Standardizing an inland waterways curriculum

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Background

• Member of the Vanderbilt Engineering Center for Transportation and Operational Resiliency (VECTOR)
  • Water-related projects sponsored by USACE, US CG, National Waterways Foundation, TDOT, etc.
  • Key focus on assessing vulnerabilities of infrastructure systems and communities they serve
• Part of the University of Arkansas MarTREC Consortium
• Integrated into K12 Educational Processes in TN
  • Teacher workshops
  • STEM Industry Advisory Council
  • Actively engaged in Regional STEM Hub and at local schools
  • Education Outreach Coordinator for Nashville Branch of ASCE
GIS Integration in K12 Education

Sponsors: Metro Nashville Public Schools, Middle TN STEMHub, TN Dept. of Education, ESRI, Power of Data Project, etc.

- Developed and facilitated workshops for K12 teachers on use of GT for STEM Education
- Project-based learning (PBL) focus

The use of geospatial technologies (GT), especially geographic information systems (GIS) and global positioning systems (GPS), are important tools used in today’s complex world to help solve problems. These tools can also be used to help educators, students, and their institutions answer personal and community questions with local to global implications. Efforts are underway to integrate GT into STEM curriculum in grades K-12 throughout Tennessee with researchers at Vanderbilt University leading the way. Dr. Janet Camp and colleagues (Lindsay Langston-VU and Kurt Budafik – Tennessee Geographic Alliance) have begun training teachers on the use of GT for use in their STEM-focused classrooms to solve “real-world” problems. Two introductory workshops for high school teachers have been held.
More Recent, Relevant Education and Outreach Projects

- Developing a web-based, GIS-centric tool for communities to assess vulnerabilities to natural hazards (HUD NDRC program funding)
- Developing high-school-level Risk Education Curriculum (HUD NDRC program funding)
- Developing content for an online course on integrating GIS into Public Health
- Leveraging the ASCE Infrastructure Report Card in the K12 Classroom
Current Inland Waterway Outreach and Education Efforts

• River Works Discovery
  • Downloadable curriculum focused on river management and operations (flows, logbooks, maps, etc.)
  • Ties to National Science Education Standards

• River Kid Activism Through Science (River KATS), Santa Anna Watershed, CA
  • River Camps, field trips, etc.

• Southeast Maritime and Transportation Center
  • “Incorporating Maritime into STEM Courses: A Guide for K12 Educators”
  • Hosts repository of resources – GREAT RESOURCE!

• Other localized outreach efforts by industry and individuals
Proposed Approach

• Develop a comprehensive, one-stop resource for maritime and waterway transportation K12 educational resources and curriculum
• Align materials to regional states and national standards
• Develop teacher guides with activities, etc.
• Develop and facilitate teacher training
  • Identify industry partners for field trips, externships, etc.
  • Workshops that provide hands-on exploration of the curriculum
• Gather feedback and refine curriculum
• Participate in STEM Educator Conferences
Thank you!

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