Professional Development

a FLATE Best Practices Guide
www.fl-ate.org

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Regional Center of Excellence

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A note from FLATE's Executive Director

FLATE's professional development workshops support National Science Foundation (NSF) goals for advanced technological education and emphasize hands-on technical training along with development, application and assessment of technology-related curriculum, and strategies for recruitment and retention of students in technology programs. FLATE works with educators from around the world, subject matter experts at colleges and universities, advanced manufacturing industry professionals, and with high-tech manufacturing organization partners to provide professional development experiences which are timely and relevant. With increasing national interest and need focused on the advanced manufacturing industry, now more than ever, educators need knowledge, skills, abilities and strategies to help prepare students for the high tech workforce. I hope you will take advantage of our experience and use this guide to help avoid some of the things we learned the hard way as we developed workshops which have provided over 20,000 hours of professional development since 1995 to more than 23,000 educators and the manufacturing workforce, economic and industry personnel, and other members of the community.

The goal of the *FLATE Best Practices in Professional Development* Guide

One of the primary objectives of the Florida Advanced Technological Education (FLATE) Center as a National Science Foundation (NSF) Center of Excellence is to provide professional development opportunities where technical educators develop, refine, and certify their knowledge base within advanced manufacturing and its related enabling technologies. FLATE has been recognized by the Florida Career Pathways Network (FCPN) for providing leadership and best practices in "Enabling Technical Educators through Professional Development" (2013). We would like to share some of the things we've learned along the way from providing professional development workshops in statewide, national, and international venues. This guide offers an overview and outline which includes ideas and examples for effective logistics management, developing content, marketing, measuring impact, and provides samples to help with startup. We hope that you will find our experiences applicable to your needs as you offer professional development experiences among your community of practice.

Identifying Opportunities

Decide what to offer, and to whom

Start with a needs based analysis to determine what type of professional development is needed or desired, and which group/s would benefit from a professional development training offering. There are many ways to look for and identify opportunities for closer examination.

These include:

➢ Focus groups
➢ Surveys
➢ Research/literature reviews
➢ Training gaps identified at conferences and presentations
➢ School meetings or other special interest groups
➢ Industry or other types of advisory committees
➢ Special requests

For instance, you could use industry feedback to help identify gaps observed in new or incumbent employees and develop a training experience to meet those needs. Teachers or the local school district are a good source to help identify a need for additional training which is needed to better equip teachers to more effectively teach STEM subjects. Another method is to simply ask about professional development topics of interest by means of a question added to the bottom of a survey provided at other workshops. We've provided some sample surveys in the appendix for reference.

Determine Your Target Audience

Narrow your participant population

From on-the-job training and technical educational offerings using high-tech facilities, to K-20 educators, it's important to keep in mind the educator level and/or skill set you wish to impact. It's wise not to cast too wide of a net the first time a workshop is offered. If you are new to professional development workshop offerings, consider limiting participants to 25 or fewer the first time offering a new workshop or topic in order to make sure you can meet all needs comfortably, or if you have a larger workshop in mind, consider adding staff to help with registration, handouts, questions with hands-on applications, and assessments.

Participants from a typically diverse and wide range of starting skill sets may sign up for workshops that sound interesting in topics they wish to know more about. The first time offering a program you may wish to identify "suggested for" parameters which define skill levels in the target audience you believe will best benefit from the workshop. Providing specifics such as   Beginner (no experience) or Advanced (at least one year of experience) helps keep those new to the topic from becoming overwhelmed and the more experienced from becoming bored. For educators, you may wish to target elementary, middle, high school or college educators in order to provide strategies and curriculum which will provide a "best fit" with their students. Consider these strategies to target your ideal workshop participant population:

➢ Administer a pre-workshop survey to determine skill level
➢ Decide when to split into beginner and advanced levels
➢ Consider the appropriate level for the curriculum you plan to offer in advance of the workshop

Pre-Workshop Planning

The logistics of time and place

Workshops will need to be developed around participant availability. Employees may need "after work" or weekend hours (unless the workshop is job sponsored). Teacher availability may be limited to teacher workdays or summer offerings. In order to fill your workshop with attendees, consider:

➢ Partnering with employers to offer training to employees either during or directly after work hours
➢ Partnering with school districts to help market your summer workshops
➢ Working with business and educator partners to leverage use of high tech labs and equipment
➢ Check to see if $$ is available from partners to fund employee training or provide stipends or meals
➢ Reserve your room and any equipment needed in plenty of time

Workshop format

High tech typically calls for a "hands on" experience. High tech equipment or items can be expensive. Vendors may sometimes supply items "to use" to make participants aware of their products and services. Examples include:

➢ Hardware, software
➢ Specialty items (such as robots)
➢ Technical training stations

Online training and remote access to equipment using simulated situations is another way to provide a wide range of high tech experiences; high speed internet access will be required.

Pre-Workshop Communication

Participants

Ensure that access is available for all participants by inquiring about special needs or restrictions in pre-workshop communication. Ascertain and address any restrictions and special needs for your attendees up front. Include consideration of meal restrictions and any special participation requirements, such as note takers or interpreters. Make it easy to get in touch with you or your staff in order to address any concerns up to and including the day of the workshop.

Access and availability is also about logistics. Be sure to address:

➢ Location (provide good directions and a map)
➢ Parking
➢ Fees or associated materials costs
➢ Meal arrangements
➢ Required forms and paperwork
➢ Attendance confirmation
➢ Start and end times
➢ Room set up
➢ Special dress requirements (if appropriate)

Consider a planning webinar for groups instead of individual email correspondence. You may wish to include a photo/media release form in your pre-workshop packet so that you may use photo images and quotes in news releases, reports, and promotions for future workshops.

Building the Professional Development Workshop

Develop the curriculum

When you've identified your target audience, and have a good idea about what you'd like to offer to meet needs and fill gaps, the next step is developing curriculum content. When developing curriculum, keep in mind the idea that the curriculum you offer should be adaptable. Your participants may vary widely in the applications they have in mind for what they will learn in your workshop. A few examples for offering professional development to teachers include:

- Provide ideas to adapt the presented curriculum for use with different grade levels and abilities
- Address the variability of student populations (such as gifted, remedial, ESOL)
- Provide adaptations to accommodate learning style differences (how students prefer to learn). Whether students are auditory, hands on, or visual learners, demonstrate how your curriculum can be used with a wide variety of applications

Begin with the end in mind

What is your main goal for the workshop? Having a clear notion of what you want to accomplish is important when crafting your curriculum, but be sure to find out at the beginning of the workshop what goals your participants have in mind as well. An easy way to accomplish this is to simply ask your participants and capture responses as they are offered. Perhaps particular interests will emerge which you can be sure to address. This kind of personal touch leads to a satisfying workshop.

Content Presentation

Make Room for Individual Expression

For best results, use a mix of presentation modes. In addition to welcoming and icebreakers, introduce thought questions prior to activities. PowerPoint is a great tool for presenting theory and background information, but keep slide show brief, and add hands on interactions which provide participants with additional opportunities to express themselves such as:

➢ Think-Pair-Share
➢ Write comments on flip charts and provide a consolidated version after the workshop to all participants
➢ Verbally test content knowledge using games and team participation
➢ Provide content related tasks with a creative emphasis

Interactive work with peers helps participants move theory into practice. These activities allow participants additional opportunities to practice with the content. This type of session enhances camaraderie and facilitates networking, leading to greater satisfaction with the workshop experience.

If appropriate, offer minimal guidance for hands on sessions which require high levels of creativity or "out of the box" thinking. If too much guidance is provided, adults may be inclined to mirror your lead, similar to how students tend to model teacher-led activities in the classroom. The goal here is to tap into creativity and support individual expression. Allow time for group discussion and presentation.

Model Diversity

Keep differences in mind

The professional development workshop in some ways becomes a microcosm of the classroom. Encourage teamwork, but make room for those who prefer to work alone. Diversity in the 21st century is about so much more than ethnicity. One size does not fit all students, and this same concept applies to your participants.

Differences to consider include:

- ➢ Age of participants
- ➢ English as a second language (ESOL)
- ➢ Special needs
- ➢ Technical ability
- ➢ Interest level in the subject (are they enthusiastic or were they assigned to attend?)

In teamwork activities, try to ensure that some participants don't dominate others or take over the conversation. Walk out into the participants' area rather than speak only from a stationary point in the front of the room. Engage in conversations with workshop participants, ensure that everyone understands, is able to keep up, and is enjoying themselves.

Include value added experiences

Make time and a place for participant expression and creativity.
Combining a variety of activities keeps your workshop lively and makes for a more memorable experience for participants.

Activities

- ➢ Presentations and guest speakers
- ➢ Videos
- ➢ Hands on activities
- ➢ Online games or simulations
- ➢ Field trips
- ➢ Panel discussions
- ➢ Review of best practices

Cost Considerations

$ Curriculum
$ Certification Testing (if applicable)
$ Instructors, Subject Matter Experts
$ Computer access
$ Stipends
$ Location
$ Food
$ Name Tags/Lanyards
$ Giveaways
$ Completion Certificates
$ "Thank You" letters, certificates or plaques

Proof of participation

Use a dated, daily sign in sheet. These are required for record keeping and are critical if you are providing stipends. Participants will often have separate participation completion forms for you to sign. If you are offering the workshop in partnership with others, they may have provided a sign in sheet which they need as well. If you would rather not have two sign in sheets, you can make a copy of the partners' sign in sheet for your record keeping purposes, providing it contains all of the information you need. It is a good idea to work with your partner in advance of the workshop to develop one sign in sheet which will work for both of you.

Marketing Your Workshop

Use a variety of venues to let people know about your workshop

Upcoming FLATE workshops are posted on its webpage www.fl-ate.org and promoted in the monthly *FLATE FOCUS* Newsletter blog. Additional promotions are sent to participants who have attended previous FLATE workshops or have requested to be added to FLATE news distributions by contacting FLATE. Flyers are typically provided for major events such as ET Summer Institutes, and advance notices are sent to school districts, educators, industry partners, and other interested parties who are included in FLATE's contact list.

We find that very often people would like additional copies of workshop materials or the PowerPoint presentation. FLATE workshop presentations are posted in **FLATE's online wiki resource for educators, www.flate.pbwiki.com**, to provide a "one-stop" reference and resource base for workshop materials.

Continuing Education Units (CEUs)

Participants taking your workshops may want to use the workshop hours toward Continuing Education Credits (CEUs) or use as credits or "points" towards certifications. Without appropriate certification credentials, you will not be able to state that your workshop can be used toward CEUs unless you have permission from the CEU provider. However, you can suggest when marketing the workshop that participants please contact the governing body from which they wish to obtain the CEU to see if your workshop applies. You will need to provide participants who are using the workshop toward their CEUs with a detailed agenda or syllabus stating what will be learned in the workshop along with the dates and hours of the workshop so that the appropriate number of credits applies. Signatures from presenters or signed certificates may also be required; determine and prepare the needed criteria well in advance of the workshop.

Developing Your Workshop Portfolio

Consider a diverse set of related offerings

Offering a variety of experiences gives satisfied participants the opportunity to return and take additional workshops with you. FLATE offers a variety of workshop formats ranging from high tech/hands on to working with peers to construct curriculum. Working with business and industry partners allows participants to use equipment in high tech facilities. We take advantage of educator "down time" over the summer, and provide workshops which allow participants from entry level to expert to build their skill sets. A few FLATE examples include:

Leverage partnerships

There are many partnerships involved in FLATE workshops. These include college partners for host sites, industry partners for equipment and subject matter expertise, equipment vendors such as Siemens or Bluegrass Education Technologies, Florida Association for Career and Technical Education (FACTE), Institute of Electrical and Electronics Engineers (IEEE), the National Science Foundation (NSF) and others. Providing workshops in partnership with other organizations allows FLATE to provide a wide range of noteworthy professional development experiences within its mission of advanced technological education. Contact school districts and let them know of your availability for events such as teacher professional work days. Make local industry contacts who may wish to send groups of incumbent workers or new employees to train with you or, teachers may attend your facilitated workshops onsite at their schools, at local industry establishments, at your location, or online. FLATE responds directly to professional development interests and needs expressed on surveys regarding future workshop topics in which participants would be interested. In addition, FLATE values and learns from others within its community of practice who also provide professional development.

Evaluating Your Workshop

How will you determine success?

Satisfaction is a common standard for workshop surveys, and you can use satisfaction data for benchmark/ comparisons, and make comments such as "90% of participants were satisfied," meaning your workshop was successful for the majority of participants. First, decide what you wish to know more about, and how the information you collect will help you improve your workshop. Are you looking for "overall satisfaction?" Although it is very difficult to 100% satisfy everyone, adding specifics to your satisfaction survey will help you identify areas for improvement.

Content learning is another success measure you may wish to consider. "Test type" content questions will need to be "graded" by the instructor and can be administered at the conclusion of the workshop or provided as pre- and post-tests, yielding comparative data to illustrate change in ability to answer test questions correctly. Evaluation of pre and post survey data is typically the percent change between pre and post survey answers. Self-ratings of content knowledge give participants the opportunity to respond about the degree to which they feel they improved their content knowledge.

Developing meaningful measures based on your individual program's needs is important since one size does not fit all. Think about how you will use your survey data to improve your workshop. As well, consider the reports that you need data to help define, news articles or other publications, and include criteria which will provide data to help you meet these needs in your surveys. Examples of end-of-workshop surveys we use are provided in the appendix. FLATE keeps generic online forms which are readily adaptable.

Considerations of survey strategies

➢ Online vs Paper Surveys

Online surveys are effective, but often it is difficult to obtain 100% participation. Online options such as Survey Monkey make it easy to email surveys to participants. Did you know? Surveys need not be anonymous! Surveys where participants identify themselves, their school, or their business make it easy to stay in touch for follow up. Consider offering some type of "reward" for online survey completion, such as $10 toward the next workshop or one of your products. The final page of the survey typically redirects participants to your homepage. Online surveys often have built in features for extracting graphs or spreadsheet data. Be sure to include a "Thank You" on the final page of the online survey.

Paper surveys which are turned in when certificates of participation are picked up typically provide more participant data than do online surveys. Unfortunately, paper surveys are time consuming to manually enter the data, and manual data entry is more prone to error. Troubleshooting, time spent in spreadsheet error resolution, lost paperwork, and manually developing graphs are all considerations of reliance on paper copies.

For both online and print survey models, consider annual revisions to leave out questions which are not returning usable data, and add new questions based on new technologies or benchmarking with other professional development workshops. Assess your workshops quarterly or annually; compare workshops to each other to see which return the highest survey ratings and use this information to improve lower performing workshops. You may find that a particular location, instructor, or subject is a consistent high (or low) performer, and this is information which can help you craft future workshops.

➢ Quantitative vs Qualitative Survey Questions

Responses to quantitative questions provide those statistics which look so good in reports, such as *93% of responders (n=374) agree that "The Toothpick Factory" is an effective way to promote the importance of soft skills."* Be sure to include how many people you are referring to, such as the n=374 in this example, in order to provide an accurate context for your data. Demographics such as age, gender and ethnicity may be important statistics to collect if you wish to reflect your participant population.

It is important to include qualitative or "open ended" questions in order to allow participants to provide a complete response. In open ended questions you will:

- Collect some complimentary quotes you can use to market future workshops
- Learn about issues you didn't include in the structured (quantitative) part of the survey
- Give people the opportunity to fully express their opinion
- Obtain a complete picture of your workshop

➢ Content vs Opinion Surveys

As mentioned in the "determining success" section, if you teach technical content, you may wish to see if students learned the content. Surveys are not a "test," but they allow for self-assessment of learning specific content. For content questions, as with qualitative questions, keep only the questions you plan to actually use…don't try to survey "everything." A self-assessment is sometimes used in lieu of an administered "test" of the content. Keep in mind that a pre and post survey provides only a *self*-assessment of learning. Examples of surveys we've used are provided in the appendix.

> ➢ **Partner Surveys**

Just ask! If the partnership was beneficial to your workshop, such as providing access to a location or high tech equipment, ensure that the partnership met your partner's needs and was a good use of their time and effort by asking about their experience. An online survey is the best way to give partners the chance to provide feedback. Make room in the survey for open ended responses. Open ended responses provide useful information you may not have addressed in the body of a generic survey.

> ➢ **Anonymous vs Identifiable Surveys**

Anonymous surveys may provide greater opportunities for more candid comments, especially in the area of complaints; however, the benefits of identifiable surveys may outweigh the negative. You can still capture any potential complaints by asking open ended questions such as "Please identify areas for improvement." There are several benefits to using surveys where you can identify participants:

- o In the event of a complaint, you have the ability to contact the participant and deal with any issues directly
- o You can extract particular information, such as responses for a certain school or location
- o Identifiable surveys facilitate feedback to ascertain if workshop information or materials were put into practice and if so, how, to what extent, and level of success

Post Workshop Activities

Provide recognition

It is customary to prove a certificate of completion at the end of the workshop. There are a variety of "pre-packaged" certificates which are readily available at office supply stores, or, use an online template. Online templates not only have the cost advantage, but save time with scanned signatures, quick name edits or additions, and can be used again and again with a simple change to the workshop name and date. Add value to the certificate by including as a formal attachment a list of skills and knowledge acquired in the workshop.

Thank your partners, instructors, and participants

Send partners excerpts from survey results along with a formal thank you letter. Partners often report community service efforts to their stakeholders, and a formal letter can be printed, shared, or even framed. If pressed for time, at the very least a timely email is called for, no later than the week following the event. Instructors will benefit from the same treatment, and can use formal letters toward tenure earning activities or in their teaching portfolio. It's easy to thank participants via email along with a link to information resources on your website where they may obtain copies of workshop materials. This is a good opportunity to include information for upcoming workshops and a friendly request to let you know about challenges and successes using workshop materials.

Final debrief

Thank your workshop team too! Gather your team to discuss any disconnects or challenges with the workshop, as well as what "went right." Would you offer this or a similar workshop again? Have survey results on hand to discuss high points and opportunities for improvement. If your organization provides employee recognition opportunities, this provides you with a chance to use that program. If not, a simple "job well done" supports effective teamwork. The debriefing provides the perfect opportunity to plan the next workshop.

Benchmarking

Annotated workshop highlights

FLATE has improved its professional development workshop offerings by benchmarking the efforts of others. This has occurred through attending a variety of professional development workshops as well as by learning more about particular workshops of interest from those who offer them. With this in mind, FLATE has put together a small sampling of recent workshops. We hope that this information provides a more in depth look at some of our recent workshops.

FLATE Professional Development: 2013 Highlights

FLATE provided 4,011 professional development hours, primarily to middle, high school and college educators in 2013. FLATE professional development workshops provide STEM educators with technical training to develop, refine, and/or certify their knowledge base within manufacturing and/or its enabling technologies. High tech/hands on experiences for educators in 2013 included workshops featuring work with Pressure Sensors, BEST Robotics, Biotechnology, NXT Robotics, Programmable Logic Controllers (PLC), Machining, and Alternative Energy (*GreenTech ™*) classroom kits (to name just a few). FLATE also offers topics of interest to educators such as recruiting girls to sTEm, help with MSSC alignment, grant writing, curriculum development, and sTEm resources for students which focus on technology and engineering and support middle and secondary STEM coursework as well as entry level college technology programs and careers in advanced manufacturing and related technologies.

The **ET Summer Institute** annual workshop was offered for the third year running in 2013. In acknowledgement that high school teacher engagement is critical to building an effective college and career pipeline, FLATE's identification of curriculum gaps in sTEm curriculum, and in response to requests from stakeholders, FLATE established recurring summer experiences for educators. In 2013 the popular workshop was offered in concert with the Florida Career and Technical Education (FACTE) summer conference. The workshop helped high school and college educators explore the Automated Production Technician (APT) secondary framework, examine college and career pathways, provided hands on curriculum development (DACUM) activities, and led to a better understanding of how FLDOE ET curriculum frameworks align with the MSSC. Prior topics include Mechatronics and 3-D Modeling.

Machining Education Workshop

This workshop focused on defining stackable academic credentials aligned to national standards. One of our objectives is to review the current college credit certificates under the A.S. Engineering Technology Mechanical Fabrication and Design specialization as well as those for the PSAV Machinist Program. We anticipate the fine-tuning of the standards and benchmarks and will explore an alignment with NIMS certifications that may result in articulation pathways.

Recruiting Girls for STEM Pathways, a professional development workshop focused on best practices for teachers, recruiters, counselors, educators and anyone interested in promoting STEM careers for girls was full in a matter of 5 days with 100 educators signed up and a wait list of 20. The final 80 attendees who gathered to share ideas included 21 elementary school, 27 middle school, and 16 high school teachers as well as 3 university and 6 college faculty members, 5 "other," and 2 school district administrators from 2 counties. The full day session included FLATE-guided brainstorming sessions, presentations, and a panel showcasing exemplary women in STEM careers. Major themes of collaboration, encouragement, and leadership by example emerged from the qualitative data collected in an online survey from teachers. The tremendous levels of feedback provided by teachers at this workshop is the basis for continued FLATE research and follow up with action plans developed by the teachers, as well as for presentations, publications, partnerships, and best practices.

2014 FLATE Summer Camp for Teachers is in its fifth year, and responds directly to needs expressed by elementary through high school teachers in FLATE's community of practice. 2013 featured an alternative energy classroom kit (*GreenTech ™*) provided by one of FLATE's vendor business partners, a focus on engaging girls in sTEm, and the popular activity (offered each year) where teachers design, construct, and compete with a "robot arm" built from "found items." Summer Camp for Teachers provides educators with an opportunity for hands-on activities which are ready to take back to

the classroom, and teachers know exactly how they work because they've completed the activities themselves in a team environment and discussed best practices in sTEm education while networking with their peers, and having a great time.

2014 FESC Community College Energy Workshop is the third highly successful workshop coordinated by FLATE for high school and college educators, as well as industry partners. Hosted by the Florida Solar Energy Center (FSEC) at Palm Beach State College, attendees participated in a wide variety of presentations, went on tours, and participated in professional development activities focused on solar energy applications.

The Toothpick Factory professional development workshop teaches educators how to use FLATE's *ToothPick Factory Simulation Game* for teaching the soft skills which manufacturers have let us know are critically needed in the technical workforce. Very high effectiveness levels for the *Toothpick Factory* professional development workshop have remained constant since 2006. Additional information about the effectiveness of the *Toothpick Factory* for teaching soft skills may be found in FLATE's published article, *The Importance of Soft Skills in Technical Education,* 2013 *NCPN Connections.* Beginning in 2014, Toothpick Factory workshop surveys will use a survey aligned with other FLATE PD workshops in order to improve the aggregation of survey results, and improve reporting consistency among FLATE professional development workshops.

Appendices

List of Terms and Acronyms

Sample Surveys and Forms

Website resources (postcards)

How to print

Other FLATE Best Practice Guides

Contact Information

List of terms and acronyms used throughout this guide

ATE: Advanced Technological Education Centers, a program of the National Science Foundation, Department of Undergraduate Education.

CTE: Career and Technical Education

DFLC: Digital Fabrication Learning Community

ET: Florida Engineering Technology (programs and degrees)

FACTE: Florida Association for Career and Technical Education

FLATE: Florida ATE Center of Excellence

FLDOE: Florida Department of Education

IEEE: Institute of Electrical and Electronics Engineering

NIMS: National Institute of Metalworking Skills

NSF: National Science Foundation

SDHC: School District of Hillsborough County

SPC: St. Petersburg College

STEM: Science, Technology, Engineering and Math

sTEm: FLATE's emphasis on the " T & E" side of STEM

Sample Surveys and Forms

FLATE Professional Development Workshop Survey

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NSF

Spring 2014 ET Forum FLATE Professional Development Workshop

Please rate your satisfaction with the workshop on a scale of 1 to 5 and check all responses which apply to you. We welcome and appreciate additional comments on the reverse side of this sheet.

Date:	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
	1	2	3	4	5
Workshop Format					
Presentation/s					
Activities/Handouts					
Overall Professional Development Value					
I plan to use the information presented in today's workshop.	☐ Yes		☐ No		
I recommend this workshop to others.	☐ Yes		☐ No		

For the comments listed below, please check all that apply.

I ANTICIPATE, AS A RESULT OF ATTENDING TODAY'S FLATE WORKSHOP:

☐ Sharing something I learned from this workshop with colleagues or peers

☐ Introducing a new technology topic and/or using instructional materials from this workshop in my work

☐ Using an activity or strategy from this workshop in my work

AS A RESULT OF ATTENDING *PAST* FLATE WORKSHOPS, I'VE:

☐ Shared something I learned from a FLATE workshop with colleagues or peers

☐ Introduced a new technology topic and/or used instructional materials from a past FLATE workshop in my work

☐ Used an activity, strategy from a past FLATE workshop in my work

☐ Used FLATE's online educator resources at www.flate.pbwiki.com

☐ Used FLATE's complete industry connected lesson plans www.flate.pbwiki.com

☐ Used FLATE's *Made in Florida* outreach resources

☐ Other (please specify):

Thank you for attending a FLATE Professional Development Workshop.
Please let us know about any topics you are interested in for future workshops.

Florida Advanced Technological Education Center of Excellence
PROFESSIONAL DEVELOPMENT WORKSHOP
Defining Machining Education in FL Workshop, Nov. 22, 2013

FLATE
FLORIDA ADVANCED
TECHNOLOGICAL
EDUCATION CENTER

NSF

Thank you for your participation today. Please let us know how our workshop served your needs so that we can continue to improve our materials and provide relevant, timely topics.

As a result of attending this workshop	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1
1. I have a better understanding of the Florida Dept. of Education (FLDOE) Curriculum Frameworks					
2. I increased my knowledge aligning frameworks to curriculum					
3. The Haas educational resources will be valuable to my practice as an educator					
4. I learned something about NIMS credentials					
5. I learned some new strategies which support machining curriculum for students					

If you answered disagree to the question(s) above, please use the back of this page to let us know why you answered as you did so that we can improve our curriculum and workshops to better serve your needs.

Overall workshop effectiveness	Excellent	Very Good	Good	Fair	Poor
	5	4	3	2	1
Workshop format					
Timeliness of information					
Overall usefulness					
Likelihood that you will implement components of this workshop at your institution					
Professional development value					

Please use the back of this page for additional comments/suggestions you may have as well as indicating if there are topics you would like to see included in future workshops.

Recruiting Girls Survey

As a result of attending the Recruiting Girls for STEM Pathways Workshop...	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1
1. I learned some strategies for engaging girls in STEM.	26 / 37%	38 / 54%	6 / 8%	1 / 1%	
2. I am more familiar with the challenges associated with recruitment and retention of girls in STEM.	28 / 42%	32 / 48%	4 / 6%	2 / 3%	
3. I am confident I can use some of the strategies presented in today's workshop to help in the recruitment and retention of female students in STEM and STEM career pathways.	17 / 25%	40 / 59%	8 / 12%	3 / 4%	
4. I am more familiar with available STEM resources for recruiting and engaging girls in STEM and STEM careers.	22 / 33%	36 / 54%	6 / 9%	2 / 3%	1 / 1%

Sample of FLATE Workshops

January	Emerging Technologies and Technicians/FabLab workshop (w/DFLC and SPC)
April	NIMS – train-the-trainer workshop (w/ DSC and NIMS)
April	Spring Engineering Technology (ET) Forum
June	Robotics (Lego and Next)Training (w/FACTE)
June	5th Annual Summer Camp for Teachers – Mainstreaming sTEm Curriculum
July	4th Annual Engineering Technology Summer Institute: Recruiting Girls to STEM Careers (w/ FACTE)
August	STEM Guitar Building Workshop (w/Guitarbuilding.org)
September	SolidWorks for BEST robotics mentors (w/SDHC, IEEE)

Certificate

The Florida Advanced Technological Education Center
FLATE
A National Science Foundation Center of Excellence

Certifies that

Jane Jones

Completed 15 Contact Hours at FLATE's
2014 Summer Camp for Teachers

Keeping the "T & E" in sTEm Curriculum

June 18-20, 2014

FLATE Associate Director
Dr. Marie Boyette

"Made In Florida" Website and Wiki Postcards

FLATE postcards are available as handouts.
To request, please contact FLATE.

How to Print this Guide

If you would like to print your guide in a "booklet" format (from the original PDF file), please use the following steps, you will need a printer that can print double sided documents:

Step 1 – select **Booklet** under **Page Sizing and Handling** *(please make sure you are using a printer that prints double sided documents).*

Step 2 – make sure Booklet subset is for **Both sides**

Step 3 – select **Print**
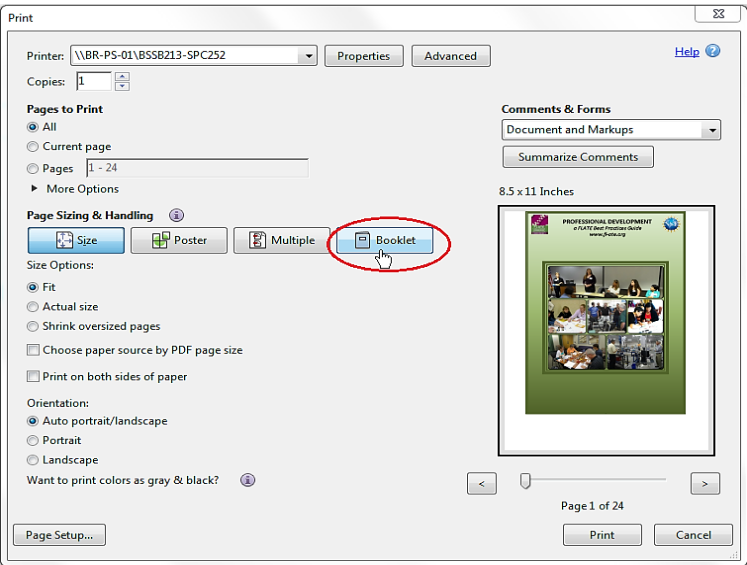
Select Booklet

Before selecting Print, make sure that the Booklet subset is for Both Sides.
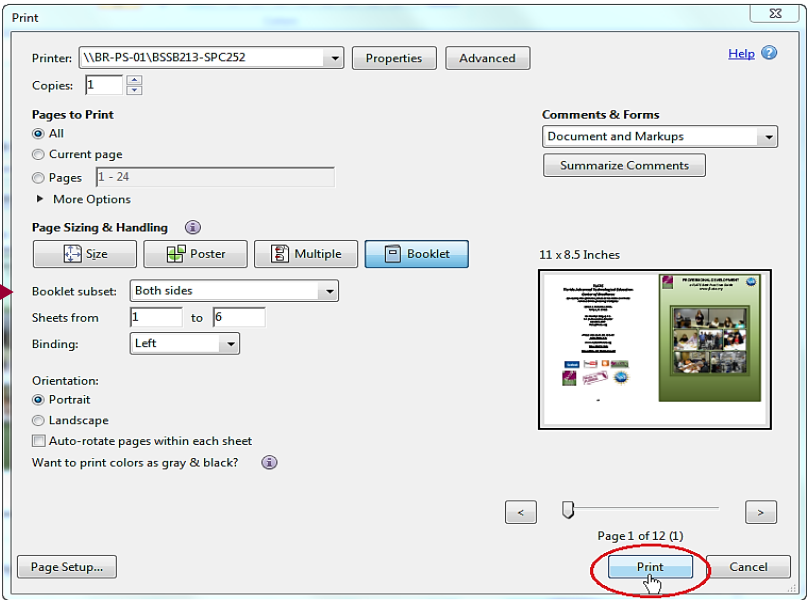
FLATE Best Practice Guides

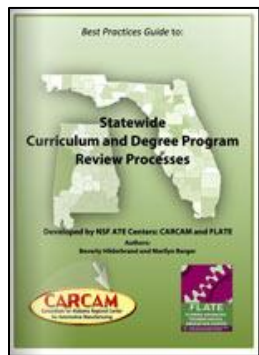All FLATE Best Practice Guides are available as online resources, or for download at fl-ate.org/best-practices
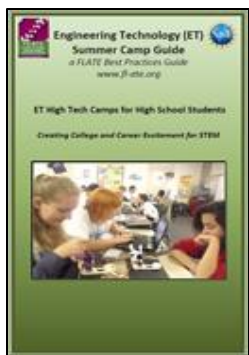
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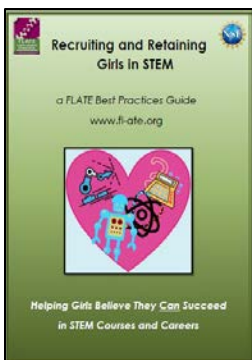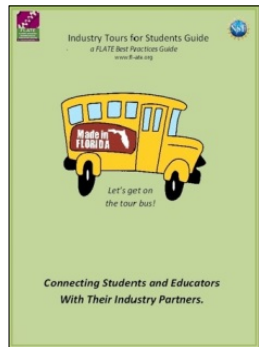

Recruiting & Retaining Girls in STEM
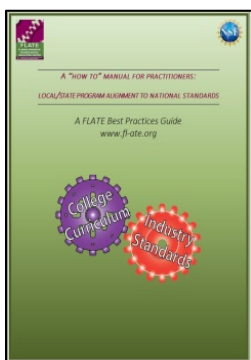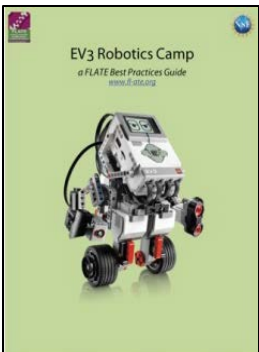

Curriculum Alignment Credentials Guide

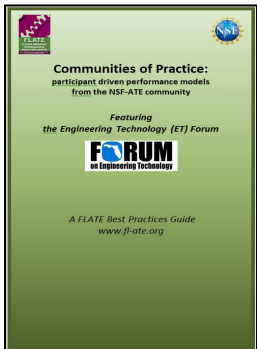**Curriculum Review Processes**

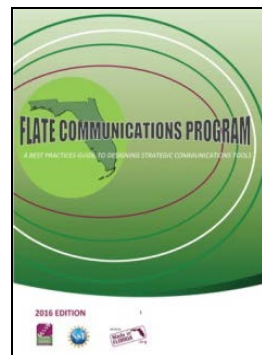**Forging Positive Partnerships in Florida**

Industry Tours for Students Guide

Robotics Camp Best Practice Guide

Communities of Practice Guide

FLATE Communication Programs

Florida Advanced Technological Education (FLATE)

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