Renewable Energy Education Initiative for K-12 Teachers with Sustainable Energy Education Network

Faruk Yildiz
Sam Houston State University
fxy001@shsu.edu

Robert. A. Lane
Sam Houston State University
blane@shsu.edu

Doug Ullrich
Sam Houston State University
dullrich@shsu.edu

Abstract

Improving energy efficiency and expanding sources of renewable energy are currently considered national and global priorities. Educational institutions in the U.S. have not kept pace with the need to produce the workforce necessary to meet the industry demands of existing technologies or the intellectual capital to further refine that technology into commercialization of more innovative and applicable inventions. The purpose of the Agricultural Sustainable Energy Education Network (ASEEN) project is the creation of a multi-faceted model involving a secondary and post-secondary education pipeline that enables workforce growth in the sustainable energy sector. The opportunity to acquire state-of-the-art, industry-driven technical knowledge while pursuing a Baccalaureate degree at SHSU is also promoted. The Sam Houston State University (SHSU) Agricultural Science and Engineering Technology Department is one of the oldest and largest in the country with around 1,300 majors. The project also produces a training curriculum for Texas high school teachers that will enhance their students' understanding of energy concepts while encouraging Science, Technology, Engineering, and Mathematics (STEM), comprehension.

It is envisioned that the project impact three thousand rural Texas high school students, with a large number of these from underrepresented groups, and thousands of community college students across the state. The three year project offered 10 agriculture and 10 science teachers per year the opportunity to attend a one-week sustainable energy professional development workshop with follow up class activities to promote student interest in the field. All training materials, activities, and articles of interest are shared on a website that agriculture and vocational secondary teachers can use following completion of project.

Community college and SHSU students create a community of interest via student organizations that can distribute career information, schedule field trips for energy demonstrations, and other activities meant to promote a peer to peer Baccalaureate degree pathway. The Mobile Renewable Energy Education (MREE) schedule visits across Texas in order to offer experiential learning opportunities in sustainable energy and STEM concepts.

Most of the visits are rural and non-metropolitan school districts with affiliated community college systems. The objective of the project is to spark interest for those students struggling with STEM understanding yet aspiring to pursue a post-secondary education.

All the materials will be shared with academic community including summer camps, curriculum development, mobile education, equipment development and use, surveys, outcomes etc.

Biographies

FARUK YILDIZ is currently an Associate Professor of Engineering Technology at Sam Houston State University. His primary teaching areas are Electronics, Computer Aided Design, and Alternative Energy Technologies. Research interests include: low power energy harvesting, renewable energy technologies. Dr. Yildiz may be reached at fxy001@shsu.edu

ROBERT A. LANE is a Professor of Plant and Soil Sciences at Sam Houston State University. His teaching responsibilities include courses in Soil Fertility and Fertilizers, Forage Crops and Pasture Management, Soil Ecology, Integrated Pest Management, Fruit and Vegetable Production, and Turfgrass Science, among others. His research interests include forage crop selection and management and crop nutrient management. Dr. Lane may be reached at blane@shsu.edu.

DOUG ULLRICH is currently a Professor of Agricultural Education at Sam Houston State University. His primary teaching areas are Introduction of Professional Skills, Career and Technology Education, Career and Technology Mentorships and Engineering Technology Internships. Research interests include: remote sensing technology for wildlife management, management and leadership skills, and teacher education. Dr. Ullrich may be reached at dullrich@shsu.edu