Safer Offshore Energy Systems Grants 1
Final Report

Project Title: Using Problem-Based Learning to Develop a Future Labor Force of Environmentally Knowledgeable and Safety
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Project Director: Jabaria Jenkins
Affiliation: Mobile Area Education Foundation

Project Key Personnel:
- Jennifer Langhinrichsen-Rohling, University of South Alabama;
- Sue Ann Sarpy, Sarpy and Associates, LLC;
- Larry Mouton, Mobile County Public Schools;
- Robert Keyser, AH Environmental Consultants.

I. ORIGINAL PROJECT SUMMARY (from proposal)

The Mobile Area Education Foundation (MAEF), in partnership with the Mobile County Public School System (MCPSS), the University of South Alabama (USA), and Sarpy and Associates, LLC, proposes an Exploratory Education and Training Project: Using Problem-Based Learning to Develop a Future Labor Force of Environmentally Knowledgeable and Safety Certified Workers.

The overall goal of the project is to examine how early training and certification in environmental safety, with an emphasis on risk analysis, occupational safety regulations, emergency scenarios, and leadership skills, may contribute to developing a stronger pipeline of middle skilled workers in Mobile's energy and maritime industries. We intend to accomplish this by meeting 3 objectives:

1. Develop a high school Environmental Health & Occupational Safety (EHOS) leadership program that includes the acquisition of an OSHA 10 Certification.
2. Identify the critical components of the EHOS leadership program and examine how each contributes to student skill development
3. Evaluate the impact of the EHOS leadership program on the future workforce pipeline.

Once implemented, the EHOS program will result in the development of a high school curriculum that provides problem-based learning centered around environmental health and safety, a core group of students with increased capacity to influence safety in future workplace settings and a cadre of teachers with the capacity to sustain the EHOS leadership program effort, 4) a comprehensive qualitative and quantitative report of the impact of the program as well as learnings that may be used by schools and training organizations to support safety skills for other high school students.

This program addresses a number of the priority areas highlighted for ongoing NAS work in that it proposes to: 1)provide early intervention and training in the area of occupational health and safety by developing a new environmental health and safety curriculum and building capacity for teachers to implement and sustain the curriculum 2) leverages existing business, community, post-secondary and K-12 educational entities to effect change in the area of health and occupational safety and 3)lead to collaboration with international energy and maritime corporations with local sites in Mobile County, such as Exxon-Mobil and Austal, to provide a global perspective to environmental health and safety issues.

This innovative project will leverage existing relationships with local energy production and maritime industry leaders, environmental science and education researchers and emergency response organizations to develop a unique approach to training and equipping future workers. This innovative collaborative approach will help create a culture of environmental safety among potential future workers in support of the Gulf Research Program's goal of fostering innovative improvements to safety culture associated with offshore gas and oil production (Goal 1) and provide an opportunity to explore a new approach to the development of effective education and training of future offshore oil and gas industry workers (a priority area of the grant).

II. PROJECT RESULTS

Accomplishments

The overarching goal of the EHOS program is to demonstrate the effectiveness of early training and certification in environmental safety, with an emphasis on risk analysis, occupational safety regulations, emergency scenarios, and leadership skills, in contributing to a stronger pipeline of middle skilled workers in Mobile's energy and maritime industries. In achieving this goal, three major objectives are advanced: (1) develop a high school Environmental Health and Occupational Safety Leadership program that includes the acquisition of a safety certification; (2) identify the critical components of the EHOS leadership program and examine how each contributes to student skill development; and (3) evaluate impact of the EHOS program on the future workforce pipeline.

The proposed EHOS program components include: (1) a health and safety certification course; (2) nine afterschool sessions, held at the respective high schools, that present current industrial health and safety standards, regulations, and practices; (3) a weeklong Summer Challenge camp, that included students from both schools.

One key component to the development of the program was the NAS EHOS Advisory Council. The NAS EHOS Advisory Council was convened one month following notification that the project had received funding. This council consisted of representatives from local energy production and maritime industry, environmental science and education researchers and emergency response organizations. Further, the council held meetings at regular intervals during the program cycle to review curricula and provide input regarding program content (e.g., emphasis on workplace safety culture; emphasis on employee rights and responsibilities) and format (e.g., hands on using specific personal protective equipment; on-site visits to local industries and workplaces) and, thereby, actively provide feedback regarding suggestions for on-going improvement to the program.

In summary, the students' capacity in occupational safety, environmental health, and leadership was increased as a result of their participation in the EHOS program. Collectively, the evaluation results demonstrate that the program engendered meaningful and statistically significant improvements on the training-related knowledge and skills of participating students. Importantly, findings reveal that students express enhanced capacity in relating these knowledge and skills to changes in their personal and professional lives. These results are noteworthy given the small size of the cohort (i.e., program was presented to a small sample of students) and, thereby, provide strong evidence of the innovativeness and effectiveness of the EHOS in building capacity in environmental health and occupational safety of its program graduates.

Our data revealed that, taken together, the evaluation results demonstrate that the EHOS program engendered meaningful improvements on the training-related knowledge and skills of instructors-in-training. The evaluation results provide strong evidence of the innovativeness and effectiveness of the EHOS in building capacity by developing a cadre of instructors who are qualified to train high school students in environmental health and occupational safety.

Initial Outcomes

This project has tremendous implications for future workforce development training. At present, on 28% of Alabamians hold a post-secondary degree of any type (2-year Associates or higher). Overall, our workforce is highly uneducated and unskilled in a region that has been designated an advanced manufacturing zone--one of a limited number across the country. In order to have a pipeline of suitable workers, training must begin at the high school level. There is a critical need for higher degrees of collaboration between career training centers and public schools.

For research, it would be interesting to continue this work into other geographic/demographic groups across the County to see if our initial results hold up as the sample population increases.

Developing a culture/psychological position takes time and the study thereof usually reserved for more anthropological/sociological disciplines; however, as post-millennials prepare for the workplace, it will be interesting to follow their ideologies and practices surrounding safety. Their perspective surrounding workplace safety will heavily influence future policy and workplaces around the country. Helping them to shape this early is critical for the long-term wellness of this region.

Unexpected Results

For the small sample size, there were significant data trends founds among the students.

Project Relevance

Researchers, educators, community leaders, state government officials, and the private sector would be interested in the results of this project.

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Educators and community leaders would also be interested in the curriculum developed to see how to integrate real workplace issues into existing career and technical curriculum.

State government officials as well as the private sector would have an interest in these results as they directly impact current workforce development efforts.

Education and Training

Number of students, postdoctoral scholars, or educational components involved in the project:

- Undergraduate students: 0
- Graduate students: 1
- Postdoctoral scholars: 2
- Other educational components: 30

Our project included 25 high school students and 4 non-doctoral teaching instructors in the Mobile County Public School System

III. DATA AND INFORMATION PRODUCTS

This project produced data and information products of the following types:

- Curricula for education and training