STEM Workforce Development at the K-12 Level

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STEM Pipeline — Leaking Badly

In 2001, there were a bit more than 4 million 9th graders. Four years later, 2.8 million of them graduated and 1.9 million went on to two- or four-year college; only 1.3 million were actually ready for college work. Fewer than 300,000 are majoring in STEM fields and only about 167,000 are expected to be STEM college graduates by 2011.
Today’s students are moving beyond the basics and embracing the 4C’s — “super skills” for the 21st century!

**Communication**
Sharing thoughts, questions, ideas, and solutions

**Collaboration**
Working together to reach a goal — putting talent, expertise, and smarts to work

**Critical Thinking**
Looking at problems in a new way, linking learning across subjects & disciplines

**Creativity**
Trying new approaches to get things done equitably, innovating & inventing
✓ STUDENTS
✓ EDUCATORS
✓ CURRICULUM
✓ STRATEGIC ALLIANCES
✓ SUSTAINABILITY
All Virgin Islands learners will achieve college and career readiness in order to meet the workforce demand for innovative problem-solvers, who are prepared to achieve success with the STEM challenges of our global society.

STEM trained learners will be the foundation of a workforce that will maintain and attract employers as the territory competes in the global market.
STEM literacy for all and STEM majors and/or career pathways
New Content Standards – Sci/Math

College Career & Citizenship
Sci. Inquiry vs. Engineering Design

2 different processes:
• Understand through inquiry
• Apply though engineering design

This a major shift in Science Education via NGSS from grades K-12!
Professional Learning Communities (PLCs)
Sci/Math grades 7-12

- Mentor Teachers

- Model Classrooms
NGSS & CCSS Instructional Shifts

✓ Content
✓ Strategies
  - Inquiry-based
  - Project-based
✓ Reflection
✓ Authenticity
Summer Institute

Mentor Teachers
STEM Teaching and Learning

“...focuses on authentic content and problems, using hands-on, technological tools, equipment, and procedures in innovative ways to help solve human wants and needs”

Merrill. (2009)
Apply Strategies & Design Curriculum

Engage
Explore
Explain
Elaborate
Evaluate
Model Classrooms
When you walk into a classroom, every student should be able to say what it is they are figuring out.
CORE: STEM literacy for all
and
ELECTIVE: STEM majors and/or career pathways
STEM & CTE

- STEM Education requires academic and career/technical to merge

- STEM education must incorporate both simultaneously for all students

College AND Career Readiness
Partnerships

STEM Academy

- Parent/Family
- Business/Industry
- Community
- IHEs
STEM

Q & A

Science, Technology, Engineering, & Math

Virgin Islands Department of Education