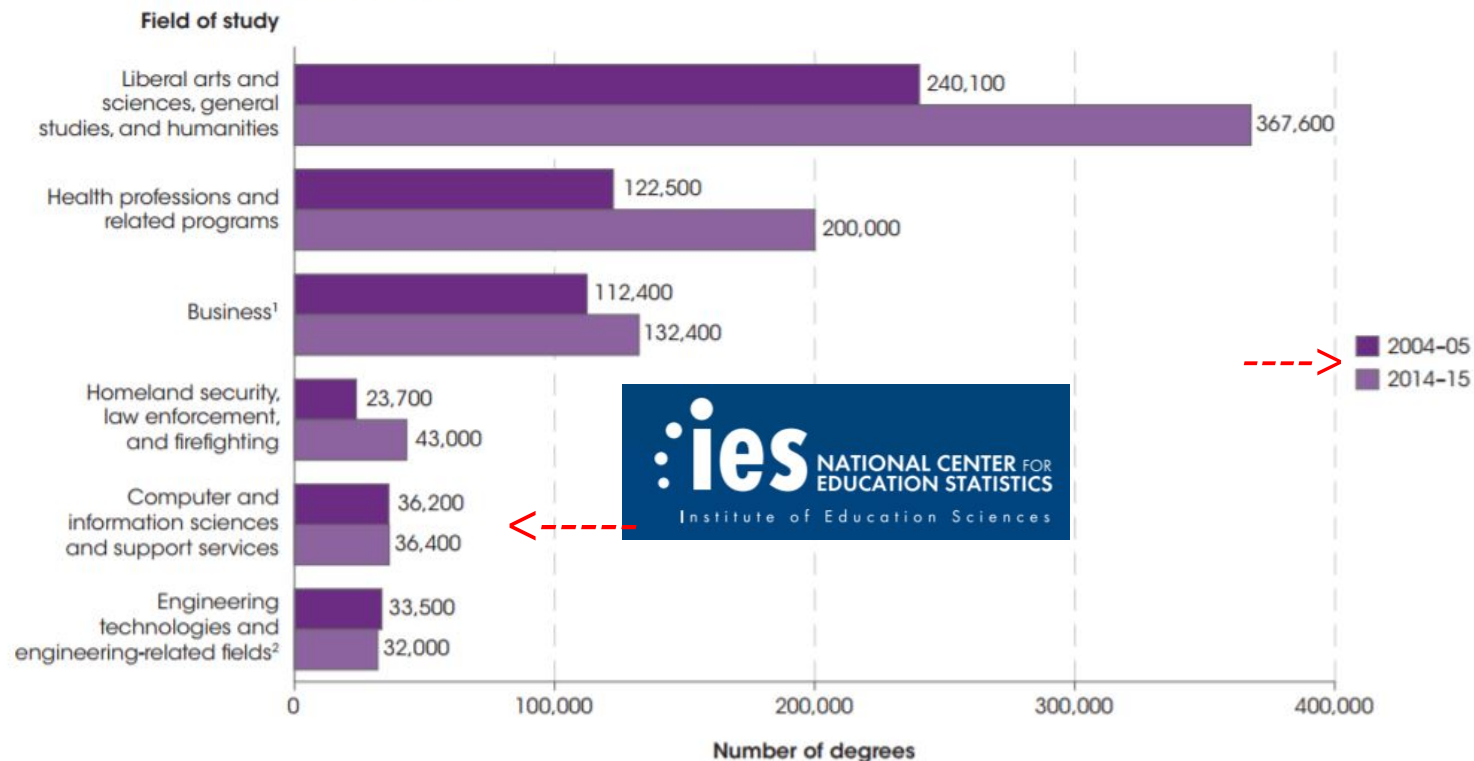
Tech Savvy means understanding these areas:

- Application Development*
- Architecture & Design
- Networks
- Security
- Operating Systems
- **Data Management**

- Hardware & Devices
- Subsystems & Middleware
- Industry Standards
- Legal: Contracts, Licensing, Patents, & Intellectual Property

* Application Development for mobile apps on smart-phones will be the springboard in the K-12 space.

Figure 1. Number of associate's degrees conferred by postsecondary institutions in selected fields of study: Academic years 2004–05 and 2014–15

Field of study

Field of study	2004–05	2014–15
Liberal arts and sciences, general studies, and humanities	240,100	367,600
Health professions and related programs	122,500	200,000
Business[1]	112,400	132,400
Homeland security, law enforcement, and firefighting	23,700	43,000
Computer and information sciences and support services	36,200	36,400
Engineering technologies and engineering-related fields[2]	33,500	32,000

Number of degrees

[1] "Business" includes personal and culinary services, to be consistent with how "business" is defined throughout the rest of the indicator.
[2] Excludes construction trades and mechanic and repair technologies/technicians.
NOTE: The six fields of study shown are those in which the largest number of associate's degrees were conferred from the 1,014,000 associate's degrees conferred in 2014–15. Data are for postsecondary institutions participating in Title IV federal financial aid programs. The new Classification of Instructional Programs was initiated in 2009–10. The estimates for 2004–05 have been reclassified when necessary to make them conform to the new taxonomy. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2005 and Fall 2015, Completions component. See *Digest of Education Statistics 2016*, table 321.10.

Response from Legislators:

Concerned that U.S. employers will have no choice but to move jobs offshore due to the massive shortage, members of Congress passed legislation designed to make computer science a core subject for grades K-12, stating primary and secondary education needs to focus on computer science.

OK, but realistically this will require up-to-date curriculum and qualified teachers!
Public schools are woefully understaffed with Teachers having computer-science expertise.

One Approach - HOUR OF CODE by Code.org

Jan 4, 2018 - On its 4 year anniversary, the Hour of Code passed 500 million served – an incredible accomplishment for all the educators, nonprofits, corporations, and governments that support this global campaign.

Last month, 9 states and 76 school districts announced plans to expand access and diversity in CS. In Los Angeles, the district pledged to teach CS to every student. To celebrate, NBA superstar Chris Bosh visited Bancroft Middle School to speak about his own experience learning to code...

Making Training Affordable and Scalable

Students and teachers have free access to our appl development suite*

- Patented
- Cloud/browser-based
- Zero-coding

Key Points:
Allows 4th graders and above to create computer apps and mobile apps in minutes.

Learning is self-paced and compliments STEM/STEAM initiatives.

Allowing students to learn application development principles by actually solving problems by creating applications that use different technologies, greatly enhances logic and problem solving skills across all subjects.
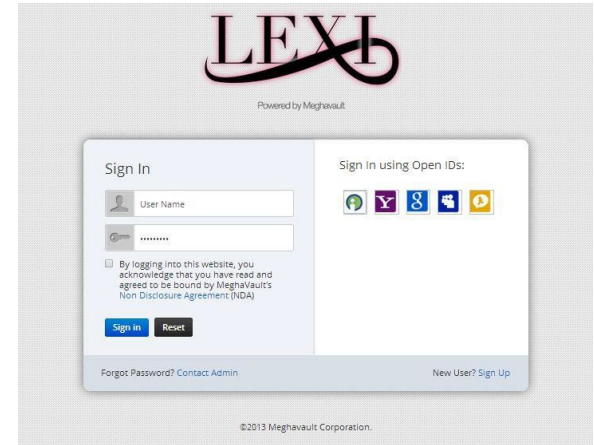
* same tools we use for our business

ACTS Intern Program

Levels:
- ➔ Collaborator
- ➔ Developer
- ➔ Mentor
- ➔ Entrepreneur

PLU$ -
- ● Earn Scholarships/Rewards
- ● Earn and $ave money for college

Immediate Goals

Ramp up Intern program

Expand advisory board and contributing Subject Matter Experts

Expand technology vendors contributing technology, resources, materials, and guidance

Obtain funding from like-minded sponsors and partners, especially large enterprises

Produce and offer content for learning modules

Preserve and protect knowledge base established the last 50 years.

Goals in 3 years

Multiple Completion certificates spread across 9 core IT disciplines, average 20 to 40 hours self-study per certificate

involve _____ participants taking at least one discipline, issue _____ Masters of Technology (MoT) certifications by 2021, _____ MoT certs earned attained *prior to high school graduation*

help _____ entrepreneurs start new small

businesses and _____ Technology Patents filed

Educational Strategy and Examples

Training Delivery

➢ Online delivery *free of charge* for students and teachers

➢ Self-paced, step-by-step with lots of immediate feedback

➢ Emphasis on adaptive reasoning and problem solving

➢ Emphasis on Enterprise Computing

➢ 100+ hours of 15, 30 and 45 minute learning modules

➢ Online testing for pre- & post-lesson quizzes, unit tests, & certification exams

➢ No instructor needed, trainee forum with moderators (Teachers can preview and embellish in classroom, trainees may help each other)

➢ Build apps by watching then doing. (step-by-step)

Multi-Dimensional Learning/Theme-based

Each learning session has a theme, most often themes will contain one or more elements of Science, Technology, Engineering, and Math (STEM) because of the synergy between STEM and Computer Science.   There are multiple learning benefits from using this multi-dimensional approach. Common emphasis will be on developing a student's analytical skills in the areas of adaptive reasoning and problem solving.

Learning sessions will be self-paced, will last between 15 and 30 minutes. They will begin with a short narrative or educational video (typically 5 min or less) before the problem to be solved;

- to teach how to identify a problem
- to expand knowledge of a subject
- to increase awareness of the possibilities for using technology

Then engage the students in an activity (e.g. perform discovery, develop app, etc) that uses terminology and builds upon ideas central to the session topic.

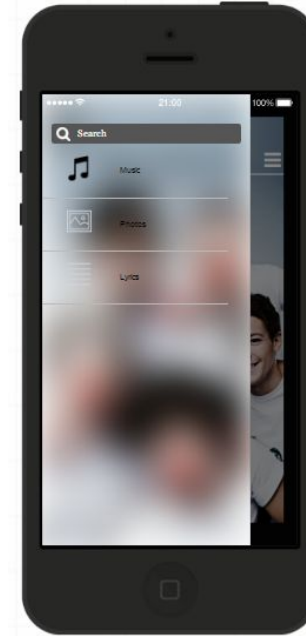# We allow apps to be built with zero coding … no need to learn a programming language
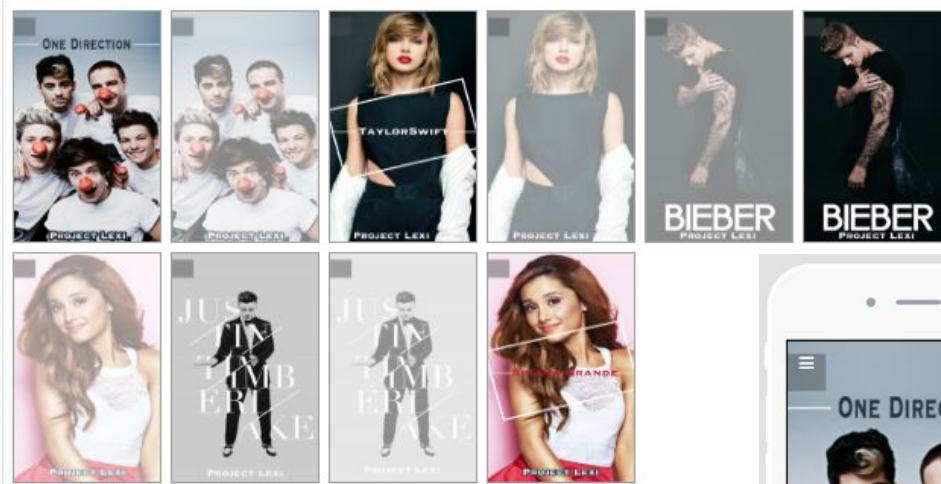
Getting students interested at STEM fairs

...by providing easy-to-follow instructions to build a mobile app in 10 minutes

Example 1 - Music app - afterward it runs on their own smartphone.


STEAM fair

Example 2 - Takes 10 minutes to complete

Students, we have a problem! The Space Shuttle Atlantis has developed a pressurization problem which will require the shuttle to land at an altitude above 10,000 feet above sea level. Your mission is to quickly build an application that will identify the countries or continents that will offer the greatest opportunity for the space shuttles safe return to earth.

By following the steps below you will use the new MeghaVault Studio to develop this application/program that will create a report that NASA can use to identify an airport to safely land the shuttle.

1. Sign in to MeghaVault Studio with Username: student5@meghavault.com and Password: **passw0rd!**. Be sure to put a check in the non-disclosure box before clicking the "**Sign In**" button.
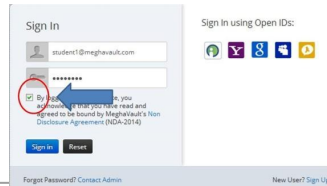
2. Click on the **Studio Tab** at top – this will bring you to the workspace (Canvas) where you will build your application.

3. On the left side tools list, click on the **Datasource Activity** which will provide a list of options. Select and drag "**Database**" and drop it in the top **Drop activity here box**. This is where you will identify where the data you need to access is stored.
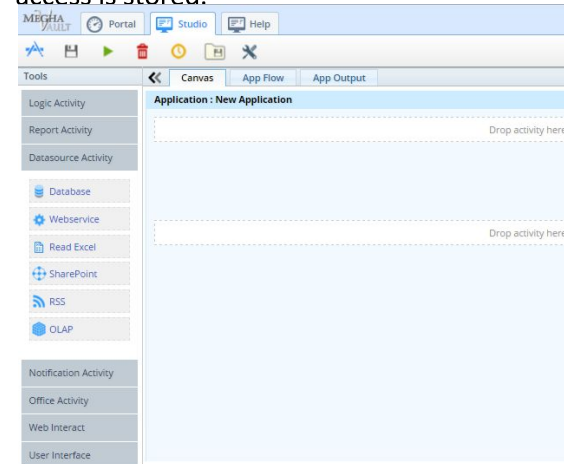
… 9. To compare the altitude of the airports in the database, and select those that meet the altitude criteria of higher than 10,000ft, check the first box under "**Filter Data**" and change the equal "=" to greater than ">". In the next field to the right type in the altitude for which we need our airports to exceed (**10000**).
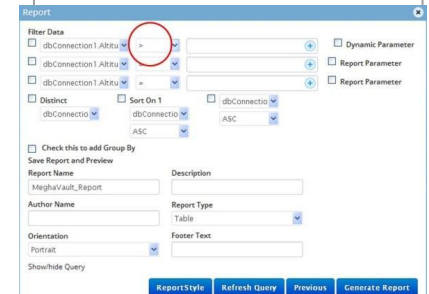
Example 2 (cont'd)

First | Prev | 1 ▼ | Of 1 | Next | Last | Report Format: Select ▼

REPORT

Airport Name	City	Country	Altitude	Latitude	Longitude
LEH	LEH	INDIA	10682	34.135555	77.545555
EL ALTO INTERNATIONAL	LA PAZ	BOLIVIA	13313	-16.513056	68.192222
JUAN MENDOZA	ORURO	BOLIVIA	12146	-17.963333	67.076111
CAPITAN NICOLAS ROJAS	POTOSI	BOLIVIA	12913	-19.543333	65.723889
ANDAHUAYLAS	ANDAHUAYLAS	PERU	11300	-13.706389	73.350278
JAUJA	JAUJA	PERU	10900	-11.783056	75.473334
JULIACA	JULIACA	PERU	12546	-15.466945	70.158056
VELAZCO ASTETE	CUZCO	PERU	10960	-13.535555	71.938611
LA QUIACA	LA QUIACA	ARGENTINA	11418	-22.162222	65.569723
CHARANA	CHARANA	BOLIVIA	13320	-17.593889	69.434166

… 18. Final Challenge: Can you name the **Continents** represented by these airports, and which continent has the most airports that would meet NASA's need?

Example 3 - lessons building upon each other

Student prep by learning how managing automotive traffic smarter can improve driver safety.   Computers in cars, connected to the internet, provide this capability. Watch a 3.5 minute video https://www.youtube.com/watch?v=EeJKQt9hL98 explaining how a city in Europe (Eindhoven) has applied this technology and is using it to monitor when and where
- brakes are hit,
- wipers are on
- potholes are hit.

What can we do with this information? Provide early detection/warning for when and where:
- traffic jams are forming
- roads may be freezing (when temp is low)
- road repairs are needed

Multiple Lessons follow building **Apps with varying degrees of complexity:**
Simple Apps - retrieve stored traffic data and provide reports based on specified criteria
Complex Apps - retrieve traffic data, analyze patterns
More Complex Apps - retrieve and analyze data, create optimal route map for road repair crew
Sidebar - require the students to locate the city in Europe that is doing this (Eindhoven) and answer a few geography/demographic questions as part of the lesson.
- Eindhoven is in what country?
- what language do they speak there?|
- Name the countries that share a common border.

Comprehensive Testing Program

- certification exam for Masters certificate (legally
      defensible and psychometrically sound)
- online administration and delivery
- timed exam, validated candidate registration, extensive security
- proctored exam (access requires proctor's password)
- waiting period required to retake exam
- per-candidate testing fee OR enter "scholarship code"
- blocks of scholarship codes sold (discounted) to school districts,
      sponsors, and (STEM) organizations
- intermediate testing by lesson & section, with remediation &
      print or mail each section certificate for small fee
- offer online practice exams for small fee

In Conclusion...

In Conclusion:

By providing both opportunity and incentives to master and use technology in a practical and relevant context, teachers will be able to prepare a generation of self-confident and tech-savvy individuals to pursue productive careers across all fields and professions.

When it comes to Paradigm Shifts, there are only 3 kinds of people in the world:

- Those who *make* them happen.
- Those who *watch* them happen.
- Those who *wonder* what happened.

Partner/Sponsor Benefits

- **Opportunity to influence next generation**
- Broader Brand Awareness
- **Contribute to certification program for K-12.**
- **Serve local community programs** e.g. Girl Scouts, Boy Scouts, WIT, etc.

Partner/Sponsor Role

**Provide funding, guidance,
and permission to use existing resources**

Contact:

For additional information:

Bill Carico _____

bcarico@actscorp.com

434-426-2287