University of Puerto Rico, Río Piedras Campus

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Summary
We have established a Center for Science and Mathematics Education Research (CSMER) to “maximize our yields” as we integrate research and education through the incorporation of existing NSF funded programs in the broad area of environmental sciences and science education. The CSMER provides support to conduct research on science education and establish outreach opportunities with partnering K-12 schools. The Center fosters the integration of research on science education, action-research by teachers and educational practice focus on the solid waste problem in Puerto Rico with the potential to expand to other relevant interdisciplinary issues. It also provides the infrastructure for developing cooperative teaching approaches, supporting pilot studies, support for internet resources and for research in science education, including statistics support, building survey support, and other assessment tools. MYTI will broaden the participation of underrepresented minorities by increasing the number of Hispanic teachers and faculty that are proficient in the best teaching practices in math and science education and improve the attitude of students at a critical juncture (7-12) towards STEM.

Project Design

CSMER was established.
Faculty was recruited and is being trained to develop science education research projects.
Integrated math & science units were developed by IGERT fellows, graduate students and faculty.

Outcomes – Year 1

- Faculty conduct action research on student learning.
- Teachers conduct action research on student learning.
- Graduate and Undergraduate students assist schools in the implementation of science projects (outreach activity).
- Mentor and assist teacher in understanding and implementing the hand and minds-on units.
- Develop educational units on basic science in the context of solid waste.

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<tr>
<th>Unit Title</th>
<th>Solid Waste Management Functional Element</th>
<th>Science concepts</th>
<th>Math concepts</th>
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<tr>
<td>Introduction to Solid Waste</td>
<td>Generation Classification Collection Transfer &amp; Transport Recovery</td>
<td>Science Processes Matter Conservation Law Mass Natural Resources</td>
<td>Data analysis Graphics Percent Linear Functions Conversions</td>
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<tr>
<td>The Impact of Solid Waste in the Quality of Water</td>
<td>Disposal (Landfill, Run-off, Leachate)</td>
<td>Water Hydrologic Cycle Water Quality Acids pH</td>
<td>Variables Data analysis Graphic Percent</td>
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