

***Mare Nostrum Caribbean:  
Workforce Development through STEM Education  
Research and Practice***

***I. STEM workforce development through higher  
education***

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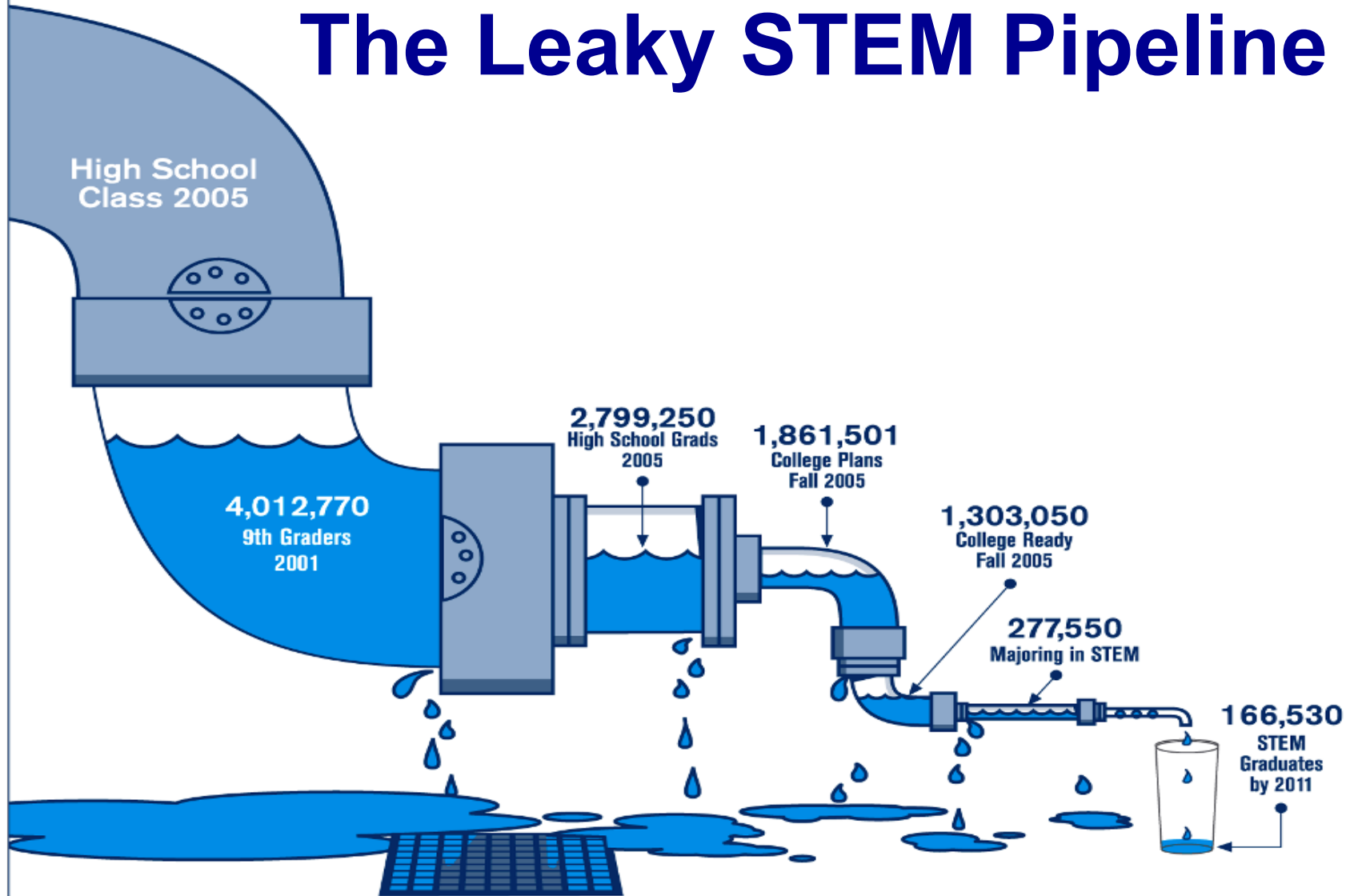
***II. STEM workforce development at the K12 level***

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# **Virgin Islands Institute for STEM Education Research and Practice**

- **to improve the quantitative and scientific skills in the USVI workforce to strengthen economic competitiveness in STEM fields**
- **improve STEM education in the Territory, at both the K12 and the University levels**

# The Leaky STEM Pipeline



Source: NCES Digest of Education Statistics; Science & Engineering Indicators 2008

# The STEM Pipeline

- **<40% of students who enter college as STEM majors complete a STEM degree**
- **Need 1 million more STEM graduates over the next decade**
- **Increasing retention by 50% would produce about 750,000 more STEM graduates**
- **Nationally the wider STEM enterprise includes <8% URM whereas minorities represent almost 30% of US population**

# The STEM Pipeline in the USVI

- **<50% of math and science teachers are highly qualified in territorial public schools**
- **~50% of 11<sup>th</sup> grade students proficient or advanced in mathematics**
- **~50% of students in public schools go on to college immediately**
- **SAT scores lower than the national average**

# The STEM Pipeline at UVI

- **~70% of incoming freshmen are not college ready for mathematics**
- **90 STEM graduates/year**
- **14% of our Biology and Chemistry majors go on to PhD programs**
- **89% of alumni complete PhD programs compared to about 50% nationally**

# **Comprehensive Economic Development Strategy for the USVI 2012**

- **Education, energy, and STEM a priority area**
- **need to develop a diverse, highly qualified scientific workforce**
- **Requires improving the quantitative and scientific skills as well as the educational levels of the territorial workforce**

# **Virgin Islands Institute for STEM Education Research and Practice**

- **to improve the quantitative and scientific skills in the USVI workforce to strengthen economic competitiveness in STEM fields**
- **improve STEM education in the Territory, at both the K12 and the University levels**



# **Virgin Islands Institute for STEM Education Research and Practice**

- **Collaborative infrastructure for STEM education research**
- **Grant writing center for STEM education research**

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Implement an effective program of STEM Education research**
  - Initial work from our NSF Noyce project
  - Research on distance learning
  - Hiring a new faculty member to focus on STEM Education research
  - Collaborative work between UVI and territorial public schools

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Develop undergraduate certification paths for STEM teaching**
  - **STEM Education minor in CSM**
  - **Early exposure to STEM teaching at the K12 level**

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Evaluate the greatest need for post-graduate training**
  - **MMES & MMAT program review**
  - **Other pathways for post-graduate training**

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Research integration in the undergraduate curriculum**
  - Including VI-EPSCoR related research on coral reef demography, disease, and diversity
  - Develop more engaging classrooms and laboratory experiences to increase retention of STEM majors

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Mentoring training for all faculty, post-docs, and graduate students involved in *Mare Nostrum* projects**
  - **Annual workshop**
  - **Ongoing monitoring and assistance**

**Increase the competitiveness of the USVI workforce in STEM-related jobs through improved teaching & better student preparation in STEM**

- **Inquiry and project-based learning practices, infused with VI-EPSCoR research, aligned with NGSS and CCSSM, established as the model for STEM instruction in all ten middle and high schools in the Territory**