FLATE FOCUS

Connecting Manufacturers, Educators & Students with Florida's Workforce

From the Executive Director's Desk: Become a Mentor. Join the Million Women Mentors Initiative

Million Women Mentors (MWM) is a collaboration of more than 58 partners, 30 sponsors with 30+ state leadership teams.The Million Women Mentors Leadership Council is chaired by Cisco, PepsiCo, Sodexo, and Tata Consultancy Services. To date, over 300,000 pledges to mentor girls and women in STEM have been made on their website (www.millionwomenmentors.org). The program is reaching over 30 million girls and women across the U. S. MWM supports the engagement of one million science, technology, engineering and math (STEM) mentors (male and female) to increase the interest and confidence of girls and women to persist and succeed in STEM programs and careers.

Photo Courtesy: Muller Elem Magnet (Twitter Feed)

In August, Florida joined the ranks of the leadership teams when Hillsborough County Public Schools (HCPS) pledged to mentor 500 young girls in the district schools. The plan is to mentor five girls at the 100 schools who signed up to support the project. Each Tampa mentor will spend 20 hours with its mentee/s either in person at the school, online, or however they work out. Other recommended methods of mentoring include paid internships and apprenticeships, workplace mentoring at a company, and through sponsorships. Anyone interested in mentoring can connect through the MWM web portal directly with a MWM partner including HCPS. It's simple to sign up and simple to report your effort. One volunteer mentor at a time, HCPS hopes to start changing lives of young girls and women by providing guidance, examples, experience, and enthusiasm for science, technology, engineering and mathematics. Mentoring can help build confidence in young women to know their capabilities and be proud and strong so they will persist in careers that are often male-dominated.

MWM, together with the Manufacturing Institute's STEP Ahead Award program (Science, Technology, Engineering and Production) are just two of many important programs focused on improving the numbers of women in STEM careers. Both use role models as a key ingredient and both are founded on building community, and building relationships. FLATE strongly supports both programs by encouraging companies to nominate their female employee(s) for the STEP Ahead awards, celebrating those Florida STEP awardees, providing its own resources for supporting girls in STEM, and encouraging all its stakeholders, male and female, young and old to be engaged in these, highly visible ongoing programs that provide young girls encouragement and confidence to pursue the rewarding careers and lifestyles of STEM professionals.

Photo Courtesy: MWM Facebook Page

Sign up to become a mentor at www.millionwomenmentors.org, or email Dr. Marilyn Barger at barger@fl-ate.org and Julie Kantor at

Julie.Kantor@STEMconnector.org.

I now invite you to read the rest of the stories in the September edition of the FLATE Focus. This edition is heavily focused on our statewide efforts and engagement with Manufacturing Day 2015. Do read the story and get involved in whatever way you can. In this edition we also highlight some of our partners' and their successes in different capacities….do reach out and send them your kudos too. To wrap up 2015 summer robotics camp season, we also have a story about the statewide camps that took place earlier this summer and the impact it had on all the campers across the state.

These and many more stories in this edition of the FLATE Focus. Send us your thoughts, comments, questions at news@fl-ate.org, or tweet us @Made_InFlorida using the official hastag of the month #MFGday2015.

Florida Plans for the Biggest Manufacturing DAY/Month Celebration in October

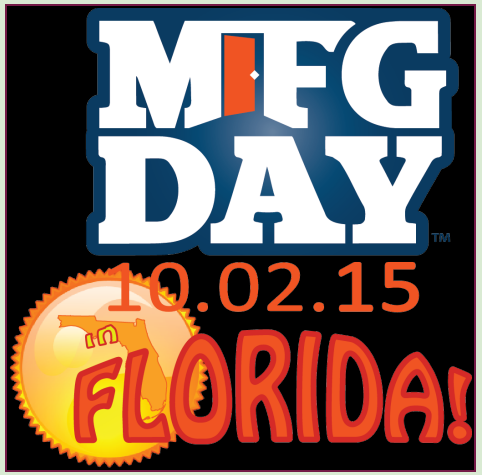
FLATE, the Florida-based, National Science Foundation Regional Center of Excellence in Manufacturing, and its statewide partners
that include Regional Manufacturers Associations (RMAs), Florida TRADE, and the Manufacturers Association of Florida are working together to plan for the biggest Manufacturing DAY/Manufacturing Month ever which will kick start on October 2. As part of the fourth, annual Manufacturing Day/Month celebrations, FLATE along with its network of statewide partners will launch a multi-faceted, statewide outreach campaign that is poised to once again position Florida as a national leader for hosting and organizing Manufacturing Day industry tours and events. As part of this effort, middle and high school students and educators across Florida will participate in *Made in Florida* industry tours that are designed to showcase, educate and heighten students', educators' and the community's knowledge about educational opportunities and high-skill careers in high-tech manufacturing.

Majority of the *Made in Florida* industry tours for Manufacturing Day will take place across Florida on October 2 with additional industry tours planned throughout October. Additionally, FLATE will once again take the lead in surveying statewide industry hosts, educators and students who participate in the *Made in Florida* industry tours. Post event survey results will be tabulated by FLATE and shared with statewide partners and stakeholders. FLATE will also help connect regional groups together, and will design as well as distribute shirts, provide educator resources, write/publish/distribute and report on MFG Day/month related news, and compile all student, educator, host survey data.

There are several ways and opportunities for industry, RMAs, school districts, educators, students and the community to get involved/engaged in #MFGDay2015. Typically, school districts provide bus transportation; identify programs/classes to attend tours. Regional Manufacturers Associations (RMAs) recruit companies to host student tours on MFG DAY (Oct 2, 2015), or any day in October. Either the school district, or the RMAs, or both – assign schools to tour hosts; set bus schedules; align communications between schools, companies, buses. Local manufacturers host tours and/or provide lunch. Organizations, companies, community groups, individuals, friends of manufacturing etc. help sponsor student MFG DAY t-shirts. To purchase a

► 2012 (84)
► 2011 (68)
► 2010 (68)
► 2009 (33)

Oct. 2 is Manufacturing Day! Mark Your Calendar!



Events Calendar

- Sep. 29: HCC All College Day
- Sep. 14: Manufacturing Day FL Planning Call II.
- Sept. 17: Industrial Advisory Committee Meeting at Lumen. Oldsmar, FL.
- Sept. 24-25: Engineering Technology Forum at Valencia College. Orlando, FL.
- Oct 2: Manufacturing Day. Statewide events
- Oct. 7-8: High School High Technology Trust Conference. Orlando, FL.
- Oct. 9: NCATC Conference. St. Louis, MO.
- Oct. 20-21: AVS Science Educator Workshop. Washington, DC.
- Oct. 22-24: ATE PI Meeting. Washington, DC.
- Oct. 28-30: National Career Pathways Network Conference. Dallas, TX.
- Oct. 31-Nov. 2: STEMtech Conference. Phoenix, AZ.

Manufacturers News

- Manufacturing company to create 420 jobs in Coral Springs
- Company lists Alachua as among top towns in US for enticing manufacturers

2015 Manufacturing Day T Shirt email Dr. Marilyn Barger at barger@fl-ate.org, or visit https://foundation.hccfl.edu/Donate.

Dr. Marilyn Barger, executive director of FLATE says Manufacturing Day 2015 is geared to stir interest and/or change perceptions about manufacturing on a national level, and also build in-roads and sustainable partnerships between manufacturers, RMAs, educators, and students. FLATE's strategy has successfully and consistently placed Florida at the top spot for hosting/coordinating Manufacturing Day events in the nation. "The Center's ongoing efforts have focused on leveraging the promotion of the national organization and its efforts through best practices implemented in Florida, and create a common platform that has encouraged a steady increase in statewide participation for Manufacturing Day" said Barger. FLATE hopes the initiative will serve as a vehicle in educating students, educators and the community about high-tech manufacturing/STEM-related careers, and also boost the overall effectiveness of Manufacturing Day through "*Made in Florida*" industry tours.

Anyone interested in participating in MFG Day/Month activities can contact FLATE directly and/or the regional manufacturers association. For information on regionally coordinated Manufacturing Day 2015 news and events, visit the *Made in Florida* page at www.madeinflorida.org/manufacgturing-day and the Manufacturing Month page on the Manufacturers Association of Florida Center for Advanced Manufacturing Excellence website. For information on national manufacturing day events and tours visit www.mfgday.com. You can also email Dr. Marilyn Barger, executive director of FLATE at barger@fl-ate.org and Nina Stokes, FLATE project manager at stokes@fl-ate.org . For press related information/coverage contact Janice Mukhia, communications manager for FLATE at news@fl-ate.org and Amanda Bowen, director of communications for MAF at abowen@nstephens.com.

Statewide Industry Tours & Events Planned for 2015 Manufacturing Day/Month

Manufacturing Day is set to make a prominent mark in state and national headlines, with Florida once again poised to take the lead in organizing and hosting Manufacturing Day/Month events in the country. Starting October 1, 2015, students, parents, teachers are set to tour high-tech industry sites across Florida as part of "*Made in Florida*" industry tours for 2015 Manufacturing Day/Month. Counties across the state are also set to issue proclamations marking October 1 & 2 as the official kick-off dates for 2015 Manufacturing Day/Month. Additionally, several colleges and manufacturers will be hosting open houses on site, with screening of the "*Made in Florida*" video and other statewide events planned to celebrate manufacturing across Florida. Indeed Manufacturing Day/Month is sure to impact Florida in a big way!

This year FLATE and its statewide partners, that include the Manufacturers Association of Florida, Florida TRADE and Regional

- Industry/Education Partnerships Hold Promise for Advanced Technology Industries
- FDA Approves First 3-D Printed Drug
- 'Highly-skilled jobs' announcement coming today
- Hillsborough approves $1M for manufacturing education
- Manufacturing's Youth Problem
- Why NASA, SpaceX are interested in C. Fla. game developers
- Leggett & Platt To Establish Manufacturing Center In Northwest Pasco County, Florida
- Osceola County seeks partnerships to increase high-tech workforce
- Big Bend Power Station: site of a big win for education
- Johnson & Johnson Vision Care expands in Jacksonville
- No Rosey Or WALL-E, But Plenty Of Other Robots At This Summer Camp
- College offers 'fast-track' to manufacturing career course
- County Commission and Hillsborough Community College Partner to Grow Manufacturing Workforce
- New skills needed for new manufacturing technology
- How Florida ranks for manufacturing and logistics
- Fostering a Growth Mindset Is Key to Teaching STEM
- Jarden to buy manufacturer for $1.35B
- Pencil manufacturer expands in Lake Mary, creating jobs
- Rick Scott touts Orlando lighting company expansion to create 35 new jobs
- CitraPac Plans $14 Million Manufacturing Facility In Sebring, Florida
- Tampa Bay Counties Partner with Germany for Student Apprentice Program
- How to keep women in STEM

FLATE's Bi-annual Stakeholders Survey

FLATE's stakeholders provide critical feedback to help FLATE deliver services and products which meet and exceed needs. As part of FLATE's commitment to continuous improvement, our 2015 bi-annual stakeholder survey is in final stages of preparation. If you receive the survey in an email, please take 3 or so minutes to let us

Manufacturers Associations, are taking the lead in hosting Manufacturing Day/Month events. FLATE's manufacturing day strategy and cohesive partnerships with regional organizations across the state have successfully helped build an effective model that has made a positive impact on a state/national level. It has enabled greater involvement and statewide participation, and has empowered regional manufacturers associations to take a leading role in implementing a customized, regional strategy for manufacturing day/month. It has also helped strengthen industry-education ties that are a critical component in enhancing workforce education on a statewide level.

2015 sets a new precedent for Florida in once again assuming a leading role in the sheer volume and statewide participation in hosting manufacturing day/month events. Outlined below is an in-depth list of industry tours that have been finalized so far, with many regions still in the process of setting up their "*Made in Florida*" tours for Manufacturing Day/Month. FLATE will be updating this list on the new Manufacturing Day website at www.mfgday-fl.com and on the *Made in Florida* site at http://madeinflorida.org/manufacturing-day. So stay tuned about news and updates on tours and events in your region!

County	Industry Tour	Contact Information
Alachua County	Themeworks, Halcyon Dive Systems, Goodwin Heartpint, Prioria Robotics, Fracture, SiVance, RTI Surgical, Phalanx Defense Systems, LLC, Sinmat, Exactech. Alachua County: Museum Night	**Gainesville Chamber of Commerce** Staci Bertrand staci@gainesvillechamber.com
Northwest Florida (Escambia, City of Pensacola, Holmes, Washington, Jackson, Calhoun, Liberty County Santa Rosa, Walton, Okaloosa, and Bay Counties)	Ascend, Bay State Cable Ties, CEREX Advanced Fabrics, Inc. Eastman, Enviva Pellets Cottondale, Exxon Mobil, FWM, GE, Gulf Power, IP, Manown, Merrick, OREN International, Rex Lumber (Bristol), Rex Lumber (Graceville), West Point Home. Career Fairs: Escambia-Santa Rosa, Bay County, Okaloosa-Walton, Chipola) *Open house at Northwest Florida State College*	**Northwest Florida Manufacturers Council** Cindy Anderson cindy@nwfmc.org
Capital Region (Leon, Gadsden, Wakulla Counties)	Advanced Manufacturing Training Center: Open House for High School Students and Industry	**Manufacturers Association of Florida** Nancy Stephens nancy@mafmfg.com **Tallahassee Community College** Rick Frazier frazierr@tcc.fl.edu Greag Bell bellg@tcc.fl.edu

know how we are doing and how we can best meet your needs.Look for a September email from our External Evaluator: Phil Centonze (of Pos-Impact, LLC)

New students start new ET Degree program at Chipola College

Chipola Engineering Tech and Civil Engineering Open House

LinkedIN Update. We have MOVED!!

We now have a Company Page. Connect with us & like our our LinkedIn Company Page where we will post all of our updates, news and events. **https://www.linkedin.com/company/et-degree-alumni** Hope to see you there!

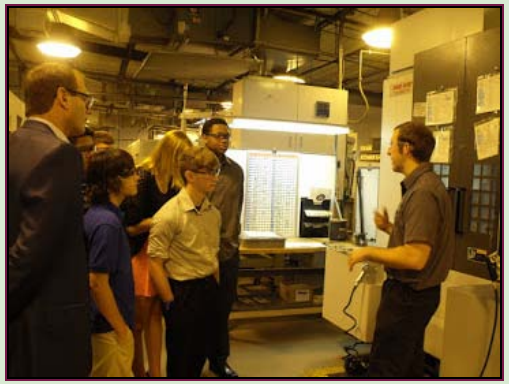
Special Announcements

- The Hard Cost of The Skills Gap: New ROI Calculator
- Submit Your Nominations for STEP Ahead Award

Hillsborough County	Sypris, HeatPipe, EMS-USA, Somatron, Chromalloy, Southern Manufacturing Technologies, MiTek, Arthur Machinery, DMG-Mori. Middleton High School: *"Made in Florida"* video Screening UTBMA Manufacturers' Award Dinner	**Bay Area Manufacturers Association** Becky Burton becky@bama.org **Upper Tampa Bay Manufacturers Association (UTBMA)** Jerry Custin JCustin@utbchamber.com Lauren Walden Lauren.Walden@sdhc.k12.fl.us
Lee & Charlotte Counties	*Gator Boards, Inc., Polygon Solutions, SAJ Manufacturing Services, Inc., Storm Smart, Ultra-Tec*	**Southwest Regional Manufacturers Association** Marni Sawicki marni@srma.net Max Dean max@srma.net
Central Florida (Orange, Brevard, Lake, Seminole & Osceola Counties)	*Open house at: Craig Technologies and at Lake Technical College, Custom Metal Designs, Nautique Boat Company, Inc., Rapid Prototyping Services*	**Manufacturers Association of Central Florida** Taje Naji taje.naji@macf.biz Sherry Reeves sherry.reeves@macf.biz
Southeast Florida (Palm Beach & Broward Counties	Hoerbiger Corporation, *Open House at Atlantic Technical College for High School Students*	**SFMA** June Wolfe june-wolfe@att.net **Palm Beach State College** Melissa Altamirano altamirm@palmbeachstate.edu Jay Matteson mattesoj@palmbeachstate.edu **Atlantic Technical College** Kevin Finan kevin.finan@browardschools.com

- ASME Advanced Manufacturing Fellowship Opportunity! Digital Manufacturing & Design Innovation Institute
- FREE MATEC Webinars
- PLTW Engineering Design for a successful future awaits. Register Now for 2015-106
- Career Opportunities at Measurement Supply, Inc.
- NEW CNC Jobs.NET - The employment source for CNC Job Seekers & CNC Employers

Did you know?



Last year Florida led the nation in the number of Manufacturing Day tours to advanced manufacturing facilities (over 100) taking place in each state. Over 1,600 MFG DAY events took place nationwide.

What's "New" in the FLATE websites? Click It!

- NEW: FLATE Manufacturing Day/Month Website
- FLATE's updated "Educational Resources" web page
- Manufacturing Day 2015 "Made in Florida" Industry Tours for Students: Sign Up & Information Request Form
- Sample Press Kit for MFG Day/Month
- Job Task Analysis Booklet (NEW)
- New Resources for ET CORE and Machining NIMS Alignment
- New Made In Florida Video

Pasco & Hernando Counties	*Accuform Signs, Adams Arms, Alumni-Guard, AM Skills, American Aviation, Bay-Tech Industries, Component General, Intrepid, Micro Matic, Seaway Plastics Engineering, Super Suppression*	**Florida TRADE at Pasco Hernando State College** Margie Burnham burnham@phsc.edu Jessica Ball ballj@phsc.edu Casey Drisco driscoc@phsc.edu
Pinellas County	American Tool & Mold, Bausch & Lomb, Beckwith Electric, Belac, Cavaform, ConMed, GaFoods, Jabil, Lockheed Martin, MasterCut Tools, Monin, Seaboard Manufacturing, Sign-Age of Tampa Bay, Inc., Ventel Plastics Manufacturing Career Fair: St. Petersburg College. "Made in Florida" video screening at James Weldon Johnson & Seminole Libraries *Open House at Paulson Plastics Academy in Tampa, Allen Industries*	**Bay Area Manufacturers Association** Becky Burton becky@bama.org **Upper Tampa Bay Manufacturers Association** Jerry Custin JCustin@utbchamber.com **Pinellas Schools** Greg Taylor taylorgr@pcsb.org Marti Giancola Giancolam@pcsb.org Bob Hawkins hawkinsr@pcsb.org
Polk County	JC Machine, Inc., ITW Professional Automotive Products, Rockford-Etteo Procunier, Sofidel America, Packaging Corp. of America, Pepperidge Farm, MaxPak, Publix Dairy Manufacturing	**Career Pathways at Polk State College** Christopher Yannes cyannes@polk.edu

Sarasota-Manatee Counties	ASO LLC, Dentsply-Raintree Essix, PGT Industries, Veethree Electronics & Marine, LLC, Pierce Manufacturing, Weber Manufacturing and Supplies, Teakdecking Systems, Sun Hydraulics *Open House & Career Fair: Suncoast Technical College & Manatee Technical College*	**SAMA** Peter Straw pdstrawpds@comcast.net **Sarasota County Schools Career & Technical Education** Martha Proulx Martha.Proulx@sarasotacountyschools.net Doug Wagner wagnerd@manateeschools.net Arnall Cox Arnall.Cox@sarasotaschools.net

Following up on the successful model that FLATE has established over the years, FLATE will once again take the lead in surveying statewide industry hosts, educators and students who participate in this year's "Made in Florida" industry tours for 2015

- FLATE--STEM Resources for Girls
- ET Degree Alumni LinkedIn Portal

STEM Educators Corner

More and more schools are appreciating the STEM connection found in tours to advanced manufacturing facilities on National MFG DAY (Oct. 2, 2015). MFG DAY resources are available at FLATE's wiki resource: http://flate.pbworks.com/w/page/10889505/FrontPage From here, choose the Industry Tour Resources - MFG DAY box. If you and your students are participating virtually this year – you can still have a great time online. FLATE has just released a new Teacher's Guide to accompany the "Made in Florida" 2015 video: What's made in your backyard? http://madeinflorida.org/videos/ The full 24 page Teacher Guide is available as a free downloadable PDF file. The Teacher's Guide contains five lessons directly connected with the video and Manufacturing in Florida. It

Manufacturing Day/Month. Post event surveys will be tabulated by FLATE and shared with statewide partners and stakeholders. FLATE will also help connect regional groups together, and will design/distribute shirts, provide educator resources, write/publish/distribute and report on MFG Day/month related news, and compile all student, educator, host survey data. FLATE will also work with regional partners to help connect schools with companies, and has compiled a complete press kit that regional partners can use as part of their media relations/outreach strategy.

To support students' and educators' learning and engagement in manufacturing, FLATE has also developed an extensive array of resources specifically designed for educators to use as part of the Manufacturing Day/Month curriculum. These comprehensive resources are lesson plans that provide a quick overview of "what is manufacturing?" and can be taught as one-day lesson plans, or as in-depth, multi-day lessons that merge manufacturing-related technical content with the language skills of common core. There is even a 2015 Manufacturing Day in Florida poster that teachers can use as a curriculum tool and/or to decorate their classroom. To access these resources, visit the FLATE's Wiki at: http://flate.pbworks.com/w/page/10889505/FrontPage and http://mfgday-fl.com.

If you would like to be connected with a regional manufacturers' association to discuss additional outreach activities for students in your community, contact Dr. Marilyn Barger at barger@fl-ate.org, or visit http://mfgday-fl.com. For information on tours for Hillsborough & Pinellas counties contact Nina Stokes, FLATE project manager at stokes@fl-ate.org. For tours in Sarasota and Manatee counties and "*Made in Florida*" lesson plans for manufacturing day contact Danielly Orozco, FLATE curriculum coordinator at orozco@fl-ate.org.

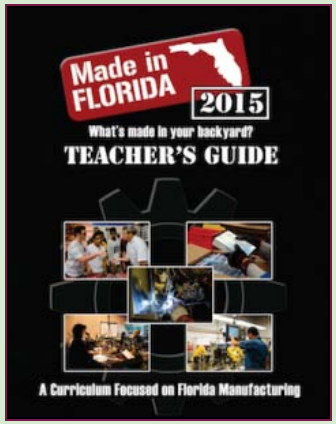
Robotics Camps Opens Pathways for Students Across Florida to Explore STEM and Robotics

Summer camp season may have concluded, but we still have some exciting highlights to report on from camps that were held across the state earlier this summer. This year as in the past few years a number of schools and organizations partnered with FLATE to once again offer invigorating robotics camps to middle and high school students across Florida. Robotics camps were held at the: Florida Institute for Human & Machine Cognition located in Ocala; Palm Beach State College in Palm Beach, FLL, and Lake Sumter State College in Leesburg, FL. Each of these camps were modeled after FLATE's robotics camps and served as a mechanism to reach out to a broader range of students across the state. The camps also proved to be a sustainable and effective mechanism to get middle and high school aged students from all socio-economic backgrounds interested in STEM and robotics education and related career pathways.

It was the first time Lake Sumter State College (LSSC) offered an engineering robotics camp for middle and high school students. A total of 19 students (15 male, 4 female) from five schools attended the three week camp at LSSC. The students were in grades six to twelve, and were from Leesburg High School, Carver and Oak Park middle schools, Lake Preparatory Academy, including some who are homeschooled. Sara Corvill, STEM program manager at LSSC who took a leading role in hosting the camp said the overarching idea for the camps was to provide students "a space to cultivate a deeper interest in robotics and engineering for the youth in the community" and also to "provide an avenue for students to gain knowledge/confidence in designing, building and programming a robot."

contains a number of teaching aids plus student activity sheets. Find the teachers guide & student activity sheets here

NEW Made in Florida Video Curriculum



It's time to think about how to engage your students in manufacturing and/or enrich your manufacturing day tour experience later this Fall.

FLATE has just released its "Teacher Guide" to accompany the "Made in Florida 2015: What's made in your backyard?" video.

The full 24 page Teacher Guide is available as a downloadable PDF file, or in hard copy format upon request. The Teacher's Guide contains five lessons with a number of teaching aids plus student activity sheets for each lesson. Student activity sheets can easily be printed for class, or shared on a white board, or projector as well.

Find the Teacher Guide & Student Activity Sheets at: http://madeinflorida.org/videos and on the FLATE Wiki

Photo Montage: Robotics Camps 2015

During the three week camp students were paired into groups of two and four, and received an overview of the design process of a VEX robot. “We wanted students to have an unforgettable experience—one that would open their eyes to possible careers they could pursue in future” said Corvill. Each group received an Engineering Notebook where they documented the design process, and learned how to build and program the robot to solve challenges in the design competition. Corvill hopes this experience at the camp will inspire students to gain more knowledge about robotics, learn the value/importance of teamwork and how local colleges like LSSC can help students get started on their higher education pursuits.

In addition to the camp at LSSC, Withlacoochee Technical College (WTC) also partnered with FLATE to offer two introductory level robotics camp. This was the second year WTC offered the camps, one of which was an ‘All Girls’ camp. Laurie Newkirk, automation & production technology instructor at WTC, who served as the director said the camps allowed students to build, program and operate robots, but more importantly gave them, especially the girls, “an opportunity to engage in hands-on STEM activities and projects led by women working in the STEM field.” Newkirk hopes the camps will expand and increase students’ interest in STEM and its applications in high-tech manufacturing. “There was a bit of fear and reluctance when we first started building & programming the robots,” but soon many were ready to start challenges and even went above and beyond the scope of the lesson plans and challenges, said Newkirk.

As is the case with both onsite and offsite robotics camps, camp challenges are deemed the most fun part of their overall experience by students’ as they got to work on hands-on projects, explore their creativity and apply their knowledge and skills in real-world settings. At WTC the most fun part of the camp was the bumper challenge whereby bumpers were placed on the front and rear of the robots, with students being challenged to knock down as many as bottles as possible. Both teachers and students brainstormed ideas on designing the track and placement of bottles/objects for the robot to knock down. “The participants enjoyed the activity” said Newkirk, as they also got to design and make their own cell phone accessory, create a marketing presentation, and present their ideas to fellow campers and their parents. They also enjoyed using the joystick to maneuver the robot through a course in an effort to deliver their product to the customer as quickly as possible.

All camp hosts hope to offer similar camps next year and perhaps even expand it. WTC hopes to offer more weeks of camp and an advanced camp in 2016 for students who attended this summer. Newkirk also hopes to expand the partnership with FLATE to include ideas for camp activities, assistance with media coverage and possible funding assistance.

For more information on these camps visit http://fl-ate.org/programs/summer-camps, or email Dr. Marilyn Barger, executive director of FLATE at barger@fl-at.org.

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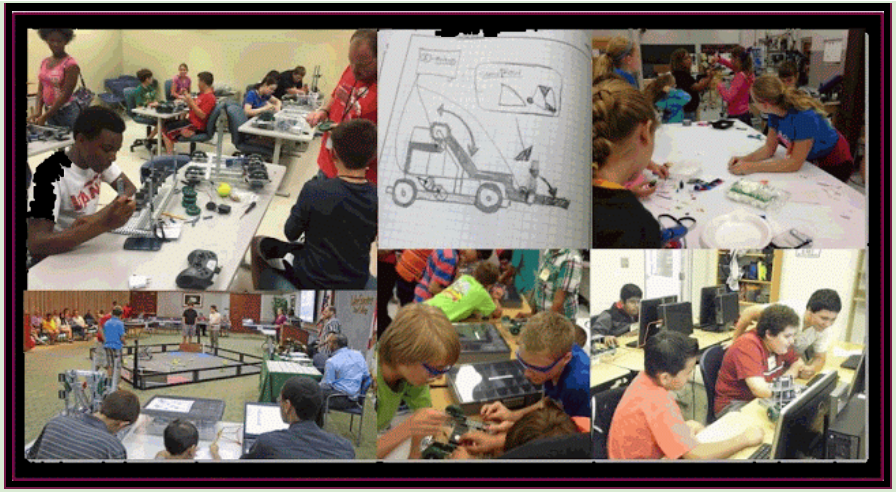
- Andrew Hoff, Associate Professor of Electrical Engineering at USF. hoff@eng.usf.edu
- Wilfredo Moreno, Professor of Electrical Engineering at USF. Moreno@eng.usf.edu

Made in Florida Social Media Pages & Profiles

- Facebook Page
- LinkedIn Company Page
- LinkedIn Profile Page
- LinkedIn Group (for ET Alumni)
- Twitter Page
- FLATER Press Room
- Google Page
- YouTube Page



Answer to sTEm–at-Work #50: Membrane Technology Decision

The Puzzle: http://flate-mif.blogspot.com/2015/08/stemat-work-puzzle-50-membrane_5.html

Analysis

A technician is involved with the purification step for a drug that uses a membrane to separate the drug from its reaction by-products. The tech understands that the separation is diffusion driven. Thus, after the tech installs the equipment and it begins to operate she knows there will be no drug in the pure liquid at the instant the equipment is turned on. The process has a sensor in the pure liquid that only monitors the increase in the number of drug molecules as a function of time. The tech observed the data shown (in the graph below) immediately after the equipment was turned on for the first time.

Usually, the puzzles have a clear yes, or no answer expectation. This is one puzzle that someone can have a Yes answer if the values on the time axis (puzzles usually do not have values on either axis to drive students into "bigger picture" thought processes) are in hours, then a yes argument can be made. However, if we assign a shorter time frame, then the concentration went up way too fast. (There was a hole, or holes in the membrane, or it was not installed properly are better explanations why the "Amount of drug in the pure liquid" is so high so quickly.) Either way, this a good example of a class time closer where a quick discussion can set the stage to think both ways.

Question: Did the Tech allow the equipment to keep running. Yes or NO

Answer: NO

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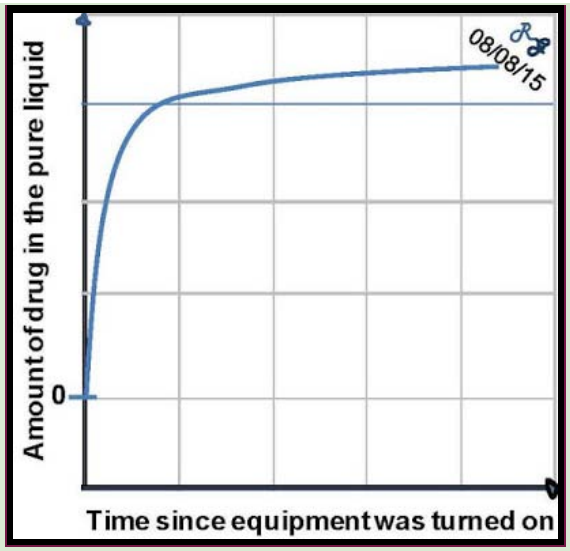

Persistence Pays: D L Jamerson Elementary School's Road to Success

FLATE would like to share an impressive engineering technology curriculum success story right here in Tampa Bay. D. L. Jamerson, Jr. Elementary School (DLJ) in St. Petersburg, FL, opened its doors in 2004 as a U.S. Department of Education neighborhood Magnet School Center for Mathematics and Engineering. The core teachers and school leadership met regularly for six months prior to opening in the fall of 2004 working hard to define their engineering theme and its total integration into every part of the school: the kindergarten classroom, the media center, to the PE fields, the music and art rooms, and, of course, the engineering science lab. With funding from their magnet program grant, the DLJ community went to work designing and developing its integrated curriculum, developing its on-campus outside classrooms, building partnerships and traditions, and screaming the theme of "engineering is everywhere." Big hurdles for implementation included: the lack of engineering and strong math backgrounds of the teachers; recruiting students from outside the neighborhood; finding the right materials to support the elementary engineering challenges; building laboratory capacity, and learning how to integrate language, math, social sciences, reading with the engineering projects.

However, we all knew it should work. Learning in a non-competitive, hands-on contextualized environment is a positive experience for students of all ages. The total integration of the K-5 curriculum and strong alignment between grade levels are key elements of Jamerson's students' success. What success? It's amazing – just take a look!

- ✓ 82% ***of DLJ 5th graders scored at Level 3 or above in the 2015 FCAT Science 2.0 tests.***
- ✓ 46% of DLJ 5th graders scored at Level 5 in the 2015 FCAT Science 2.0 tests. *(This put DL Jamerson as the #1 elementary school in the Pinellas school district and in the top 5% in the state for performance on the FCAT 2.0 Science test in 2015.*
- ✓ The percentage of African-American students achieving level 3 or higher on the same FCAT Science 2.0 test increased from less than 5% in 2008 to over 65% in 2015.

(Note a Level 5 score means the student is performing two levels above their current grade level)

Why do these 5th grade science scores speak to the success of the DLJ integrated engineering education approach? Science requires both verbal and mathematical skills as well as creative thinking. Linking an engineering challenge to the underlying science and math concepts that govern the principles behind that challenge help students "own" the whole concept—including the math. Add in the practical aspect that "things don't always work right so we have to 'redo'," using the best of what is available to fix something, starts students down the road to logical thinking, systematic and orderly troubleshooting and defining root causes. And best of all – it's habit forming!

Students use the same Jamerson created Engineering Design Process (Plan, Design, Check and Share) from the first day of kindergarten through the last days of 5th grade. This approach provides a stable problem solving strategy that students can continue to use with deeper and more complex interpretations as their knowledge of math, science, and language increases over the years. Mixing in the 'How, Who, and What' questions about the impact of a potential new bridge rounds out the engineering of that DLJ 5th grade design project and slides social sciences, reading, and writing into this total learning experience.

Great scores in 5th grade science are also reflective in the school's "grade". DLJ's State of Florida designated school grade for 2006-07 (two years after DLJ opened their doors) was a "**C**". The 2014-15 academic year marked the 4th year straight that DLJ earned an "**A**" rating from the state. Add this academic success to the fact that D.L. Jamerson Elementary school has also won a number of magnet school awards as well as had visitors from over 20 other states coming to see and experience this extraordinary elementary school underlines the bottom line message that Persistence pays off and an integrated engineering education approach works.

The secret is to: keep and continuously improve the strongly integrated hands-on, engineering focused curriculum; continuous professional development for teachers; weave in new district and state requirements without losing the core content, and strive for success for every child. D.L. Jamerson does this with no exceptions and that has made Jamerson a great place for learning. FLATE is proud to be part of their warm and nurturing Community of Practice.

Feel free to contact us if you want more information. Or better still, check out their website http://www.pcsb.org/jamerson-es, and then contact Lucas Hefty at heftyl@pcsb.org, and tell him Marilyn and Richard said to get in touch.

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