1. **Edward Bart & Amber Reep, USF** - Transit Manager Certificate Program - An Educational Space of Technology and Innovation


3. **Kelwyn A. D’Souza & Sharad K. Maheshwari, Hampton University** - Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM)

4. **Eric Heiselt, MSU** - Family Engineering Night: The Onramp to STEM

5. **Ian E. Hosch, Virginia P. Sisiopiku, & Ordell Smith, UAB** - Transportation Engineering Workforce Development Programs

6. **James B. Martin, NCSU & Leslie Washburn, UF** - Engineers Change the World-A Hands-on Workshop for Girls 13-18 Years Old

7. **Dan Pallme, Univ. of Memphis** - Opening Doors and Minds to Engineering Professions at Many Levels


9. **Danielle Soriano, UF** - WTS Student Chapter at the University of Florida Transportation Workforce Development

10. **Berrin Tansel, Muhammed Hadi, & Xuanwu Chen, FIU** - K-12 Workforce Development and Outreach in Transportation Engineering at FIU

11. **Leslie Washburn, STRIDE (UF, NCSU, FIU, UAB, & MSU)** - STRIDE K-12 Transportation Workforce Development - A Collaborative Effort

12. **Leslie Washburn, UF** - LEGO® Robot Vehicle Lesson Plans for Secondary Education: A Transportation Recruitment Tool
Abstract:
A workforce of trained and skilled professionals is essential to the sustainability of the public transportation industry. As demand for viable transportation options increases due to the growth of a transit-dependent population (Baby Boomers), and with many of Florida’s public transportation senior experts and key officials retiring or leaving the industry, there are concerns that a workforce shortage is inevitable. This labor shift leads to a foreseeable industry wide knowledge gap as those leaving the workforce take with them a wealth of knowledge, skill, experience, and information.

The Transit Manager Certificate Program (TMCP), sponsored by the Florida Department of Transportation and offered through the University of South Florida’s (USF) Center for Urban Transportation Research and Corporate College prepares public transportation personnel for advancement. The TMCP provides the next generation of supervisors with the knowledge and skills they will need to be successful managers.

This innovative, professional development certificate program consists of interactive self-paced computer based training, traditional classroom courses, and peer to peer exchanges. TMCP is at the forefront of the progressive educational movement and integrates advanced educational technologies into its curriculum. Students have easy access to courses that are relevant in both content and delivery to today’s public transportation professional.

The TMCP offers three principal education tracks; transit operations, maintenance or administration. By presenting program specific course content in a contemporary technologically advanced educational environment, students can be fully-engaged in their education development, apply their newly acquired knowledge, and learn at their own pace.

This poster presentation will highlight key workforce development program elements, successes, and technology based innovations.
2. **Applicants Information:**
   Edward Bart, Program Manager, Center for Urban Transportation Research University of South Florida and
   Amber Reep, Program Manager, Center for Urban Transportation Research University of South Florida

**Title:** **Certified Transit Technician Program: Leveraging Technology for State of the Art Training**

**Abstract:**
The Florida Department of Transportation’s Office of Freight Logistics and Passenger Operations manages several training programs that provide professional development, progressive, and longitudinal training opportunities to Florida’s public transportation professionals. The Certified Transit Technician (CTT) Program focuses on goal-oriented adult education, workforce development and core competencies. The program applies various instructional and learning techniques including the three main categories or philosophical frameworks of learning theories: behaviorism, cognitivism, and constructivism. Behaviorism focuses on objectively observable aspects of learning. Cognitive theory views learning as an active mental activity that involves internal coding and structuring by the learner. This theory focuses on how learner remembers retrieves, and store information into memory. Constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts. These elements or philosophies of learning have been integrated into the Certified Transit Technician Program (CTT) by way of distance education/learning, classroom, 3D computer based training, and On-The-Job training.

The CTT Program delivers technical training in a variety of subject areas specific to transit vehicle maintenance, and was developed to be at the forefront of the technological/longitudinal training concept. In addressing the transit industry’s important challenges—attracting people to the industry, keeping incumbent maintenance technician skills current, and retaining those technicians who have a desire to rise into leadership positions—the program enables technicians to acquire and maintain both job specific and organizational credentials.

This poster presentation will highlight key workforce development program elements, successes, and innovations.
Title: Interdisciplinary Transportation Education and Workforce Development Modules. (ITEWDM)

Abstract:
The expanding transportation industry in the U. S. has a growing need for professionals qualified to manage advanced transportation systems. With up to 50% of the current workforce expected to retire in the next ten years, the industry faces a challenge of finding replacements. As this issue comes to the forefront there is an increasing awareness that there is a dearth of minority professionals in transportation technical and policy-making positions. Although often overlooked, education and training of future professionals is critical in view of the projected shortage of skills to meet transportation’s increasing needs. The overall goal of the proposed Interdisciplinary Education and Workforce Development Modules (IEWDM) is to attract and educate the next generation of transportation professionals through well-designed program of coursework, guest lectures, case studies, and experiential learning that reinforces classroom knowledge. The modular approach followed the design of the well recognized Structured Training system of the Louisiana Model for Transportation Workforce Development that offers varied education and training options to suit an individual’s position.

The program has designed several academic and training modules to meet our education and workforce development objectives. Within the transportation education modules, two different programs have been modified: a minor in aviation management and a concentration in transportation management. Beside this, several university courses have been surveyed to ascertain where modifications can be made to include or enhance intermodal transportation management issues in the course material. Under workforce development, several internships have been offered to the students. The Summer Transportation Institute will run a program for the high school students in June-July, 2013. Several lectures from the industry experts have also been organized.
Title: Family Engineering Night: The onramp to STEM

Abstract:
Multiple calls for an increase in students in engineering and other STEM disciplines have shown it is imperative that recruitment begins at an early age. The goal of Family Engineering Night is to develop and encourage an interest in STEM among children in grades 1-6 through hands-on, minds-on activities with their families. Through a series of introductory activities followed by an in-depth content based engineering challenge, participants work as a family to engineer solutions while discussing the use of the Engineering Design Process. As part of the program, families are encouraged to continue the discussion after the event.
Having conducted the beta testing of the program, we have hosted a large number of these events in a variety of settings including public and private schools, boys and girls clubs, scout troops and community centers. In seeking to identify the impact of these events, we have used simple survey tools with the parent attendees to assess the impact, if any, of the event on their conversations with the children. Surveys were completed at the event and again two weeks following attendance.
5. Applicant Information:
Name: Ian E. Hosch, Ph.D., Assistant Professor
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Name: Virginia P. Sisiopiku, Ph.D., Associate Professor and Transportation Program Director
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Ordrell Smith, Director of JCYTP Program
University of Alabama at Birmingham (UAB)
Office for Equity and Diversity

Title: UAB Transportation Engineering Workforce Development Programs

Abstract:
The University of Alabama at Birmingham (UAB) has initiated three unique workforce development programs for future and current students interested in transportation engineering related careers. The first is the Jefferson County Youth Transportation Program (JCYTP), a year-round program that seeks to prepare minorities and females to career track employment in the field of transportation. Life skills training is provided that will ultimately result in increased disadvantaged business participation, employment, educational, and occupational skills in the transportation industry. The second workforce program is the Family Engineering Night Program. This new program aims at sparking the interest of elementary school children in Alabama in engineering and transportation engineering careers. The target age group is 8-11 year olds, and parents are encouraged to team up with their child in select activities. By exploring engineering concepts and engaging in hands-on activities, young participants are exposed to the world of engineering and develop positive attitudes about engineering as a possible career in the future. The third program is the National Center for Transportation System Productivity and Management Summer Enrichment Program (NCTSPM SEP). UAB in partnership with Alabama’s Historically Black Colleges and Universities -- Alabama A&M University, Alabama State University, Oakwood University, Stillman College, and Tuskegee University -- has initiated the annual four week summer program for currently enrolled freshmen, particularly African American and Hispanic/Latino students. The program creates intensive learning opportunities in science, technology, engineering, and mathematics (STEM) and aims to increase enrollment in engineering schools with transportation focus.
Applicant Information:
James B. Martin, North Carolina State University, Center for Transportation and the Environment, Associate Director, jbm@ncsu.edu

Leslie D. Washburn, University of Florida, Civil and Coastal Engineering, Workforce Development Coordinator/Special Projects Engineer, lwash@mail.ufl.edu

Title: **Engineers Change the World - A Hands-on Workshop for Girls 13-18 Years Old**

Abstract:
The Center for Transportation and the Environment (CTE) at North Carolina State University and the University of Florida Transportation Research Center (TRC) plans to collaborate with the North Carolina Department of Transportation (NCDOT), the Florida Department of Transportation (FLDOT), and the Women’s Transportation Seminar (WTS) to offer engineering, particularly transportation engineering, as a viable career option for girls.

A series of workshops, targeted at sophomore and junior high school-level in North Carolina and Florida, provides experiential hands-on activities, speakers, role models, and mentoring opportunities which serve to engage and inspire.

Workshops vary, but participants are divided into groups and usually start with an “ice breaker” activity. There is a presentation by a female engineer, or engineers, followed by a question and answer session. The hands-on activity serves to illustrate a common engineering principle. Participants are given time to design and build their project with guidance from an engineer. The girls then test what they have built to see how well it performs. Lunch or dinner is provided in some workshops which gives the girls additional time to interact with the engineers and each other.

An accompanying website is used to help market the events as well as continue the learning experience by providing resources to supplement the concepts learned during the workshops. The website will also serve as a resource to high school teachers.

Of the workshops held to date, the girls have been very engaged – listening, asking intelligent questions, and excitedly working well together in the hands-on activities.
Title: Opening Doors and Minds to Engineering Professions at Many Levels

Abstract:
A trained workforce is a productive workforce; therefore, the University of Memphis impacts the future and current workforce at many levels.

Each summer, the University of Memphis engages, educates, and excites area students with two fast-paced interactive programs involving a number of activities designed to motivate and challenge participants to explore engineering. The Girls Experiencing Engineering Program targets middle and high school aged girls. The male version, Transportation Engineering Careers, is for high school boys. Program goals are addressed through careful selection of curricular activities, undergraduate student mentors, and professional speakers to include diversity in gender, ethnicity, career path, and experience. Content areas covered demonstrate the wide variety of opportunities available through transportation engineering. These programs create a broader impact by providing science and math teachers with new tools and methods for use in their classrooms.

The Freight Transportation Leadership Academy is a concise, affordable primer that teaches leadership skills, offers hands-on experience and allows participants to gain an understanding of the freight transportation network. Through a four-part certification program, the Academy offers a unique collaboration between academic and industry experts that impart the most up-to-date information on critical issues facing the transportation industry. After classroom work, participants take “field trips” to see each mode in action. Memphis is one of the greatest working freight laboratories in the world with access to every transportation mode. By seeing and understanding the interaction between the modes, participants can further their knowledge of the freight network and improve their value to their company.
8. Applicants Information:
   Amber Reep, Program Manager, Center for Urban Transportation Research University of South Florida

   Edward Bart, Program Manager, Center for Urban Transportation Research University of South Florida

   Lisa Staes, Program Director, Center for Urban Transportation Research University of South Florida

Title: **Stakeholder Support for Innovative Workforce Development - Florida’s Transit Operator Trainer Training Program**

Abstract:
A workforce of trained and skilled professionals is essential to the sustainability of the public transportation industry. As demand for viable transportation options increases due to the growth of a transit-dependent population (Baby Boomers), and with many of Florida’s public transportation senior experts and key officials retiring or leaving the industry, there are concerns that a workforce shortage is inevitable.

This poster presentation will highlight the efforts under way by the Florida’s Department of Transportation (FDOT) and the Florida Operations Network (FON) to equip the current public transportation workforce with the education and skills necessary to meet the ongoing need for public transportation. This poster is intended to provide insight and synthesize information regarding the methods used in Florida to address the issue of workforce development through the support and implementation of a coordinated and certified statewide training program. These methods focus on providing skill development and building competencies while fostering continued stakeholder support through networking and collaboration.
Title: **WTS Student Chapter at the University of Florida Transportation Workforce Development**

Abstract:
The WTS Student Chapter at the University of Florida has been dedicated to the advancement of students in the transportation field since its inception in the fall of 2010. The student chapter, here in known as WTS UF, promotes the development of members and other students through a variety of events, some of which are inspired by the Transportation YOU initiative and others by members’ interests or by events hosted on the University of Florida campus. To recognize the value of Transportation YOU, WTS UF has helped to organize several events, such as Family Engineering Night, in order to encourage young students to explore engineering as they continue their education by performing hands-on engineering activities. Similarly, the chapter has used LEGOs to create vehicles, learn transportation concepts, and foster teamwork among the children. Apart from grade school initiatives, WTS UF has hosted on-campus activities for college level students to develop professional skills, network, and strengthen their knowledge in the transportation field. Students have had the opportunity to participate in events such as the Transportation Symposium, the Alternative Transportation Fair, and the Bicycle Helmet Fitting Certificate event. The actions of WTS UF are certain to positively alter the workforce entering the transportation field.
Title: **K-12 Workforce Development and Outreach in Transportation Engineering at FIU**

Abstract:
The faculty in collaboration with FIU ITE Student Chapter is actively working with the area schools to promote transportation engineering, transportation technology, and role of transportation engineering for establishing livable communities. The activities focus on use and importance of GIS, traffic safety education, traffic simulations, and educational hands on activities with direct use of science, technology, mathematics and engineering concepts. The activities target students specifically in elementary, middle and high schools as well as their parents.

The students are also introduced to different video games which provide direct exposure to engineering aspects of traffic safety, scheduling, planning as well as demand management. Once established, this program will be conducted on a continuing basis as an annual event which will be celebrated as “FIU Transportation Day.”

In addition, the educational materials and hands on activities are being distributed and transportation engineering modules are being implemented through FIU’s existing outreach programs operating at five elementary schools serving grades 1st - 4th as afterschool programs.
Title: STRIDE K-12 Transportation Workforce Development - A Collaborative Effort

Abstract:
In order to ensure that young people are attracted to the transportation jobs of the future, STRIDE is working to develop local, state, and national partnerships throughout the transportation and education communities while collaborating on outreach programs within the southeast region consortium.

Family Engineering Night
Mississippi State University (MSU), University of Alabama Birmingham (UAB), Florida International University (FIU) and the University of Florida (UF) are hosting Family Engineering Nights at local elementary schools. Family Engineering Night is an informal engineering education program that engages elementary-age children and their families in fun, hands-on, engineering activities.

Engineers Change the World – A Hands-on Workshop for GIRLS 13-18 Years Old
North Carolina State University (NCSU) and UF have collaborated with the North Carolina Department of Transportation (NCDOT) and the Women’s Transportation Seminar (WTS) for this project, which includes a series of one-day workshops targeted at girls in high school. Speakers, role models, mentors, and experimental, hands-on activities serve to engage and inspire.

LEGO® Robot Vehicle Lesson Plans
NCSU, UF, and FIU are offering LEGO® Robot Vehicle Lesson Plans for Secondary Education. The “Introduction to Transportation Engineering” curriculum, developed at UF, is offered to students in grades 5-8. The lessons contain the fundamentals of transportation engineering, which teach students how advanced technology is integral to solving transportation problems.

Transportation Career Day
A Transportation Career Day will be held at UF and FIU to introduce transportation to high school students, their parents, and school counselors. A Traffic Simulation Workshop has been piloted at UF. Social media will be used to continue to engage participating students in future transportation research activities and transportation-related events.
Title: LEGO® Robot Vehicle Lesson Plans for Secondary Education: A Transportation Recruitment Tool

Abstract:
Robotics is a great way to get kids excited about science, technology, engineering, and math (STEM) topics. It is also highly effective in stimulating development of team-work and self-confidence. This project includes transportation-related lesson plans for middle school-aged students utilizing LEGO® Mindstorms NXT robots to foster interest in the transportation engineering profession as a career choice.

A series of lesson plans for fifth through eighth graders were developed. The first lesson plan is a general introduction to engineering and transportation through the use of videos and interactive activities. The next four lessons are a hands-on guide exposing students to basic computer programming, mathematics as it relates to the tasks, and the robots as tools. The lesson plans’ theme focuses on a significant area of the future of transportation—intelligent vehicles.

The objective is how an intelligent vehicle can help mitigate congestion through the use of sensors and computer programming. Participants build and program the intelligent vehicle to conduct activities to solve congestion issues on our roadways. Vehicle programming exercises include movement of the intelligent vehicle, following a route, emergency vehicle detection, pedestrian detection, travel distance calculations and travel time calculations.

During these lessons, students will learn some fundamentals of transportation engineering and how the use of advanced technology is integral to solving current and future transportation problems. They will also learn how much transportation affects the quality of life in our society. Students will hopefully become excited about the field of transportation and become interested in pursuing this field as a career.