



Emerging Technology and Technician Workshop

Moving the “maker movement” to the classroom”

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Outline

- NSF ATE & FLATE
- Digital Fabrication Learning Community (DFLC)
- Emerging Technician and Technology Workshop
- Questions?



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National Science Foundation (NSF) Advanced Technological Education (ATE)

ATE CENTERS



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NSF ATE Centers: Our Work

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NSF ATE Centers

- Offer neutral/non-college consensus on skills and knowledge required for technical programs
- Develop and implement strategies for recruiting minorities
- Have expertise in curriculum and curriculum processes
- Gather & create technician education resources for both educators and industry
- Provide professional development for industry and educators
- Have access to content expertise in advanced/emerging technologies



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NSF ATE Centers!



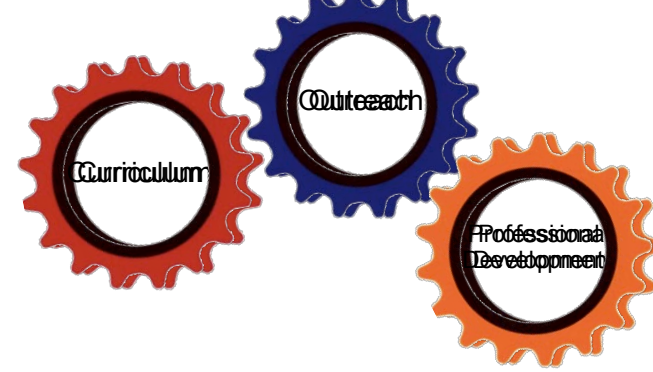
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VISION

FLATE will be Florida's leading resource for education and training expertise, leadership, projects, and services to promote and support the workforce in the high performance production and manufacturing community.



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DFLC – overview

- Build a FABLAB network in the ATE Community
- Promote FABLABs for college programs and economic development
- Mentor new FAB LABs
- Define STEM learning related to FABLAB activities



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Emerging Technologies & Technicians Workshop

- Hosted by St. Pete College (SPC)
- Exposure to & experiences with
 - Next Generation Manufacturing (NGM)
 - Rapid Prototyping (RP)
 - Digital Fabrication (“Fab Lab”)
- Use an advanced, project based learning activity
- SPC faculty and students supported the hands-on activities
- Include implementation of and the role of FAB LABS for college economic development and academic programs
- Tour TSE industries



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ETT Workshop Agenda

Wednesday, January 8, 2014

1:00 PM	Welcome: CCET, SPC & FLATE
1:15 PM	DFLC Sponsor & Lifecycle Overview
1:45 PM	Lab & Hands-On Activities Orientation
2:30 – 5:00 PM	Emerging Technologies & Technician Hands-On Project (<i>sessions 1-2</i>)
4:30 – 5:30 PM	Optional: Fab Lab Mentoring & NGM Enterprise & Technician Models

Thursday, January 9, 2014

8:00 AM	Tour of TSE Industry
10:00 AM	Break
10:15 AM	Emerging Technologies & Technician Hands-On Project (<i>session 3</i>)
11:30 AM	Curriculum Alignment Project Session #1 (Lunch provided)
1:00 PM	Emerging Technologies & Technician Hands-On Project (<i>session 4</i>)
2:45 PM	Break
3:30– 5:00 PM	Employer Alignment- Leveraging Emerging Technologies for Economic Dev

Friday, January 10, 2014

8:30 AM	NextGen Mfg. Best Practices & Resources
9:00 AM	FINAL- Emerging Technologies & Technician Hands-On Project
10:30 AM	Curriculum Alignment Project Session #2
11:45AM	Project summary
12:15 PM	Lunch (provided)
1:00 – 2:00 PM	Workshop Summary; Evaluation; Attendee Experience; Wrap Up



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Crank Power Transfer Module

The participants will become familiar to the manufacturing processes steps through Project Based Learning. The activity for this workshop includes::

- Reverse Engineering of an assembly from which the design is made
- Additive and Subtraction Manufacturing
- Machining and/or reshaping of the materials
- Tests & checks for quality assurance



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EET 2014 Curriculum alignment summary results

9 participants (educators) returned surveys

4 were complete (responded to all 4 activities)

WORKSHOP ACTIVITIES	COURSE ALIGNMENT
Reverse Engineering	CAD, Drafting, etc Intro to Engineering or Technology
Design	CAD, Drafting, etc Intro to Engineering or Technology
3D Printing	CAD, Drafting, etc
Metrology	Mechanical Measurements Mechanical Systems Metrology



EET 2014 Curriculum alignment summary results

9 participants (educators) returned surveys
4 were complete (responded to all 4 activities)

CONCLUSIONS – *with disclaimer that there there was a very small sample size*

- Overall agreement that skills used in the workshop align to some academic courses
- Group activity responses closely matched the workshop worksheet responses
- Logistics issue of using an open fab lab for classes (Scheduling, etc)
- Requires some work with curriculum to embed project that might overlap with different courses
- Capstone and Introductory courses that are project based have similar design /build projects integrating concepts and skills.



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Thank you!



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**This presentation will be
posted on FLATE's wiki:**

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ETT Workshop Outcomes

- 24 participants (14 community college and university faculty from around the USA)
- 86% stated that they would use workshop materials
- created a unique and comprehensive “hands-on, minds-on experience” that emphasized deeper and enriched learning
- learning emulated real product development processes
- reinforced the need for an emerging new breed of technician with niche and horizontal skills more closely aligned with emerging industry technologies and needs
- created a vehicle for the Digital Fab Lab and ATE communities to integrate selected content into their offerings from MIT’s research on Science of Digital Fabrication (<http://cba.mit.edu/events/13.03.scifab/>)



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