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April 1, 2013

Mr. Duncan McBride
National Science Foundation
4201 Wilson Blvd.
Arlington, Virginia 22230

Dear Mr. McBride:

As the External Evaluator, I have completed the FLATE Annual Evaluation Report for the year ending

December 31, 2012 . It is enclosed with supplemental appendices. Please contact me with any

questions.

Sincerely,

Phil Centonze
Co-Founder and Managing Partner

Enclosures:
Evaluation Report – December 31, 2012 Pages 1 through 51
Appendices (begin on Page 52)

- Appendix A – FLATE 2012 Engineering Technology Florida College Network (1 page)
- Appendix B – FLATE 2012 Online Publications, Products, Awards and Recognitions (3 pages)

Florida Advanced Technological Education Center (FLATE) Evaluation Report
For Year Ending December 31, 2012
Executive Summary

This report examines and evaluates organizational performance in all key areas as self-identified by FLATE goals and objectives, based on FLATE's environment and award contract, as described in Part I. This evaluation is an integral element of FLATE's Evaluation Plan. Please refer to http://www.fl-ate.org/about_us/evaluation.html, or to the annual evaluation report submitted in 2010 for a full description of that plan. Fundamentally, the evaluation plan serves two primary purposes. First, to collect evaluation data to measure the positive impact on goals of the National Science Foundation (NSF) Advanced Technological Education (ATE) Program including science, technology, engineering and mathematics (STEM) education and workforce impact, as well as the technical skills for STEM technicians and educators. Second, to collect data which satisfy FLATE's industry partners and stakeholders as to FLATE's performance and success. The FLATE evaluation plan and results assures stakeholders that FLATE operates in a manner that is consistent with industry-recognized best business management practices as expressed by the Sterling Criteria for Performance Excellence.

This evaluation report is organized in three parts. Part I (page 3) is centered on FLATE's operational goals with a section that includes other elements of performance in key areas. Part II (page 6) includes effectiveness results measures relating, in three sections, to the three overall organizational effectiveness strategies: Curriculum Development and Reform, Outreach and Recruitment, and Professional Development, which speak directly to NSF's expectations for FLATE. Part III (page 48) includes recommendations for improvement based on this evaluation.

Key strengths, opportunities for improvement, and recommendations are summarized here:

Strengths:

- In each area, Curriculum Development and Reform, Outreach and Recruitment, and Professional Development, evaluation evidence shows that FLATE continues to make

progress in addressing and implementing its strategies. The use of FLATE-developed curriculum at community and state colleges continues to expand. ET Program enrollment and completions continue to grow. Growth in professional development activities and hours has engaged educators and others to support and endorse manufacturing careers.

- There is strong and improving alignment of the ET Degree framework with the core MSSC Certified Production Technician credential.

- FLATE outreach activities and partnerships with industry and academia have increased awareness among stakeholders, further enhancing the climate conducive to promoting manufacturing workforce education, development, training, and career paths. Communication with, input from, and relationship building with Stakeholders, Staff, Volunteers, Customers, and Partners are embedded into the culture and overall operation of FLATE and the Leadership Team. This has resulted from some very successful activities and approaches. Included are the FLATE awards program and the many facets of online and social media outlets such as the Made In Florida and FLATE websites, the *FLATE Focus* blog formatted newsletter, and more.

- FLATE leadership has a clear vision for the future, and systematically seeks opportunities that align with sustainability options. The Leadership Team strengthens this focus through partnerships in academia and industry, such as the Manufacturers Association of Florida (MAF) *Dream !t Do !t* campaign. There is a focus on organizational and mission sustainability.

Opportunities for Improvement and Recommendations:

- Create a system for identifying key measures requiring comparatives, select appropriate comparatives, and effectively use key comparisons to set goals and improve organizational performance.

- Focus should continue on three aspects of outreach: outreach between FLATE and academia to increase awareness of FLATE's services and products; outreach between FLATE and industry to increase awareness of the workforce resources and sources of technical employees for manufacturers; networking connections between industry and academia. FLATE should review the type of actionable data collected relating to industry engagement (such as industry perceptions related to student tour events).

- Effort should be made to identify and address the causes of low female participation in secondary level technology programs, specifically the Automation and Production Technology program.

- Increased effort is needed to reverse the unfavorable trends in high school enrollments and completions in engineering technology and related programs, since these represent a significant pathway and pipeline to these programs.

I. FLATE Operational Goals.

FLATE Goals and the related Objectives and Effectiveness Measures are the foundation of FLATE strategies for operational performance success. Figures 1, 2, and 3 match curriculum development and reform, outreach and recruiting, and professional development goals to their corresponding effectiveness measures. Please refer to:

- http://fl-ate.org/about_us/docs/FL%20ATE%20-%202012-2015%20Strategic%20Hierarchy%2011-16%20pc.pdf
- http://fl-ate.org/about_us/docs/2012-15%20Effectiveness%20Measures%20Matrix%20mb%2011-19%20-12.pdf
- http://fl-ate.org/about_us/docs/Goals%20and%20Objectives%20TimelineV1%20110812.pdf

for descriptions of FLATE's Strategic Hierarchy, current Goals, Objectives, and Effectiveness Measures.

Goal: Effectiveness of Curriculum Development and Reform Efforts.

To implement a statewide unified education system for manufacturing that positions

manufacturing education as a convergent curriculum that optimizes technician preparation in manufacturing and its enabling technologies.

- There are 16 target objectives with 15 corresponding effectiveness measures (Figure 1).

Figure 1. Effectiveness of Curriculum Development & Reform Efforts			
Measure		**Measure**	
CE-1	Community Colleges - % of implementations in existing programs	CE-2	Community Colleges - % increase in students participating
CE-3	Community Colleges - # of new programs	CE-4	Community Colleges - # of new specializations
CE-5	High Schools - % adopting Automation and Robotics framework	CE-6	High Schools - % increase in students participating in Automation and Robotics framework
CE-7	High Schools - % integrating MSSC standard in existing non-FLATE framework	CE-8	High Schools - % increase in students participating re: MSSC standard in existing non-FLATE framework
CE-9	PSAVs* - % integrating MSSC standard in existing non-FLATE framework	CE-10	PSAVs* - % increase in students participating
CE-11	Community Colleges - # of college level completers (through various sources) in ET programs	CE-12	High Schools - # of HS level completers (through various sources) in related programs
CE-13	# of other programs asking for curriculum model as best practice	CE-14	# of students using Made In Florida Learning Challenges
CE-15	# of students using soft skills module		
*PSAV=Post-Secondary Adult Vocational School **MSSC=Manufacturing Skills Standards Council			

Goal: Effectiveness of Outreach and Recruitment Efforts.

To provide an effective outreach platform for Florida's high schools, community colleges, industry, and legislature to access information related to the requirements for, and impact of manufacturing education.

- There are 8 target objectives with 10 corresponding effectiveness measures (Figure 2).

Figure 2. Effectiveness of Outreach & Recruitment Efforts			
Measure		**Measure**	
OE-1	Florida Trend Magazine's NEXT issue (manufacturing advertorial) - # of contacts by category	OE-2	Florida Trend Magazine's NEXT (manufacturing advertorial) - # of qualified leads forwarded to secondary & post-secondary schools
OE-3	Florida Trend Magazine's NEXT issue (manufacturing advertorial) - # distributed career planning handouts	OE-4	Tour Survey results - perceptions of students
OE-5	Tour Survey results - perceptions of Industry	OE-6	# hits on the *Made in Florida* (MIF) Website, flate.pbwiki (home, Video, scholarships, or careers)
OE-7	# MIF DVDs distributed and video views	OE-8	# hits on the FLATE.org website
OE-9	$ value of industry cash contribution to FLATE's outreach effort	OE-10	$ value of industry in-kind contribution to FLATE's outreach effort

Goal: Effectiveness of Professional Development Efforts.

To present professional development opportunities for technical faculty to develop, refine, or certify their knowledge base within manufacturing and/or its related enabling technologies and educational pedagogies.

- There are nine target objectives with five corresponding effectiveness measures (Figure 3)

Figure 3. Effectiveness of Professional Development Efforts			
Measure		**Measure**	
PDE-1	Level 1* usefulness/ applicability measures collected at professional development events/training sessions	PDE-2	# participant contact hours in workshops/training
PDE-3	# participant contact hours in ET Forum	PDE-4	Faculty behavioral changes in the workplace as a result of attendance at professional development events/training sessions (planned)
PDE-5	Faculty self-evaluation of performance changes in the workplace as a result of professional development events/training sessions		
*Level 1 refers to the lowest of four levels of Kirkpatrick's training evaluation model; Level 1 evaluation measures what participants thought and felt about the training; called Reaction			

II. Operational Performance Results

Section A. Effectiveness of Curriculum Development Efforts:

An NSF expectation of this ATE Regional Center is that it engages multiple community and state colleges (hereafter referred to interchangeably as "colleges" and/or "state colleges") and focuses efforts on academic initiatives in partnership with industry that address the technician workforce needs of employers specific to the region. FLATE has designed, developed and promoted degree and certificate programs for colleges, especially the AS degree in Engineering Technology, and the secondary school Automation and Production Technology (APT) curriculum framework for high schools. FLATE has built enrollment in these programs.

This report provides a five or six year review, depending on the specific figure, of enrollment and completion data for the Engineering Technology (ET) and related degree and college credit certificate (CCC) programs for Florida colleges, and for related programs at the secondary and Post-Secondary Adult Vocational Schools (PSAV) level. All data are provided by the Florida Department of Education (FLDOE), upon FLATE's request annually.

While the data reporting mechanism is reliable and repeatable, the reported data's accuracy is impacted by two factors. First, the data do not include enrollments for undeclared majors. Second, there is some inconsistent reporting by registrars since all data might not be input by cut-off dates among colleges. Collectively these factors have resulted in some data discrepancies and anomalies particularly in colleges where older program titles have been eliminated and new program titles are added.

Figures 4 through 8 address Effectiveness Measures CE-1, CE-2, CE-3, CE-4, and CE-11, relating to Community and State College adoption and proliferation of the ET degree program and related degrees and certificate programs. These data provide a perspective on the historic lack of unified focus within the State College system. FLATE's work with educational partners has sharpened focus on the whole system. The data reflect the long term effectiveness of curriculum development and reform as related to implementation of the FLATE-developed ET

degree program in Community and State colleges in Florida. Fourteen of 25 colleges, offering technical AS degree programs, have adopted the ET degree program. Among these 25 colleges are offered nine AS & AAS degree programs including Aerospace Technology, Biomedical Engineering Technology, Chemical Technology, Computer Integrated Manufacturing, Drafting and Design Technology, Electronics Engineering Technology, Industrial Management Technology, Manufacturing Technology, and Simulations and Robotics Technology.

Figure 4 depicts the favorable growth in adoptions of the ET degree program by colleges. Other colleges are in discussion with FLATE and have expressed interest in adopting the program. The growth in ET degree program adoptions reflects not only the perceived value of a consistent and standard state-wide program, but also the outreach effort by FLATE to embed the ET framework into the academic system.

Figure 4. Academic Year – ET Degree Program Adoptions	
Academic Year	**Number of Colleges**
2007-2008	3
2008-2009	5
2009-2010	10
2010-2011	11
2011-2012	14*
12 Colleges Implementing ET Program as of 2012	
Brevard Community College (Melbourne)	St. Petersburg College (Clearwater)
College of Central Florida (Ocala)	Polk State College (Lakeland)
Hillsborough Community College (Tampa)	Florida Gateway College (Lake City)
Florida State College at Jacksonville	Pensacola Junior College
State College of Florida (Venice)	Tallahassee Community College
Northwest Florida State College (Niceville)	Broward College (Coconut Creek)

*Note: Daytona and Gulf Coast State Colleges not yet implemented in 2012

Please refer to Appendix A, the ET Degree Distribution Map. This appendix displays a map of Florida and the distribution of Colleges adopting the ET degree program. Appendix A and Figure 4 both indicate that the South and Southwest Florida regions are still the least represented with

respect to ET Degree curriculum adoption. Broward College in Fort Lauderdale is the first in those regions to step up and adopt and implement the program in 2012. FLATE's continued efforts at outreach to industry and regional manufacturers associations in these southern areas is an action to gain additional adoptions. FLATE partners are facilitating outreach to make greater inroads to the academic and manufacturing communities in that southern region of the State, the most densely populated by manufacturers.

Figures 5 through 12 reflect enrollment and program data since 2005. These also suggest overall effectiveness of FLATE's curriculum development and propagation efforts. Enrollment in the ET degree program continues to grow favorably. The data show an overall favorable improvement trend in enrollment in ET and related programs in recent years since deployment of the ET degree curriculum to adoptive colleges since academic year 2007-2008. Several sets of comparative data are available and presented in Figure 5. FLATE's ET degree enrollment growth from 2008-09 to 2010-11 is at a 315.9% rate. This compares favorably to overall growth in ET-related curricula at 25.1% growth in the same period, and overall AS program enrollment at 34.9% statewide in Florida. Other comparatives with similar programs in other states/centers are also favorable, as a Connecticut comparison is at 29.3% growth from 2008-09 to 2010-11 and an Illinois comparison shows nearly no growth during the same period. As can be seen in the chart, individual year to year growth of the ET degree program in Florida is also favorable against all the comparisons as well.

As expected and in tandem with a favorable trend in ET degree program enrollments, ET certificate program enrollment is also favorably trending upward. This while other ET-related certificate program enrollment is flat or slightly unfavorably trending down. These trends can be seen in Figure 6 below.

Figure 5. ET Degree Enrollment & Related Technology Enrollment							
Program	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**
ET Degree Enrollment in Florida	Non-Existent			145	347	603	703
Percent Change Year over Year					139.3%	73.8%	16.6%
						315.9% Increase since 2008-09	
Degree Enrollment – ET-Related in Florida	5147	4552	3998	3985	4367	4985	4642
Percent Change Year over Year		-12.1%	9.6%	-0.3%	9.6%	14.2%	-6.9%
						25.1% Increase since 2008-09	
Statewide (in Florida) AS program enrollment			80,659	83,796	103,741	113,019	Not Avail.
Percent Change Year over Year				3.9%	23.8%	8.9%	
						34.9% Increase since 2008-09	
Comparative Program #1 (Chicago) - Enrollment	40	37	49	61	59	61	94
Comparative Program #1 - Enrollment Percent Change Year over Year	-34.4%	-7.5%	32.4%	24.5%	-3.3%	3.4%	54.1%
						0% Increase since 2008-09	
Comparative Program #2 (Connecticut) - Enrollment	331	343	412	491	597	635	755
Comparative Program #2 - Enrollment Percent Change Year over Year		3.6%	20.1%	19.2%	21.6%	6.4%	18.9%
						29.3% Increase since 2008-09	

Figure 6. ET & Related Certificate Enrollments					
	2007-08	2008-09	2009-10	2010-11	2011-12
ET Program Certificates					
Alternative Energy Engineering Technology (new)				7	14
Alternative Energy Systems Specialist (new)				10	20
Applied Technology Specialist	46	36	13	12	15
Automation			2	5	2
CNC Machinist	1	2	5	12	16
Composite Fabrication & Testing (new program)				1	11
Computer Aided Design & Drafting (new)					2
Computerized Woodworking		1	0	0	1
Electronics Aide					2
Engineering Technology Support Specialist	9	22	20	16	28
Lean Manufacturing			20	1	1
Lean Six Sigma Green Belt	25	16	12	21	13
Medical Quality Systems (new)					4
Pneumatics, Hydraulics & Motors for Mfg (new)					3
Six Sigma Black Belt	22	13	5	11	14
Sub-Total ET Program Certificate Enrollment	103	90	77	96	146
Related Certificates					
AutoCAD Foundations	337	328	245	269	189
Chemical Laboratory Specialist	7	6	15	10	30
Electrical Distribution, Advanced				7	6
Electrical Distribution, Basic				8	22
Electronics Technician, Basic	49	55	28	129	79
Electronics Technician	15	21	13	26	17
Laser and Photonics Technician	13	6	3	8	12
Logistics & Transportation Specialist (new)				9	40
Robotics and Simulation Technology (new)				1	2
Scientific Workplace Prep				1	1
Sub-Total ET-Related Program Certificate Enrollment	421	416	304	468	398
Total ET & Related Certificate Enrollment	524	506	381	564	544

Data in Figure 7 below show that the number of ET-related programs in the college system have grown slightly since 2008 with the addition of data collected from three new programs added to this report in 2010-2011.

Figure 7. ET-Related Programs Offered				
	2008-09	**2009-10**	**2010-11**	**2011-12**
Aerospace Technology	1	1	1	1
Biomedical Engineering Technology	5	5	5	5
Chemical Technology	2	2	2	2
Computer Integrated Manufacturing	3	3	3	2
Drafting & Design Technology	18	18	17	16
Electrical Distribution Technology*	Data not Collected		3	3
Electrical Power Technology *	Data not Collected		3	3
Electronics Engineering Technology	18	18	15	15
Industrial Management Technology	14	14	15	16
Manufacturing Technology	5	5	4	4
Simulation and Robotics Technology	1	1	1	1
Supply Chain Management*	Data not Collected		2	2
Total Program Offerings	66	66	71	70

AS the ET degree program is newly adopted by colleges around the State, further growth of the program is indicated by the addition of new specializations within the schools which have already implemented the program. Figure 8 shows continued growth within these colleges with data showing more specializations added each academic year, up to 31 specializations offered in the 14 implemented schools in 2011-12.

Figure 8. Cumulative ET Degree Specializations Offered					
	2007-08	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Quality	2	2	3	4	4
Electronics	2	2	3	4	4
Advanced Manufacturing	1	1	4	5	6
Fabrication & Design				3	4
Advanced Technology	1	1	1	2	2
Biomedical Systems			1	1	2
Digital Design & Modeling			2	4	5
Alternative Energy Systems			1	3	4
Total Annual Specialization Offerings	6	6	15	26	31

As seen earlier in Figure 5, since the FLATE ET degree program was implemented in three colleges in the 2007-2008 school year, there has been favorable growth in enrollments. Direct enrollments in the ET degree program statewide have increased from non-existent to 703

students in the 2011-2012 school year as can be seen in Figure 9. Also as reported in Figure 5 above, although direct enrollment in the ET program has increased, overall enrollment in ET-related programs declined slightly in the past year, despite growth in all of the previous four years.

Figure 9. Total Enrollment - ET & Related Degrees
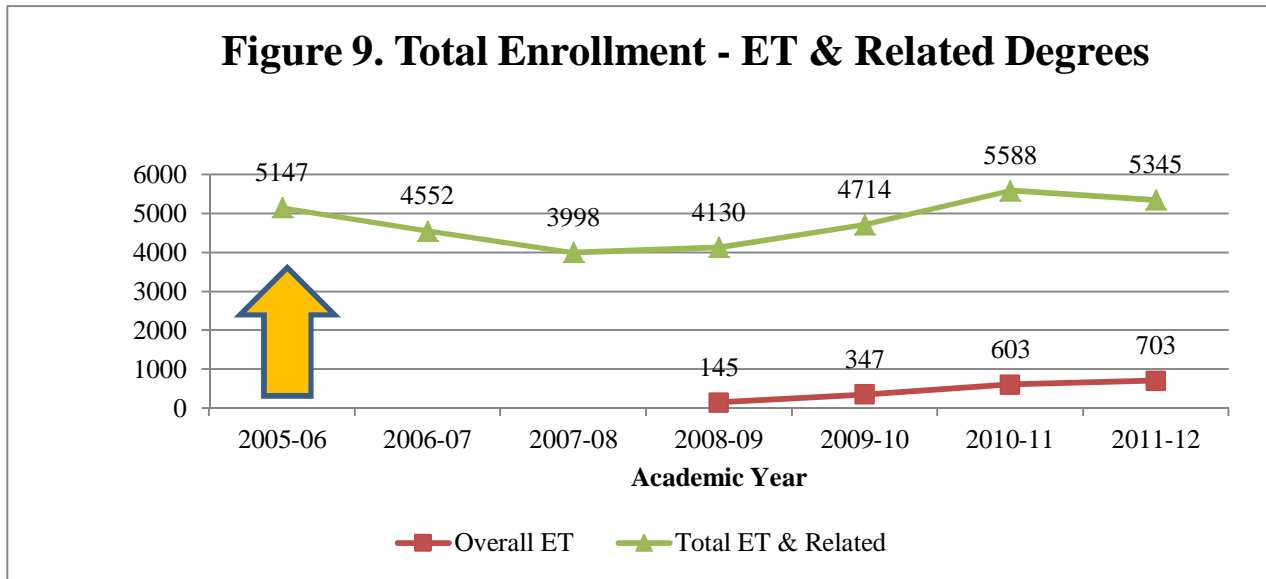
Although the data above indicate the ET degree has established its presence in Florida, there is still room for improvement. FLATE has had success in collecting comparative performance data in this area of measurement. There also may be opportunity for in depth benchmarking the Connecticut or Chicago degree programs and others to identify best practices that can be adapted to the Florida AS structure. Since identifying and collecting comparative data for organizations like FLATE is difficult and time consuming, these successful comparisons are lauded. Lessons learned should be noted to refine and improve future selection and collection of comparative data in all areas.

Figures 10, 11, and 12 depict data trends for college completions in the ET and ET-related programs around the State since the 2007 academic year. Figure 10 indicates a slight unfavorable downtrend in the last two years, despite an increase from 2007 to 2011. The specific program with a significant contribution to this downtrend is the Industrial Management Technology program. It may be that the growth in the ET degree program has drawn enrollment interest from other non-ET programs. Similar to data reported in earlier charts, favorable trends commenced

and are coincident with the FLATE ET Degree program implementation in the 2007-08 school year. Enrollment in the ET degree program is industry-driven, that is growth in enrollment is due in part to the growing demand for certifications that are needed by manufacturers in Florida.

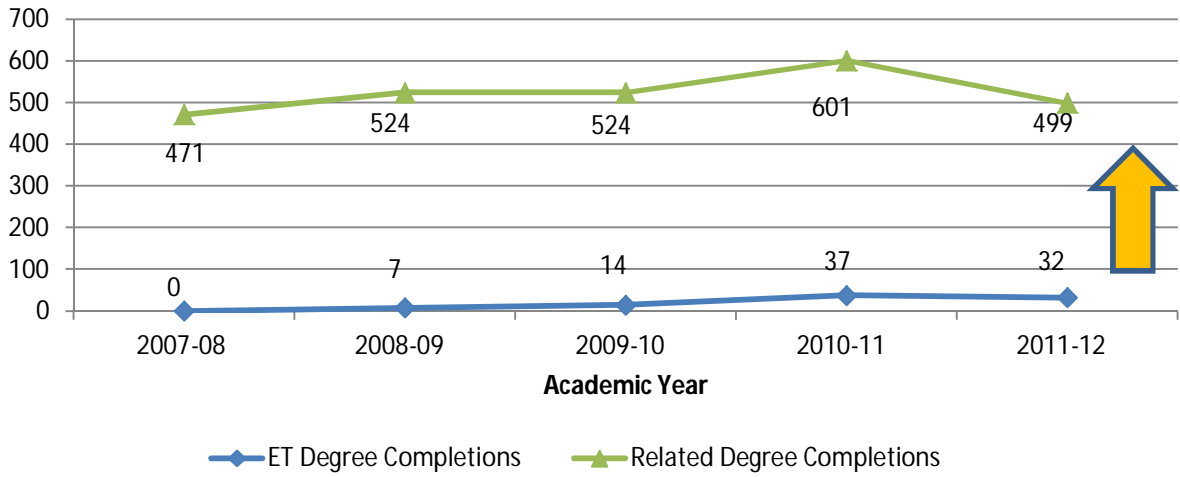| Figure 10. ET & Related College Degree Completions by Program					
Related AS Degree Programs	2007-08	2008-09	2009-10	2010-11	2011-12
Aerospace Technology	6	15	11	18	8
Biomedical Engineering Technology	24	23	30	35	31
Chemical Technology	17	13	19	34	37
Computer Integrated Manufacturing	7	8	6	5	4
Drafting & Design Technology	110	121	124	132	102
Electrical Distribution Technology*	Data not collected			1	3
Electrical Power Technology *	Data not collected			45	69
Electronics Engineering Technology	65	117	93	123	100
Engineering Technology		7	14	37	32
Industrial Management Technology	239	222	237	199	134
Manufacturing Technology	1	4	3	5	4
Simulation Technology	2	1	1	4	7
Supply Chain Management*	Data not collected			0	0
Total ET Degree & Related Program Completions	471	531	538	638	531

*added in 2011 to data collection

Figure 11 shows overall ET and ET-related certificate program completions are slightly up and favorable since 2007-2008. Mirroring the overall trend in enrollment, this trend is comprised of a favorable trend up in ET certificate programs, and an overall unfavorable trend down in other ET-related certificate programs. As seen in the chart, as new certificate programs are implemented, they have been added to the collection protocol. There are greater numbers of these added each year with the parallel proliferation of the ET degree program.
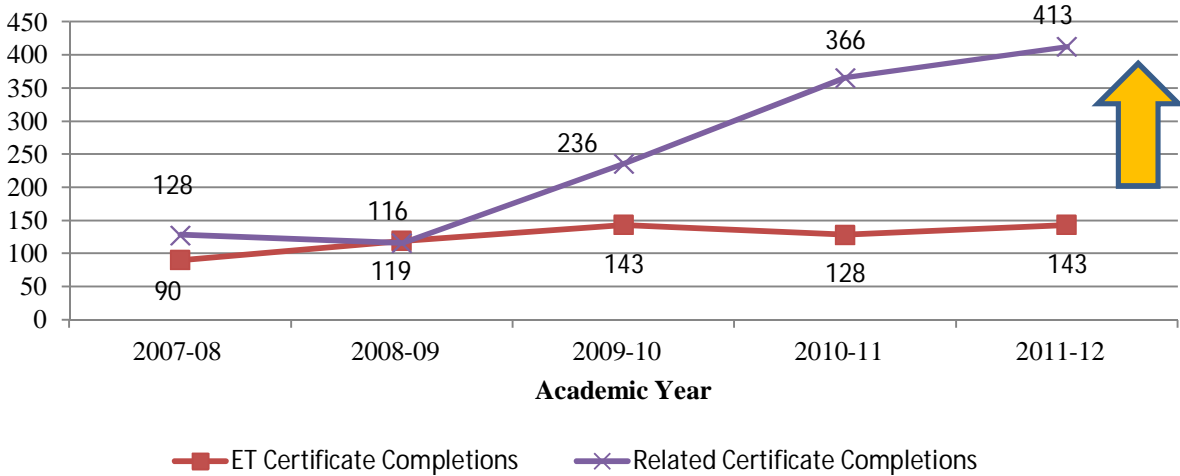
Figure 11. ET & Related Certificate Completions					
	2007-08	2008-09	2009-10	2010-11	2011-12
ET Program Certificates					
Alternative Energy Engineering Tech (new program)					4
Alternative Energy Systems Specialist (new)				1	8
Applied Technology Specialist	25	21	22	2	8
Automation			2	5	1
CNC Machinist					
Composite Fabrication & Testing (new)	1	2	7	11	23
Computer Aided Design & Drafting (new)				13	8
Computerized Woodworking			1	2	6
Electronics Aide					
Engineering Technology Support Specialist			9	1	5
Lean Manufacturing	5	36	36	35	33
Lean Six Sigma Green Belt			20	0	3
Medical Quality Systems (new)					1
Pneumatics, Hydraulics & Motors for Mfg (new)					3
Six Sigma Black Belt	33	27	22	25	13
Sub-Total	64	86	119	95	116
Related Certificates					
AutoCAD Foundations			161	167	190
Chemical Laboratory Specialist	2	2	6	4	3
Electrical Distribution, Advanced					9
Electrical Distribution, Basic				13	2
Electronics Technician, Basic	92	52	24	111	88
Electronics Technician		26	8	12	26
Laser and Photonics Technician	8	3	2	8	25
Logistics & Transportation Specialist (new)				5	30
Robotics and Simulation Technology (new)	26	33	24	33	31
Scientific Workplace Prep			11	13	9
Sub-Total	128	116	236	366	413
Total ET & Related Certificate Completions	192	202	355	461	529

The following Figures 12 and 13 depict the data in Figures 10 and 11 in run chart formats, showing the trends totals reported above. The growth ET degree program completions is evident. Also evident is the growth in certificate program completions.

Figure 12. ET & Related College Degree Completions

Related Degree Completions: 471 (2007-08), 524 (2008-09), 524 (2009-10), 601 (2010-11), 499 (2011-12)

ET Degree Completions: 0 (2007-08), 7 (2008-09), 14 (2009-10), 37 (2010-11), 32 (2011-12)

Academic Year

◆ ET Degree Completions   ▲ Related Degree Completions

Figure 13. ET & Related Certificate Completions

Related Certificate Completions: 128 (2007-08), 116 (2008-09), 236 (2009-10), 366 (2010-11), 413 (2011-12)

ET Certificate Completions: 90 (2007-08), 119 (2008-09), 143 (2009-10), 128 (2010-11), 143 (2011-12)

Academic Year

■ ET Certificate Completions   ✕ Related Certificate Completions

The following Figures 14, 15, 16, and 17 show data used for monitoring the progress of curriculum effectiveness at the secondary or high school level. These address effectiveness Measures CE-6 , CE-7, CE-8, and CE-12 relating to new programs, enrollments, and completions by secondary and post-secondary programs that support the manufacturing industry sector. These also show some demographic (i.e. female and minority completions) distinctions.

Figure 14. Secondary Enrollment: -In Overall Technology Programs, and -In Automation & Production Technology Framework (Adopted by FLDOE in 2009-2010)			
	2009-10	**2010-11**	**2011-12**
Overall Technology Programs	14,592	21,730	21,889
Automation & Production Technology	37	26	55
# Districts Adopting APT Framework	1	1	3
# Schools Adopting APT Framework	7	6	6
Male Enrollment	28	16	49
Female Enrollment	9	10	6
Total Graduates	12	9	6
Male Graduates	10	5	6
Female Graduates	2	4	0

Figure 15. Secondary Enrollment in Tech Programs
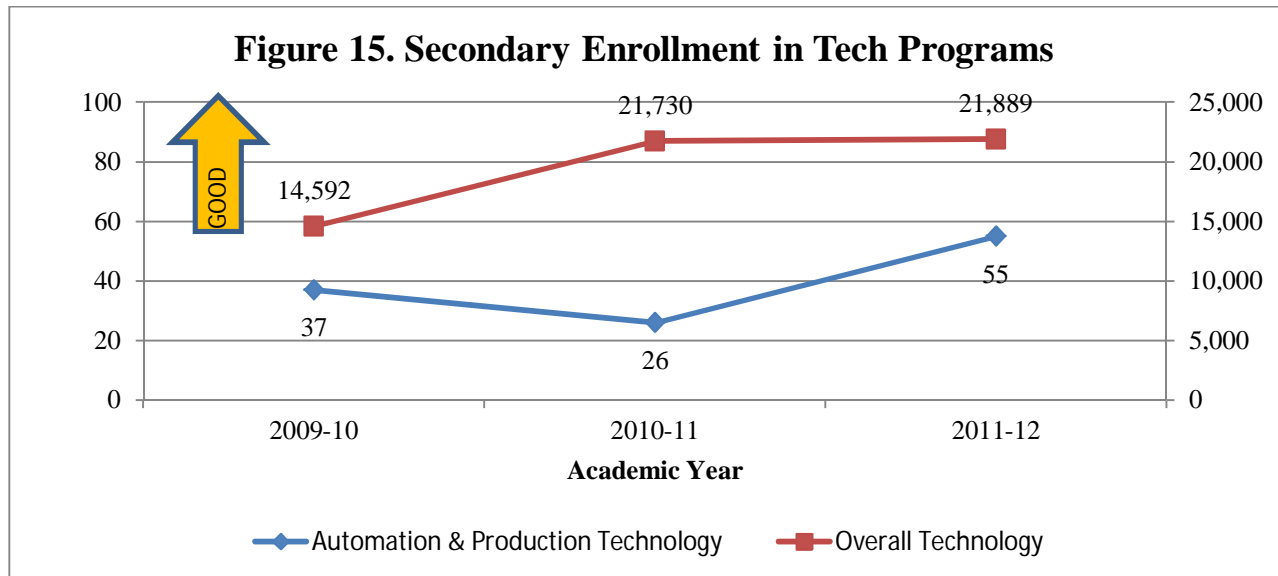
Enrollment information in Figures 14 and 15 indicates generally an overall favorable trend, for both the overall enrollment in technology programs and for the secondary level Automation and Production Technology (APT) program specifically, which relates to the MSSC pathway for students in high school. Figure 14 shows specific information about the adoption of the APT program among school districts and schools. The favorable trend in APT enrollment shown in Figure 15 is an improvement over the nearly flat trend in the number of enrollees in other high school technology programs. While enrollments have grown along with the number of adopting districts, the number of schools has dropped by one, and there is an unfavorable trend in the

number of graduates in the APT program, shown in Figure 16.. Secondary level completion is an area that should continue to be given special attention to ensure the ET degree pipeline is filled with qualified individuals.

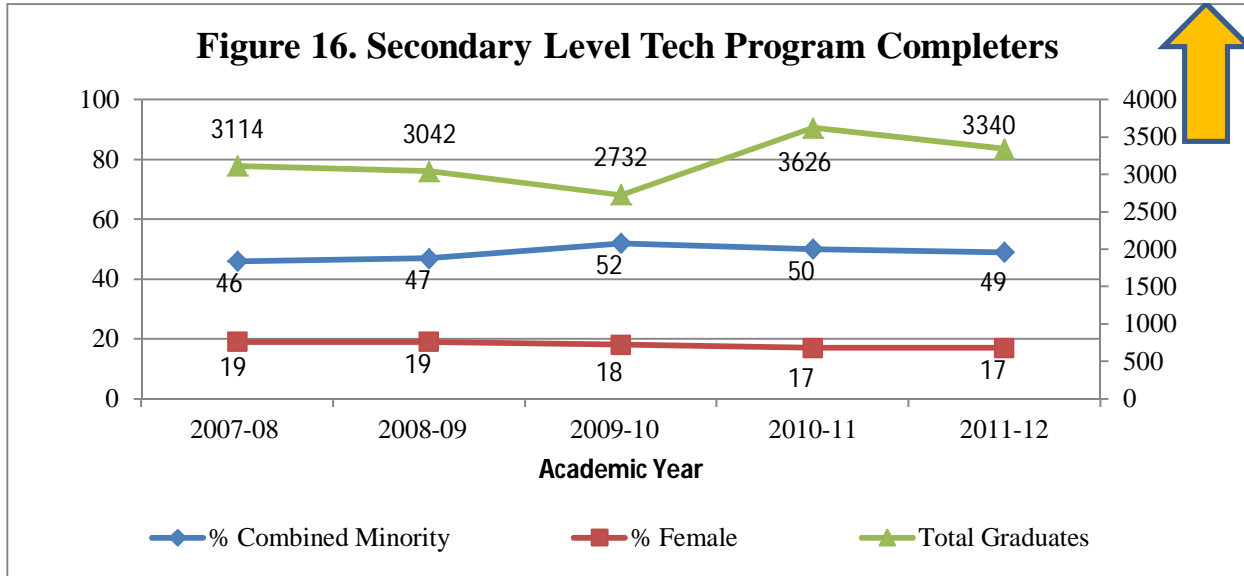**Figure 16. Secondary Level Tech Program Completers**

Figure 17 shows data related to the demographics of completions. While total numbers of graduates fluctuates in the last five years, the percentages of female graduates have decreased. These are slightly unfavorably trending, from 19% to 17%. Data reported for combined minority students shows the trend generally increasing from 46% to about 49%.

Figure 17. Secondary Level Technology Program Graduates & Demographics					
	2007-08	2008-09	2009-10	2010-11	2011-12
Technology Program Total Graduates	3,114	3,042	2,732	3626	3340
Percent Change Year to Year	1%	-2%	-10%	33%	-8%
% Technology Program Graduates	17%	17%	19%	17%	15%
Male Graduates	2,530	2,472	2,231	3,029	2,771
Female Graduates	584	570	501	597	569
% Female of Total Graduates	19%	19%	18%	17%	17%
% Combined Minority Students	46%	47%	52%	50%	49%

The next chart, Figure 18, represents effectiveness measure CE-10, relating to Post-Secondary Adult Vocational School (PSAV) enrollments and completions.

Figure 18. Post-Secondary Adult Vocational (PSAV) Enrollments, OCP, and Completions					
	2007-08	2008-09	2009-10	2010-11	2011-12
Enrollment (without newly reported programs in 2010-11) *	425	371	359	298	38
Percent Change Year over Year	23%	-13%	-3%	-17%	-87%
Enrollment (Only newly reported data beginning 2010-11) *				1279	568
Percent Change Year over Year					-56%
Total Enrollment	425	371	359	1577	606
Percent Change Year over Year	23%	-13%	-3%		-62%
Occupational Completion Point (OCP) Earners	414	333	340	2,279	299
Full Program Completer	34	33	43	522	87
Percent Change Year over Year	-8%	-3%	30%	1114%	-83%
Number of Programs	15	5	5	9	9
Number of Participating Institutions	8	9	12	30	9
*Not all program data collected in 2010-11 and later had been collected in previous years.					

 The data show a significantly unfavorable trend in enrollment and completions, considering newly reported data in the 2010-2011 school year. However, as noted in evaluation reports in the last two years, PSAV activity accounts for small numbers of people flowing into ET Degree programs. Subsequently, resources are probably better used in other areas, such as high schools, which could provide greater positive return.

The following chart and data, Figure 19, do not relate directly to any Curriculum Effectiveness Measures. However, they are precursors for curriculum effectiveness in preparing students for technical careers. FLATE aligned the Engineering Technology (ET) Degree Curriculum frameworks, a State required and reviewed student standards document for the academic program, with the skill standards of the MSSC credential. This intense frameworks development process was needed to support the statewide articulation of the MSSC Credential to the degree

program for college course credit. In addition, FLATE validated the alignment results with Florida industry to ensure that the ET degree program meets industry workforce needs.

However, alignment development and verification does not ensure the competencies are taught or mastered in college classrooms. Faculty commonly uses standard text books and text book driven academic course syllabi to formulate classroom lessons. Although there is often much overlap, gaps do occur between the State Curriculum Frameworks and the academic course chosen by colleges to support the frameworks. Therefore, the skills needed for passing the MSSC certification test may not be aligned to the academic courses (ET Degree core courses).

To close the alignment loop without insisting that faculty use a particular "packaged" or "test prep" curricula, MSSC test results from students in ET Core academic courses are being acquired, and results to date are reported below. FLATE began this activity in the spring of 2010 by covering the test fees for any E.T. Degree student who takes the MSSC certification test aligned to a course they were enrolled in. Five colleges have reported results from three MSSC certification tests: Quality, Safety, and Manufacturing Processes and Production; results are summarized in Figure 19. FLATE continues supporting college student testing to assure validating the integrated knowledge provided in the academic ET core courses prepare students for the aligned MSSC test.

Figure 19. MSSC Certification Test Performance		
MSSC Test Topic	**Number of ET Degree Students Taking the Test**	**Percentage who Passed the Test**
Quality	35	88%
Safety	63	90%
Manufacturing Processes & Production	44	88%
Maintenance Awareness	0	N/A

Test score results through December 2012 show very favorable results. FLATE has provided workshops addressing this issue of MSSC alignment with the ET Degree program, at the ET

Forums in 2012. As a result of the workshops, suggestions for improving alignment were generated. There is still the one MSSC test topic that has not yet been evaluated through the same method used for the other three test topic areas, (i.e. Maintenance Awareness still remains for testing and alignment).

Although not directly addressed by the Effectiveness Measures, the Florida ET Forum is also an indicator of acceptance of the ET degree program and curriculum effectiveness. The FLATE-supported ET Forum is an important professional development vehicle since it brings together the diverse and geographically dispersed colleges with common issues and challenges. The Forum is an event innovated and coordinated by FLATE, which provides many benefits to the attendees, as noted in the surveys and comments from the participants as well as its regular and stable attendance; typically 20 or more people, with attendance often affected by geographic location. The ET Forum is held twice annually, once each in the spring and the fall. More data related to the ET Forum as an element of professional development will be discussed later in **Section C.**

Figure 20. Number of ET Forum Participants
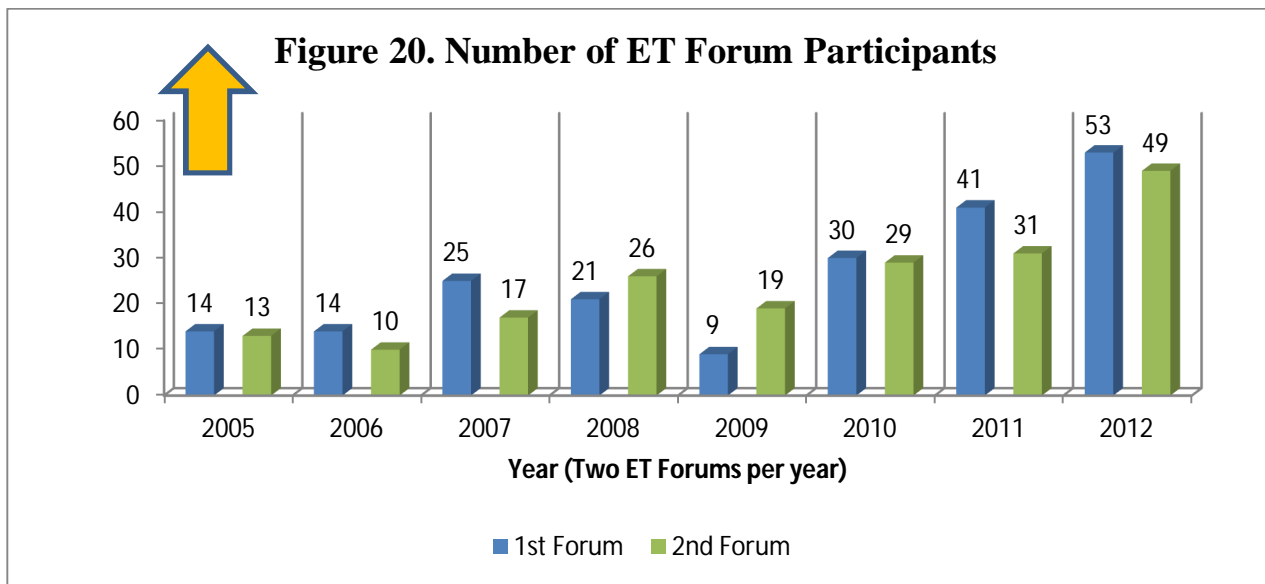
Figure 21. Number of ET Forum Participants								
Year	2005	2006	2007	2008	2009	2010	2011	2012
1st Forum Annually (Spring)	14	14	25	21	9	30	41	53
2nd Forum Annually (Fall)	13	10	17	26	19	29	31	49
Annual Total	27	24	42	47	28	59	72	102

Figures 20 and 21 show favorable overall growth in participation. The chart shows individual annual totals as well for spring (blue columns) and fall (green columns) components. The ET Forum is an ongoing FLATE vehicle for outreach and advisory feedback, as well as professional development opportunity for faculty.

There are no data relating to Effectiveness Measures CE-9, CE13, CE-14, and CE-15.

Section B. Effectiveness of Outreach and Recruitment:

FLATE's Outreach and Recruitment goal is to provide an effective outreach platform for Florida's high schools, colleges, and industry to access information related to the requirements for, and impact of manufacturing education. FLATE's *Made in Florida* (MIF) campaign is the manifestation of that outreach platform and is the continuing centerpiece of outreach to schools, faculty, and students. It is a multi-media effort including videos, student and teacher industry plant tours, industry-based, online lesson plans for K-20 educators, an industry sponsored career guidance advertorial, summer robotic camps, and a student-friendly website focused on education and careers.

FLATE has partnered with the Manufacturers Association of Florida (MAF), Center for Advanced Manufacturing Education (CAME) regarding MIF resources and the *Dream !t Do !t* initiative, CAME's project to implement the nationally branded effort to outreach to middle and high school students. FLATE and CAME have created and published a booklet which guides and gives instructions to interested manufacturers willing to find, support, and partner with local schools in this outreach effort.

FLATE has also enthusiastically embraced other popular student friendly communication tools and activities. FLATE is using social networking sites such as Facebook, Twitter, YouTube, and TeacherTube. FLATE also annually sponsors and partners with FIRST Robotics, SkillsUSA, and Technology Student Association (TSA) competitions to attract the attention of the current generation of career and technical education entrants. FLATE uses online and in-person activities to engage students, educators, and industry representatives to meet outreach goals.

FLATE continues to support the more conventional electronic message delivery mechanisms. The FLATE team publishes a monthly newsletter in blog format, the *FLATE Focus*. It is distributed monthly to over 2,000 individuals across Florida and the nation comprised of industry, government, educational, workforce, and community partners. Since spring 2007, the *Focus* has been serving as a platform to discuss a cross section of topics that are targeted to inform its readers about professional and educational opportunities in high-tech manufacturing and/or STEM related initiatives. *FLATE Focus* articles are timely, relevant and highlight local industry partners, their role in positioning Florida as a high-tech hub in the nation, and spotlights FLATE's widespread outreach, curriculum and professional development initiatives.

Some of the most popular articles in 2012 included stories about a fabrication lab in Sarasota, technical student associations in Florida; the 2012 FIRST Lego league challenge, machining program at Clearwater training center, and Tampa Bay area manufacturers association STEM Goes To Work program. There are readers and visitors from all 50 states and in 111 countries internationally. The *FOCUS* is constantly evolving and improving, from changing designs and layout templates, to staple offerings in the "STEM Educators Corner" and "Did you Know?" sections. *FLATE Focus* captures relevant and timely information on STEM and high-tech manufacturing. The special announcements section continues to feature news about ongoing and upcoming events, conferences, grant opportunities, and professional development workshops. The award winning STEM puzzles have also gained full momentum in expanding a devoted fan base throughout the country, and serves as a fun, enjoyable way to integrate and learn STEM concepts.

While contributing to outreach efforts, in 2012, the *FLATE Focus* newsletter generated close to 6,000 website visits and over 12,300 page views. Figure 21 depicts this data add addressing Effectiveness Measure OE-6. The newsletter has an impact on website hits on the FLATE website, addressing Effectiveness Measure OE-8. Data regarding the website are displayed later in Figure 24 and Figure 25.

Year	Monthly Distribution to an Annual total of…	Total Annual Visits/% of Distribution	Total Annual Pageviews	Comparative Newsletter – Bi-Monthly Distribution To an Annual total of…	Comparative Newsletter - Total Annual Visits / % of Distribution
			Figure 22. *FLATE Focus* Newsletter Electronic Distribution & Visits		
2009	7,310	2,279 / 31.2%	Not collected		
2010	12,586	3,744 / 29.7%	Not collected		
2011	16,455	4,197 / 25.6%	8,842	15,000 (est.)	4,314 / 28.9%
2012	24,000 (est.)	5,982 / 24.9%	12,385	24,761	3,945 / 15.9%

In 2012, FLATE continued an effort to benchmark newsletter performance. Out of 40 ATE Centers examined, the majority either does not offer newsletters or does not offer online newsletters. One other ATE Center was selected with a similar mission and similar newsletter format and distribution. This comparative data are also shown in Figure 22. On the basis of this single comparative data point, FLATE's performance is favorable. FLATE draws more visits to the *FLATE Focus* newsletter blog, consistently more than 25% of total distribution of the *FLATE Focus* newsletter. Additionally, there are many instances of communication from readers about the usefulness of newsletter content.

In summary FLATE's *Made in Florida* campaign is inclusive of all media venues. It also provides a "one-stop" source for students and stakeholders, and shareholders. It provides ready to use online collateral materials including: community college program maps, manufacturing career Job Journey (wage information), listings of Florida manufacturers, *NEXT* advertorial, *In-Demand* magazine article on Robotics & Advanced Manufacturing, degree program fliers, technical and trade school information, *Made in Florida* website information, links to manufacturers, ET Degree Programs, *Hire an ET Grad*, FLATE's social networking sites, and an email address to contact FLATE for help and additional information.

One facet of outreach to students is accomplished through the FLATE and industry partnership project that champions the *Made in Florida* Manufacturing advertorial in the *Florida Trend: NEXT* magazine. This career guidance magazine is published annually by Florida's leading business magazine, *Florida Trend,* and is distributed to high schools all over the State. FLATE, with the Manufacturers Association of Florida (MAF) has consistently attracted industry partners and sponsors to fund the annual advertorial. The *NEXT* outreach effort has had the support of industry sponsors who have contributed more than $150,000 plus in-kind support over the last six years. Copies of *NEXT* magazine are distributed annually by high schools to secondary students statewide. Students indicate interest in the message by mailing a response card or visiting a website address and filling out an online response card. All students who provide a valid email address receive a personal email from FLATE, as well as ready to use online collateral materials including: community and state college program maps, manufacturing career Job Journey (wage information), listings and links for Florida manufacturers, In-Demand magazine article on Robotics – Advanced Manufacturing, degree program information, *Made in Florida* website information, FLATE's social networking sites, help with Florida's student advising site FACTS.org, and an email address to contact FLATE for help and additional information.. All inquiries, including those with no or invalid email addresses, are forwarded to the appropriate regional postsecondary or technical school partners based on zip code matching. All leads received by FLATE (2,699 email and postal card requests were received for the 2011-12 advertorial) were forwarded monthly to designated recipients such as program managers, advisors, and career counselors at 45 Florida colleges and technical schools. Inquiries were forwarded electronically by FLATE to these partners on a monthly basis, along with online collateral assist and informative materials.

The *Made in Florida* manufacturing advertorial in *Florida Trend's NEXT* magazine reached hundreds of thousands of Florida high school students for five years, informing them about careers in modern manufacturing. It also provided the guidance to make the educational choices needed to obtain these careers. These advertorials trigger student interest in manufacturing as a viable and lucrative career pathway and promotes the image that Florida's manufacturing industry provides challenging, state-of-the-art technology jobs with high wages.

Figure 23. NEXT Magazine Distribution & Interest Responses					
Academic Year of Distribution	Magazine Size (Number of Pages)	Total *NEXT* Distribution	Total Number of Responses Received by NEXT	Total Number of Responses Due to Manufacturing Advertorial	Responses Received by FLATE as % of NEXT Total
2006-07	100	750,000	*580,319*	*4,360*	*.8%*
2007-08	104	750,000	*803,989*	*4,698*	*.6%*
2008-09	96	750,000	805,461	5,762	.7%
2009-10	76	400,000	417,829	2,831	.7%
2010-11	70	400,000	250,789	2,301	.9%
2011-12	64	400,000	249,230	2,699	1.1%

Figure 23, addressing Effectiveness Measures OE-1, OE-2, and OE-3, shows the history of *NEXT Magazine* distribution and interest responses. *Florida Trend* has significantly reduced both the page count and distribution of *NEXT* magazine since 2008-09. Regarding the 40% drop in total student responses received for the 2010-11 advertorial, *Florida Trend* said, "The difference in the total number of leads for the issue is due to several factors, including the active links in the digital edition which allow the students to click on the ads and go directly to the advertiser websites to request information." An additional reduction in overall leads of 1,559 has occurred in the current year (2011-12) as well. This year, 2012, marks the end of the sixth and final year of the FLATE/MAF partnership to place content in *NEXT*. The diminishing distribution and regression of the overall response pool as well as the lack of ability by colleges to effectively track the number of students who contact them and enroll as a result of the *NEXT* advertorial were among the factors influencing FLATE, MAF, and their industry partners not to renew the advertorial for the 2012-13 campaign. Instead, teen outreach energy and resources will be diverted to MAF's Florida Dream It! Do It! campaign. FLATE, MAF, and their industry partners have decided to divert resources from the NEXT Advertorial to other student outreach efforts.
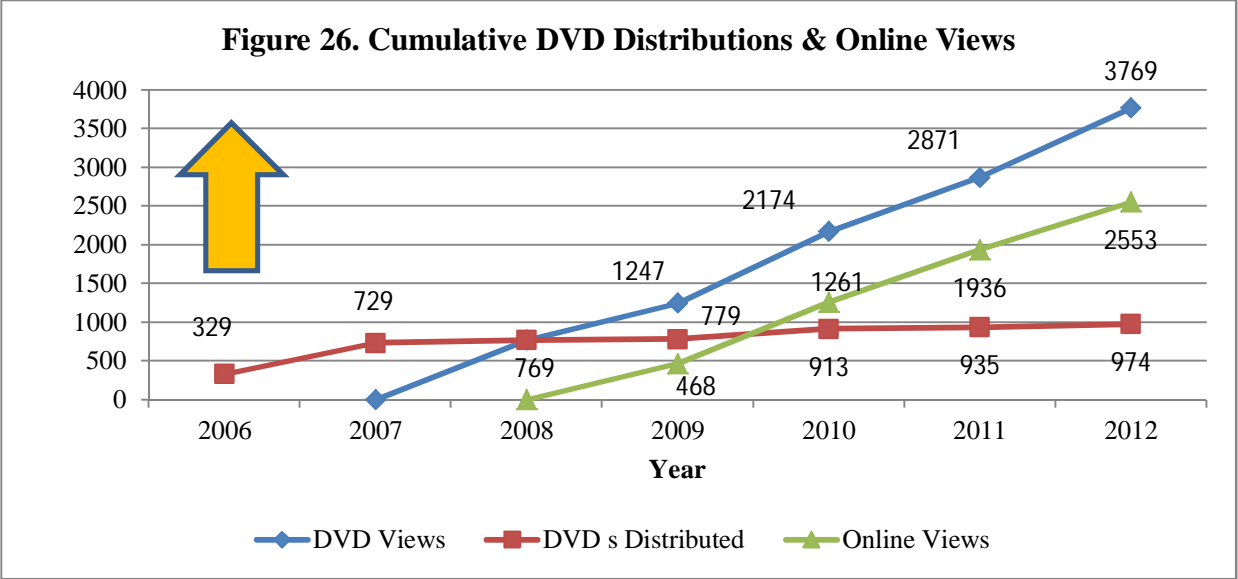
The following set of charts in this section address Effectiveness Measures OE-6, OE-7, and OE-8. Figure 24 shows a high number of FLATE and *Made in Florida* page visits 2009 through 2012. The FLATE wiki page was undergoing a major reconstruction for most of the year and didn't come on line until the end of the year; no data are reported for the wiki page. Collection and reporting will resume in 2013. As seen in Figure 25, the average monthly number of visits

Fig 24. Visits to Websites
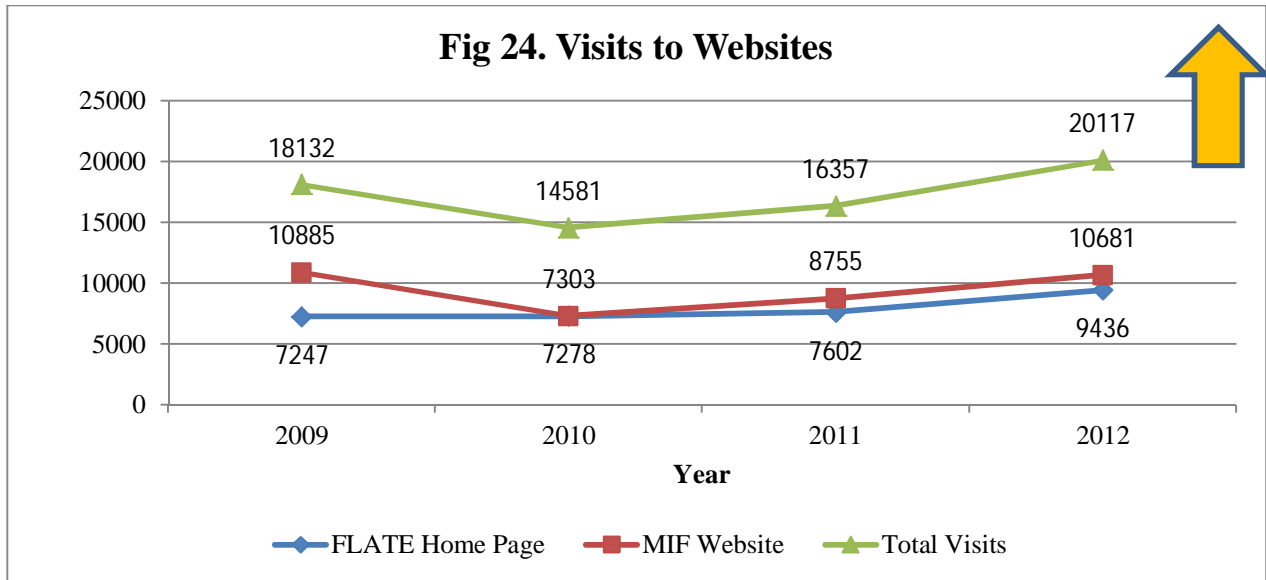
is higher than two comparatives in 2011. It is also higher in 2012 than the single comparative for which data are available. Average monthly visits for one of the comparatives, the Evalu-ATE Center, is based on a 6 month total from May through October 2012, and has shown an increase since 2011. Comparative data collection will continue in 2013.

Figure 25. Average Monthly Web Page Visits		
	2011	2012
FLATE Home Page	634	820
Made in Florida Home Page	730	923
Comparison: Combined Avg. for 8 NSF-ATE Centers	472	Not Available
Comparison: Evalu-ATE Center Home Page	431	795

Figure 26 shows a continued overall increase (favorable trend) in the number of opportunities viewers take to see the MIF video, English- and Spanish-language versions through 2012. As expected, during the transition to the online distribution format the number of DVDs distributed each year remains low, the cumulative number of views of the video on the FLATE and the *Made in Florida* websites continues to grow steeply. This trend is expected to continue.

Figure 26. Cumulative DVD Distributions & Online Views

Year	DVD Views	DVDs Distributed	Online Views
2006		329	
2007		729	
2008		769	0
2009	1247	779	468
2010	2174	913	1261
2011	2871	935	1936
2012	3769	974	2553

In addition to its use of virtual media to reach students and stakeholders alike, FLATE has taken other actions to reach out to geographically diverse areas of the State, especially in the southern region. FLATE had reached out to the South Florida Manufacturers Association (SFMA), industry, Broward College, Palm Beach State College, and Edison College to better engage that region. As a result of this activity, colleges are gaining interest in adoption of the ET degree program, include the adoption by Broward College in Fort Lauderdale in 2012.

Figure 27. Overall Value of Industry Contributions
(Thousand of Dollars)

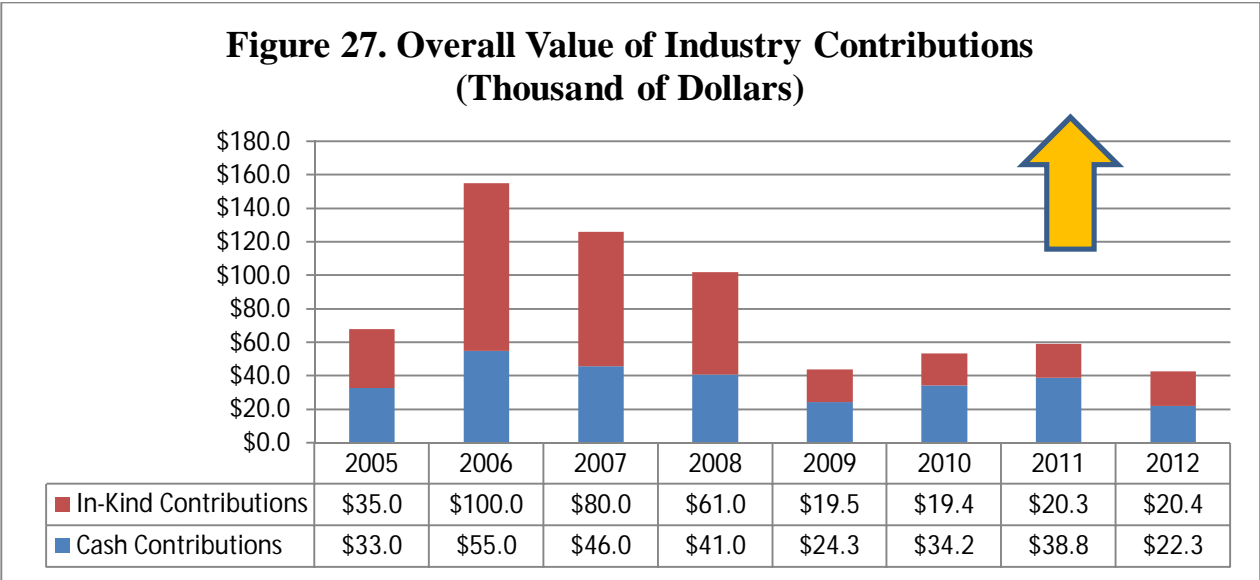|	2005	2006	2007	2008	2009	2010	2011	2012
In-Kind Contributions	$35.0	$100.0	$80.0	$61.0	$19.5	$19.4	$20.3	$20.4
Cash Contributions	$33.0	$55.0	$46.0	$41.0	$24.3	$34.2	$38.8	$22.3

Figure 27 addresses Effectiveness Measures OE-9 and OE-10. Data in Figure 27 indicate the overall value of cash and in-kind contributions from industry and partners to support various FLATE activities including the *NEXT* manufacturing advertorial. This chart indicates an unfavorable trend in contributions from 2007 to 2009 which happens to coincide with the economic downturn suffered in the manufacturing sector. There had been hesitancy on the part of manufacturers to donate funds generally. The year 2012 marks the start of a new baseline of industry contributions because that is the first year in the series shown in the figure, that funds formerly for the *Florida Trend NEXT* manufacturing advertorial are no longer solicited.

In 2012, FLATE increased both the number of events and participants in tours to advanced manufacturing facilities. Several factors added to this upturn: FLATE increasing the number of its *Industry Day* **multi-site model** tour offerings, a partnership with Bay Area Manufacturers Association (BAMA) and county school districts offering a new *STEM Goes to Work* tour model (a new model taking place on a Saturday to encourage more parental participation), expansion of tours into south Florida (Hendry County), new 2012 outreach to homeschooled students, and an increase in the number of FLATE summer camps (tours are offered as part of the camp experience). A positive change for 2012 in both number of events and participants is reflected by Figures 28 and 29 address Effectiveness Measure OE-4.

Figure 28. Tours to High Tech Industries
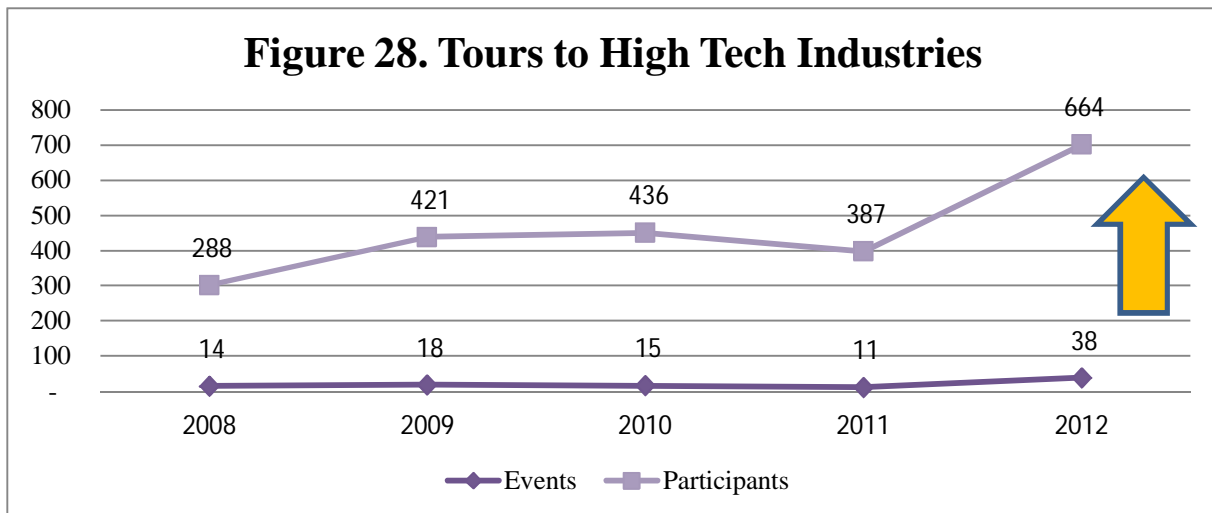
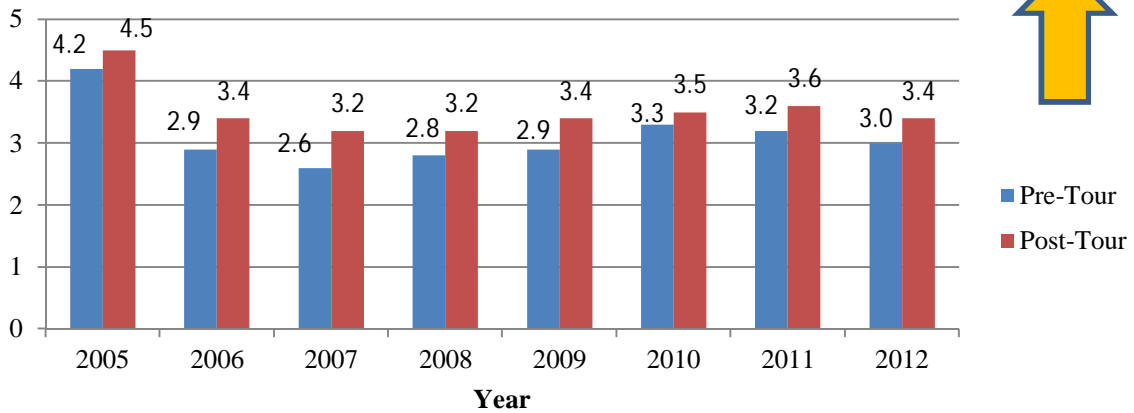**Figure 29. Touring Student Inclination Toward a Manufacturing Career**

Figure 29 above shows survey results related to industry and plant tours, collected at the start and end of each tour, conducted for students, and depicts the level of agreement, by attendees, with these selected survey statements, relating to the comparison of the students' inclination toward a manufacturing career before and after the tour:

- Statement #10: "I was considering a career in manufacturing before the tour". (pre-tour)
- Statement #13: "I am now considering a career in manufacturing or related technical industries". (post-tour)
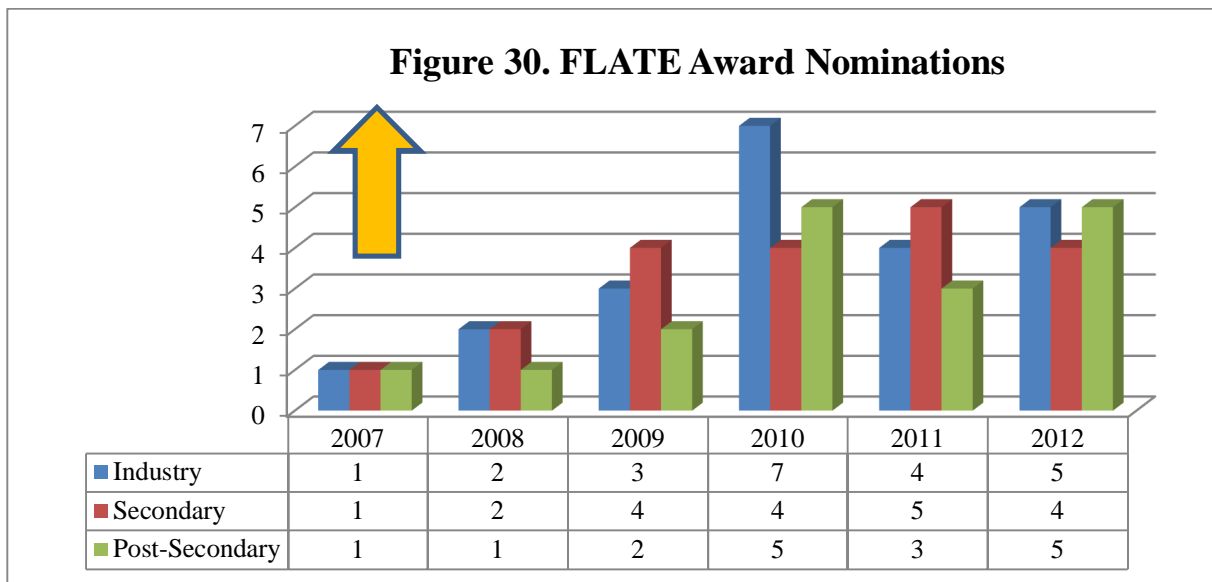
These annual summary results show that in every year, the aggregate results are favorable in that students were more inclined toward a career in manufacturing after having completed the tour. Student responses to other survey questions also indicate high levels of their perceptions of the relevance of the tour and awareness of the importance of manufacturing skills.

To disseminate and institutionalize FLATE experiences and knowledge, the staff has distributed its best practice guide about the student tour activity. It is intended to help interested organizations, such as the regional manufacturers associations, plan, conduct, and follow-up successful student tours. The guide is available both in print and online.

There are no data currently collected which address the other element of Effectiveness Measure OE-5, relating to industry perceptions regarding student tours. A recommendation is made to
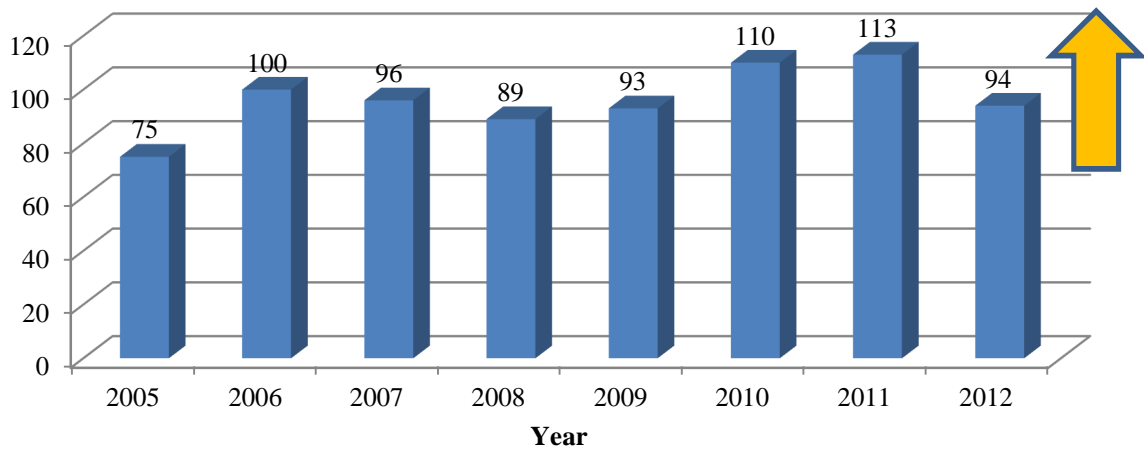
collect this data. It is expected information will be available in 2013.

Figure 30 doesn't directly refer to any Effectiveness Measure, but it is an indication generally of FLATE outreach effectiveness. Each year FLATE recognizes three individuals, one from industry, one from the community or state college or technical school systems, and one from the secondary level school system for outstanding contributions to the promotion of technical education, and in support of the manufacturing workforce. The award ceremony is held jointly with the Manufacturers Association of Florida (MAF) at the MAF Manufacturers Summit every year in the fall. The figure shows unsteady, but generally a favorable increase in the numbers of nominations made for all three awards since inception in 2007. This outreach and recognition event is valued by partners and gives FLATE high visibility to its stakeholders in the education community and industry.

Figure 30. FLATE Award Nominations

	2007	2008	2009	2010	2011	2012
Industry	1	2	3	7	4	5
Secondary	1	2	4	4	5	4
Post-Secondary	1	1	2	5	3	5

A significant part of FLATE's outreach efforts is participation in public events, presentations to raise awareness for advanced manufacturing, conferences, seminars, and the like. Figure 31. indicates the numbers of annual events in which FLATE took part and used for outreach and networking purposes. The overall trend continues favorably exposing more organizations and stakeholders to FLATE.

Figure 31. Number of FLATE-Involved Outreach Events

A bar chart showing the number of FLATE-involved outreach events by year:

Year	Number of Events
2005	75
2006	100
2007	96
2008	89
2009	93
2010	110
2011	113
2012	94

Figures 32 through 36 and the results discussed in the next few paragraphs, don't directly address specific Effectiveness Measures but relate to an activity that generally serves to improve outreach and awareness among middle and high school students and parents. FLATE hosts several robotics camps each summer, and works with sponsors and partners in other locations, targeted at middle and high school students to enhance the understanding of science, technology, engineering and mathematics (STEM), and to showcase robotic applications in high-tech manufacturing operations. The effort represents partnership between FLATE, and several academic and industry partners to cultivate STEM, hands-on, technical, leadership, professional, and team-building skills. Although there are a number of robotics camps offered by other organizations around the State, FLATE camps are unique in providing STEM-focused opportunity to highlight robotic applications in high-tech manufacturing operations and showcase advanced manufacturing companies and their products.

These FLATE Summer Camps provide an important part of FLATE's outreach to middle and high school students and their parents by connecting camp experiences to the high tech world of Florida advanced manufacturing. The camps expose students to robotics through the use of programming software where Lego Mindstorms ® robots are taught commands and compete in team challenges. In addition to the STEM related learning activities and technological information the campers receive, the program enables students to learn and practice lessons in

leadership skills, communication, and teamwork. Each summer camp is designed to be five days in length and involves classroom exercises, team experiences, field trips to advanced manufacturing industries, and fun. Between 2005 and 2012, FLATE camps have made the connection between STEM curriculum, college, and Florida advanced manufacturing for a total of 587 campers.

The pre-camp survey was new this year based on benchmarking efforts. In addition to quantitative data, the survey includes information which can be used for follow up interaction and outreach with schools, and captures a more exact picture of the population of campers: gender, grade in upcoming school year, name of school, STEM course name enrollment, post high school plans, and for promotion purposes, how students learned about the camp. The post-camp survey includes open ended comments from the campers in addition to quantitative data. This year, 2012, marked the first year FLATE compared pre- and post-survey responses to better assess impact. The parent survey is designed for campers and their parents to answer together. The quantitative questions on the parent survey deal with location, accommodations, instructors, the lessons, and include open ended comments from the parents. Figure 32 depicts the summary

	Figure 32. Summer Robotics Camp Summary										
Year	FLATE # of Campers	CARCAM # of Campers	FLATE # of Males	FLATE % of Males	CARCAM % of Males	FLATE # of Females	FLATE % of Females	CARCAM % of Females	FLATE # of Camps	CARCAM # of Camps	FLATE # of Girl Camps
2008	20								1		0
2009	60	58			86%			14%	3	3	0
2010	200	140	134	67%	74%	66	33%	26%	9	6	2
2011	194	79	136	70%	89%	58	30%	11%	11	4	0
2012	171		138	81%		33	19%		8		1

of camps conducted to date. Outreach has increased by continuously conducting camps and exposing more middle and high school students to advanced manufacturing ideas and concepts. The number of camps held in 2012, as well as the number of campers, and female campers, is down since 2011.

In 2010 FLATE selected the CARCAM ATE Center in Alabama as a comparison for Robotics Camps performance. There are two distinctions between these programs:

- FLATE's camps are targeted primarily at middle school students to stimulate interest in STEM classes; CARCAM's camps at high school students for college recruitment.
- CARCAM follows up with the High School transcripts to track whether Camp students enroll in STEM elective classes; FLATE surveys parents during the next school year following the summer camp.

Figure 32 shows this comparison as related to the total number of campers, percentages of numbers of male and female campers, and the total number of camps. Although the CARCAM camp approach is not quite analogous in purpose, the FLATE performance in each of these areas compares favorably. Due to the differences in program approach, this comparison was not collected in 2012 and will not be collected in the future.

Effectiveness of the camps is judged by surveys of the campers and their parents. In 2010 and 2011 a follow-up survey was sent to parents to judge whether camp attendance had a positive effect on their students and their choice of classes taken during the following school year. Response rates were about 16%, 12%, and 32% in 2010, 2011, and 2012 respectively. In 2012, parents reported strong agreement with the survey statement:

"My student was inspired by the camp experience to enroll in challenging STEM courses [the school year following the summer camp]."

Results in Figures 34, 35, and 36 show results of surveys of campers and their responses to sever4al questions on the survey indicating awareness, interest, and consideration of careers in manufacturing.

Figure 34. Camper Awareness of Career Options in Advanced Manufacturing									
Responses to Question 6: Please rate your awareness of career options in advanced manufacturing. (Likert scale 1 = Not at All Aware to 5 = Extremely Aware)									
	HCC Girls	**HCC Intro**	**HCC Intro**	**Ocala Intro**	**Ocala Intro**	**Ocala Intro**	**HCC HS**	**HCC Adv**	**Combined 8 Camps**
Pre	2.4	2.8	2.4	2.5	2.4	2.6	2.5	3.2	**2.6**
Post	3.4	4.2	3.5	3.4	3.5	3.3	3.9	3.9	**3.6**

Figure 35. Camper Interest in Career in Advanced Manufacturing

Responses to Question 7: Please rate your interest in a career in advanced manufacturing. (Likert scale 1 = Not at All Interested to 5 = Extremely Interested)

	HCC Girls	HCC Intro	HCC Intro	Ocala Intro	Ocala Intro	Ocala Intro	HCC HS	HCC Adv	Combined 8 Camps
Pre	2.7	3.1	3.0	2.5	2.8	2.9	2.7	3.0	2.8
Post	2.7	3.9	3.2	3.2	2.7	3.3	2.9	3.1	3.1

Figure 36. Camper Consideration of a Career in Advanced Manufacturing

Responses to Question 12 (Pre-tour): I've been considering a career in advanced manufacturing or related technical industries; and Question 7 (Post-tour): I'm now considering a career in advanced manufacturing or related technical industries. (Likert scale: 1 = Strongly Disagree to 5 = Strongly Agree)

	HCC Girls	HCC Intro	HCC Intro	Ocala Intro	Ocala Intro	Ocala Intro	HCC HS	HCC Adv	Combined 8 Camps
Pre	3.2	3.4	3.3	3.1	3.3	3.4	3.5	3.5	3.3
Post	3.2	4.0	3.6	3.6	3.1	4.4	3.6	3.4	3.3

These charts all indicate overall favorable results in student attitude change before and after the robotics camp participation, with few exceptions (i.e. question 7 HCC Girls, Ocala 2 Intro, & HCC Adv; question 12 HCC Girls, Ocala 2 Intro, & HCC Adv). However, 90% of all campers responding to the survey said that they would recommend the camp to others. FLATE initiated in 2012 a new approach to collecting information by using both a pre- and post- impact survey for summer camps. Before this, a post camp survey was sent home with kids on the next-to-last day of camp to be returned on the final day. In 2012, 125 surveys from 171 campers were collected, a 73% return rate. Parents' responses to one of the survey questions are summarized in Figure 35. The data show a high level of agreement that parents would recommend the camp to others.

Figure 37. Parent Inclination to Recommend Robotics Camp

Responses to Question 10 (Parents' Survey): As a parent, I would recommend this camp to others. (Likert scale: 1 = Strongly Disagree to 5 = Strongly Agree)

	HCC Girls	HCC Intro	HCC Intro	Ocala Intro	Ocala Intro	Ocala Intro	HCC HS	HCC Adv	Combined 8 Camps
Average Response	4.8	4.6	4.6	4.7	4.9	4.7	4.9	4.7	4.7

Additionally, parents were given the opportunity to make comments on the survey. Many positive comments were recorded, along with some other actionable comments that allow FLATE an opportunity to refine the camp approach for better effectiveness.

FLATE has institutionalized the Robotics Camps initiative, through the development and distribution of a 28-page Best Practices Guide which is consistently distributed upon request and at FLATE-involved events. This reference manual is available both in print and online and is intended for use by other organizations wanting to initiate and run a similar program. The guide addresses issues important to a planning and conducting a successful camp.   The guide deals with costs and funding, equipment, facilities, communications and marketing, and curriculum. Requests for the guide have come from K-20 as well as from 4-year institutions across the country.

One other aspect of FLATE outreach, although not noted specifically in Effectiveness Measures, is the concept of scale-up, reported in Figure 38. According to the NSF-ATE Synergy Collaboratory (June 2011 Report), an important objective of NSF-ATE Center scale up activity includes "expanding a clientele or number of students served, increasing the reach of a project so that additional business, colleges, or communities are involved". FLATE's scale up efforts have impacted everything from increased newsletter and website performance to increased participation in professional development workshops, more than doubling the scope of its contact area since 2010. These data reported in Figure 30 are gleaned from FLATE's contact database used for dissemination of information about FLATE, its activities and impact, *FLATE FOCUS* Newsletter, advanced manufacturing news including the needs and opportunities of employers in the advanced manufacturing industry, college and industry partners and their activities, general outreach, professional development opportunities, and promotion of online curriculum and services. FLATE's scale up activity has expanded the scope of its reach and impact on stakeholders.
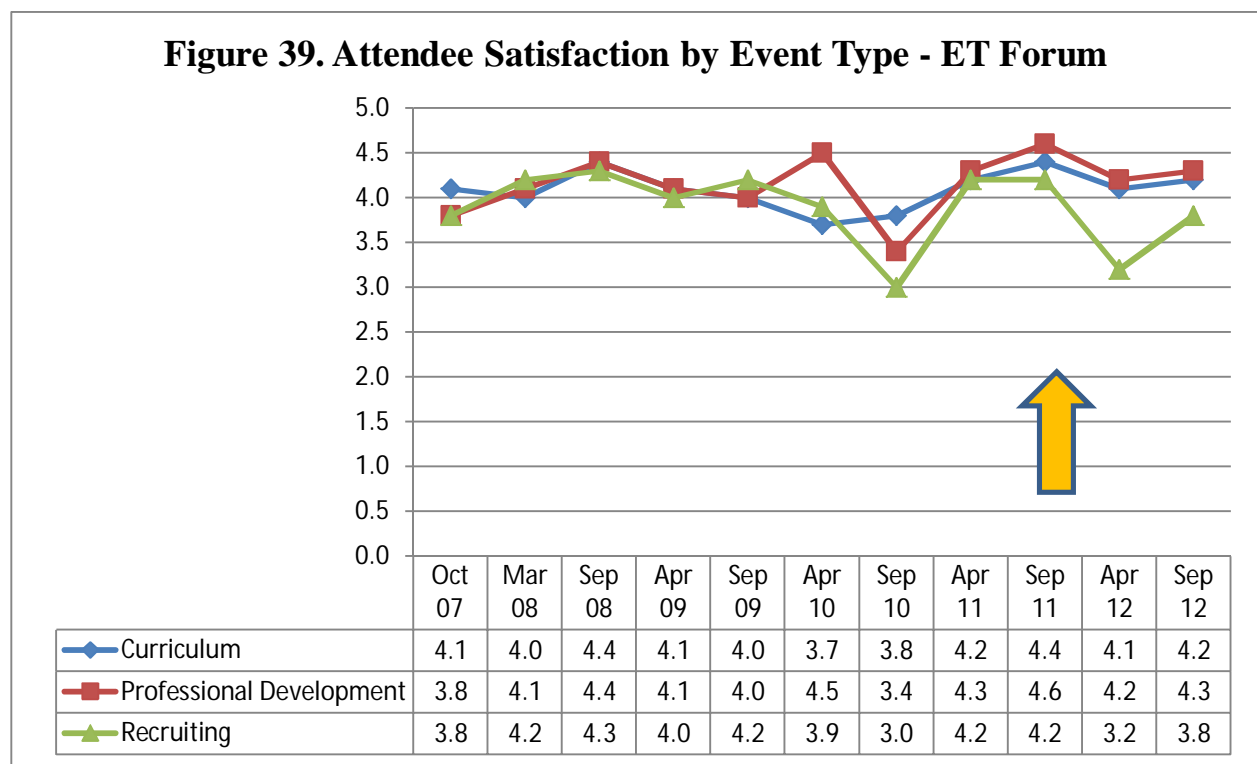
Figure 38. FLATE Contact Scale-Up Activity			
Contact Category	**As of June 2010**	**As of December 2011**	**As of December 2012**
Industry	317	413	429
Workforce Development, Training & Vendors	82	111	120
Secondary Education	242	707	767
Post-Secondary Education	411	1091	1117
Manufacturers & Professional Associations	27	36	35
Economic Development, Government & Community Organizations	54	229	227
FLATE	25	22	19
Personal Interest via Email	1	2	3
Totals	1159	2611	2717

Section C. Effectiveness of Professional Development Efforts:

Professional Development is a key element of the FLATE strategy to support K-20 STEM education and college engineering technology and related technology programs. FLATE's goal is to present professional development opportunities for technical faculty to develop, refine, or certify their knowledge base within manufacturing and its related enabling technologies and educational pedagogies. To maximize immediate impact many of these activities follow a just-in-time delivery approach.

Professional development activities enable faculty and other involved stakeholders to facilitate the implementation and use of FLATE-developed tools in academic and industry settings. FLATE provides a number of training and development opportunities throughout the year in a number of different venues including stand-alone workshops, online webinars, the Forum on Engineering Technology (ET Forum), and other partner projects. Relative to the other goal

related activities, FLATE professional development projects were delayed in the initial phases of FLATE existence to expedite the degree development and outreach activities. As noted earlier in this report, the Florida ET Forum is an important professional development vehicle and provides a place for colleges to confront and discuss common issues and challenges. A satisfaction survey was provided to participants at each workshop to collect information to improve performance and gauge the relevance of the activities provided. Figure 39, addressing Effectiveness Measure PDE-1, reflects participant data regarding the ET Forums, which has been scored by participants at favorably high levels on a Likert scale of Poor (1) to Excellent (5).

Figure 39. Attendee Satisfaction by Event Type - ET Forum

	Oct 07	Mar 08	Sep 08	Apr 09	Sep 09	Apr 10	Sep 10	Apr 11	Sep 11	Apr 12	Sep 12
Curriculum	4.1	4.0	4.4	4.1	4.0	3.7	3.8	4.2	4.4	4.1	4.2
Professional Development	3.8	4.1	4.4	4.1	4.0	4.5	3.4	4.3	4.6	4.2	4.3
Recruiting	3.8	4.2	4.3	4.0	4.2	3.9	3.0	4.2	4.2	3.2	3.8

The ET Forum has an impact on the development and adoption of the ET Degree program. The Forum's low cost, relatively informal meetings have seeded a close network of faculty and administrators focused on the everyday workings and issues of related technical programs. It has resulted in a number of shared projects, grant proposals, and grants; mentoring for new and/or evolving programs; and a strong partnership of institutions that have discovered a venue where they can share the same mission and goals and express their differences within a spirit of cooperation, not competition. Attendees at the Forum regularly provide input to the Florida

Department of Education (FLDOE), Florida workforce organization, and economic developers, and various career and technical education organizations in Florida.

The structure and operating characteristics of the ET Forum serve as a model organization for other disciplines and career clusters in Florida as well as technical disciplines in other states. This exportable model brings the state and community colleges and their university counterparts together with representatives from the FLDOE Workforce Education Division to discuss common issues, best practices, institutional and programmatic news, and to seek solutions that better unify the programs serving students, industry, and academic institutions. FLATE uses the ET Forum to continue its curriculum development, reform, and alignment efforts through a workshop on Day 2 at the Forum. Figures 40 and 41 show the percentage of agreement participants indicated regarding the impact of the professional development workshop provided at the semi-annual ET Forum. These also address Effectiveness Measures PDE-4 and PDE-5.

Figure 40. Current Impact of ET Forum Professional Development Activity		
Statement: I anticipate, as a result of attending today's FLATE PD Workshop…		
Spring 2012	Fall 2012	
66%	78%	…Updating/ adding new instructional materials
25%	33%	…Modifying/ trying new pedagogical methods
42%	33%	…Changing the way I assess student learning
25%	66%	…Updating/ adding new technology topics
42%	66%	…Adding a new activity/ course
25%	66%	…Augmenting/ updating new recruiting strategies

Figure 41. Past Impact of ET Forum Professional Development Activity		
Statement: I have already, as a result of attending past FLATE ET Forum PD Workshops…		
Spring 2012	Fall 2012	
66%	88%	…Updated/ added new instructional materials
25%	25%	…Modified/ tried new pedagogical methods
42%	50%	…Changed the way I assess student learning
25%	75%	…Updated/ added new technology topics
42%	63%	…Added a new activity/ course
25%	38%	…Augmented/ updated new recruiting strategies

As Effectiveness Measures, a matter of importance in Professional Development, FLATE monitors PDE-2 and PDE-3, individual participation in the ET Forum and other FLATE-initiated workshops. Data reported in Figures 42 and 43 are pertinent and address PDE-2 and PDE-3.

Figure 42. Number of Attendees & PD Hours at ET Forum
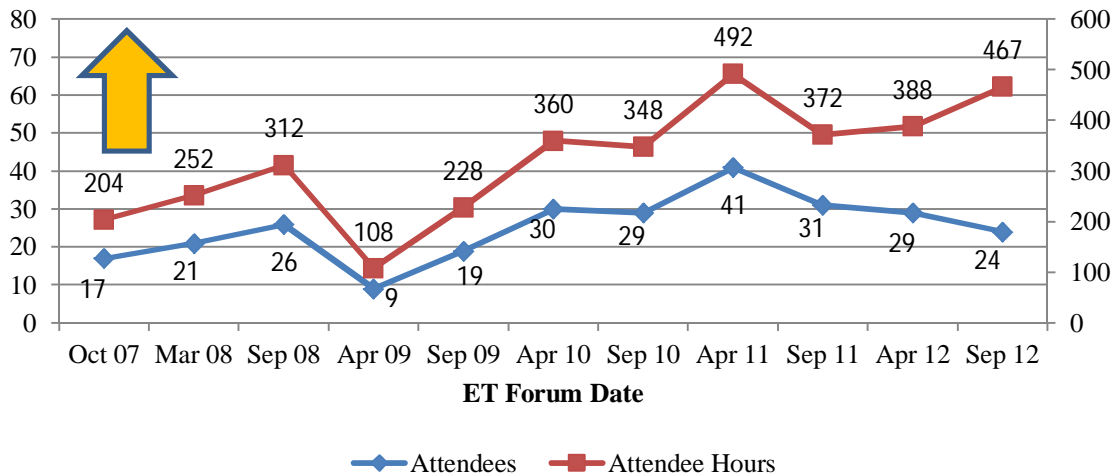
Figure 42 shows an unsteady but overall favorable trend through 2012 in the number of participants and their professional development contact hours at the series of ET Forums conducted twice annually since 2007.
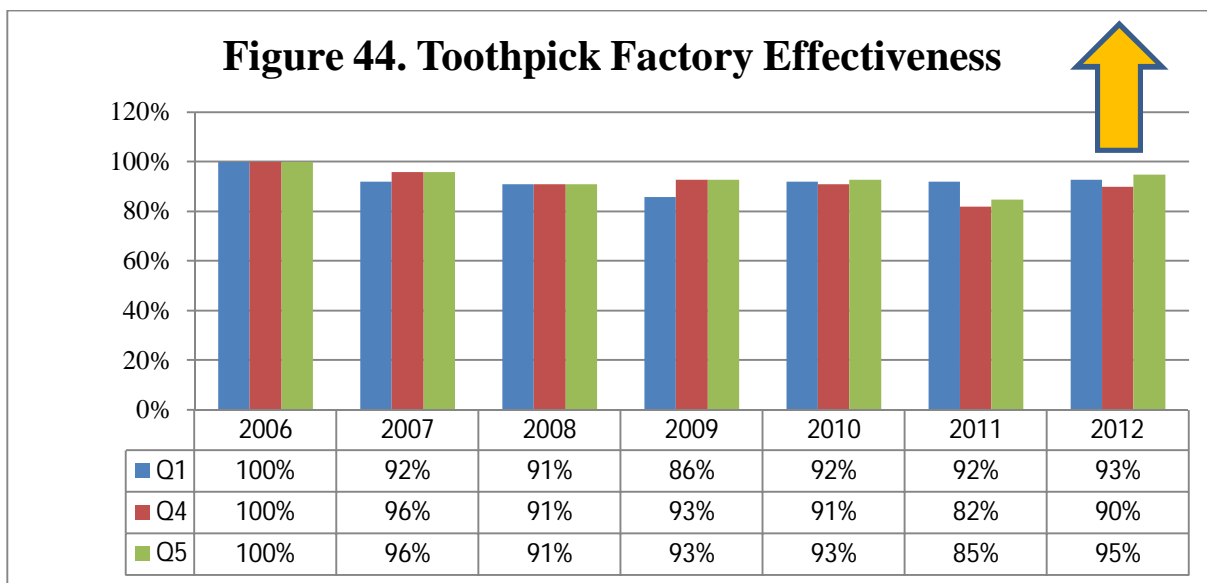
Figure 43. Professional Development Hours

A line chart titled "Figure 43. Professional Development Hours" with the y-axis ranging from 0 to 2500 and the x-axis labeled "Year" showing years 2005 through 2012. Data points: 2005 = 1495, 2006 = 1170, 2007 = 421, 2008 = 764, 2009 = 1179, 2010 = 1364, 2011 = 2060, 2012 = 2378.
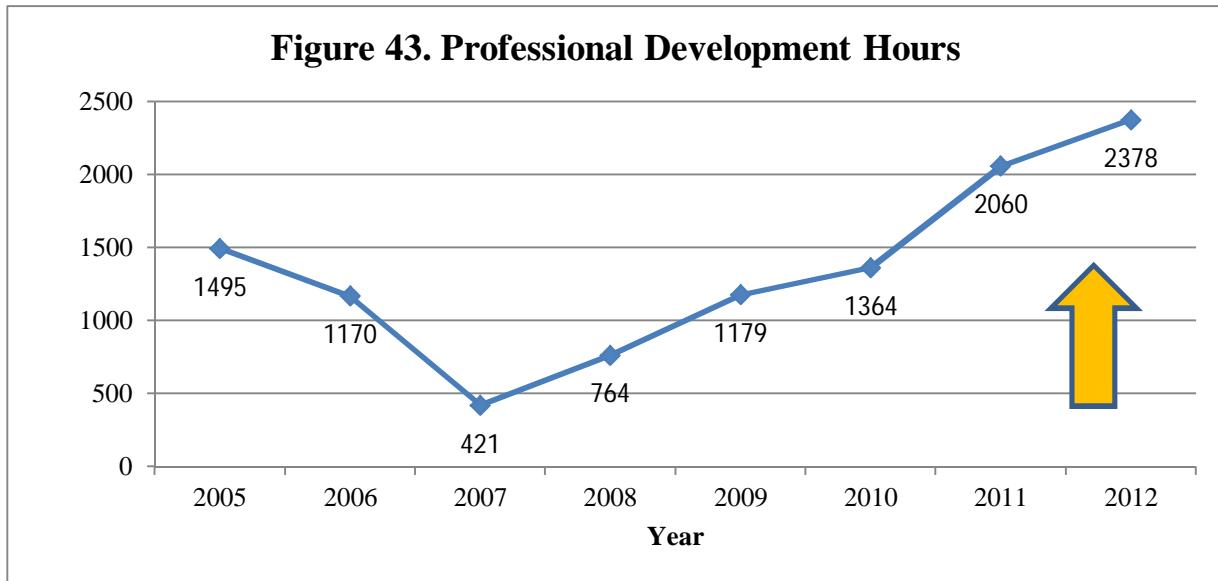
Figure 43 shows a linear continuous increase in the number of professional development hours provided by FLATE since 2007. Following development and implementation of the ET curriculum in 2007, FLATE's strategic plan guided the organization to implement its action plan to increase professional development activity. Some of the actions which may contribute to the favorable , steady increase include: establishing full staffing of FLATE including a full-time curriculum coordinator playing a major role in offering professional development (PD) presentations and workshops; offering multiple PD functions at large events, with panel presentations, workshops, and presentations over multiple days at the same event, and even offering multiple events on the same day; selecting PD venues reaching larger audiences and promoting better attended; expanding PD to online webinars with FLATE staff as subject matter experts; and responding to growing requests for FLATE PD offerings for the School District of Hillsborough County K-12 teachers.

Figure 44, further addresses Effectiveness Measures PDE-1 and PDE-4. Data related to these measures primarily reflects participant perception of the usefulness in the workplace of the Toothpick Factory Professional Development event. The Toothpick Factory is a hands-on

activity created by FLATE, set in a manufacturing context that stimulates discussion and awareness about a wide range of soft skills that are essential in today's work and personal relationships.

The Toothpick Factory stimulates discussion and awareness about a wide range of soft skills which are essential in today's work and personal relationships. The award winning Toothpick Factory (2011 National Career Pathways Network (NCPN) Best Practice Award) has users in six states and around the world from as far away as Australia. This hands on and interactive simulation game is set in a manufacturing context and provides a unique way to look at soft skills. Three Toothpick Factory soft skills communication workshops were conducted by FLATE in 2012, serving 124 participants. The workshop is also available to other centers and has impacted over 600 students and educators nationwide. To assess effectiveness of the Toothpick Factory, FLATE uses the data shown in Figure 44. This six year span of data is anchored by a 100% approval rating in 2006 to at least 95% approval rating in all categories in 2012.

Figure 44. Toothpick Factory Effectiveness

	2006	2007	2008	2009	2010	2011	2012
Q1	100%	92%	91%	86%	92%	92%	93%
Q4	100%	96%	91%	93%	91%	82%	90%
Q5	100%	96%	91%	93%	93%	85%	95%

Q1. This is an effective way to promote the importance of soft-skills
Q4. I would recommend this game to others
Q5. I see the value of using this game in my workplace

Data are collected by participant survey, seeking input as to whether knowledge and skills gained is useful and applicable to the participant in her or his workplace. Participants responded to the

survey statements identified as Q1, Q4, and Q5 described above. The data shown are the total Agree and Strongly Agree responses as a percentage of all the responses. While the levels are relatively high and fluctuating at high levels, an obvious slightly unfavorable down trend is noted but turned around in 2012.

Effectiveness Measure PDE-4 relates to judging the effectiveness of professional development events for faculty through self-recognition that opportunities provided by FLATE have assisted faculty in their work. Data related to this Effectiveness Measure have been collected through the biannual FLATE Stakeholder Survey in 2009 and 2011. These historical data are displayed in Figure 45. The next survey is due in 2013.

Figure 45. Response to Stakeholder Survey Q5
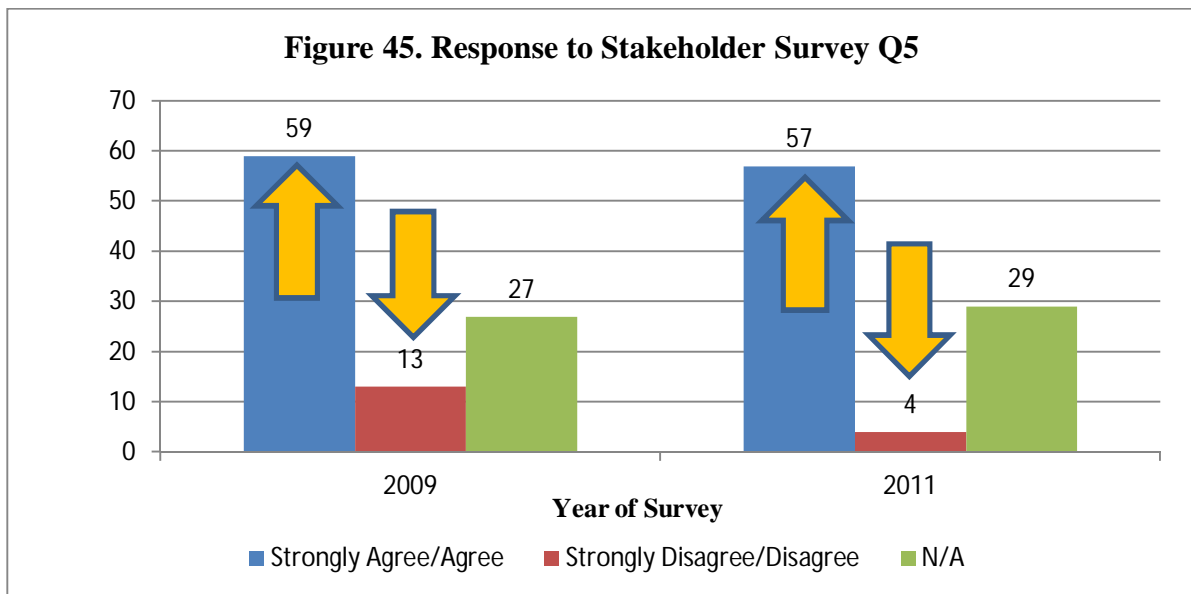
Q5. Curriculum Reform initiatives provided by FLATE have assisted me.

Figure 45 shows the total percentage of Strongly Agree and Agree responses in blue and is at about the same level in 2009 and 2011 as is the percentage of "Not Applicable" responses. The total percentage of Strongly Disagree and Disagree responses is in reddish brown and is favorably lower in 2011. Although there are only two data points, 2009 and 2011, the results indicate a favorable change in perception among stakeholders. Favorable direction is indicated by the "GOOD" arrow near each blue and each reddish brown bar.

Section D. Additional Effectiveness Evaluation Results:

FLATE adopted the Sterling/Baldrige business model in 2006 to provide an evaluation framework for operating, as would any successful manufacturer. This evaluation model combines evaluation plan elements required by NSF with the quality-driven Florida Sterling/Baldrige process familiar to Florida manufacturers. Integrating Sterling/Baldrige quality components with FLATE's operations is vital to FLATE's success in serving customers, partners, and other stakeholders. As a result, FLATE has created, nurtures, and maintains a team-based culture, driven by senior leaders, that engages and motivates all staff and volunteers, and focuses on serving customers and stakeholders.

FLATE seeks input and partnership with stakeholders to best develop and deliver products and services to the industry and academic environments. The Leadership Team drives success and sustainability through an integrated approach in setting the direction and goals of the organization while maintaining a culture of proactive leadership, collaboration, excellence, and an action orientation. Organizational goals and objectives are established and refined through annual evaluation planning. The Leadership Team and staff monitor progress against goals regularly, by using the results reported in this document and other data collected by FLATE. Actions are taken to assure goal accomplishment.

Actively listening to customers and stakeholders, and developing proactive approaches to meet their needs occurs in a number of ways. These include surveys, focus groups, input from the Industry Advisory Committee (IAC) and National Visiting Committee (NVC), twice-annual FLATE workshops at the Engineering Technology (ET) Forum, and interaction with customers at public exhibits and events. The FLATE website and contact information is in the public domain. Implicit in FLATE goals is Outreach requiring a proactive approach to follow up with customers and customer leads, and to close the customer and stakeholder relationship loop.

As noted in the previous section, this evaluator has undertaken a biannual survey of FLATE stakeholders, now conducted in 2009 and 2011, next due in 2013. The Leadership Team has taken previous recommendations for improvement seriously and

has made good progress at improvement. The Team understands the use of the Sterling/Baldrige business model and has adapted the FLATE culture to integrate Sterling/Baldrige concepts. This quality approach with its resulting focus on excellence has lead FLATE and its leadership to be recognized in 2011 for excellence. Noteworthy recognition is included in Appendix B.

Self-Assessment Summary and Key Strength and Opportunity Themes

The biannual Sterling/Baldrige self-assessment was accomplished in 2012. This process includes an assessment scoring by a certified Sterling evaluator. Scoring in 2012 shows overall improvement from 2008 and 2010. Figure 46 depicts the FLATE scores, both overall and for each category comprising the whole. Although the Sterling scoring process is uniform it is not based on a linear scale. In addition, as the organization gets better at accomplishing its goals and mission, expectations for quality improvement also increase. Thus, the score always reflects the current performance and the maturity level of leadership and management systems.

	Category	Available Points	2008	2010	2012
	Figure 46. FLATE Sterling Assessment Score				
1	Leadership	140	42	56	63
2	Strategic Planning	100	40	50	45
3	Customer Focus	100	40	40	50
4	Measurement, Analysis, & Knowledge Management	100	25	30	40
5	Workforce Focus	100	30	30	30
6	Operations Focus	100	30	30	40
7	Results	360	126	126	144
	Total	**1000**	**333**	**362**	**412**

To put scoring in context, "average" or typical organizations usually score in the 20-25% or 200-250 points range. Sterling Award winners are usually at 50% or 500 points and better.

There are no perfect scoring organizations, as there are always progressively higher level opportunities and expectations for improvement. Overall 900 or higher scores are uncommon, but it is not unusual for Sterling Award winners to score in the 90% range in one or more individual criteria categories.

The key strength and opportunity themes from the 2012 Sterling assessment follow.

Key Strengths:

- Leadership creates an environment for 2-way communication & engagement with the workforce, including volunteers, and other stakeholders and customers.
- Active listening to stakeholder and customer feedback in focusing on action and for improving FLATE performance.
- Operational effectiveness and Strategy Implementation results show favorable levels and trends in most areas.

Key Opportunities for Improvement:

- To refine the strategic planning process including more systematic identification of strategic challenges, and to address these implicitly in strategies and key objectives
- To identify relevant stakeholder knowledge for innovation and to incorporate into the strategic planning process to support sustainability of the organization's mission.
- To continue seeking relevant and appropriate comparative measures for key result areas to be able to establish realistic stretch goals of overall performance.

FLATE leadership is dedicated to building a systematically managed organization focused on customers and stakeholders, and on mission sustainability. FLATE demonstrates effective approaches in various areas, many systematic and responsive to the basic requirements of the Sterling/Baldrige Criteria for Performance Excellence. Most approaches are appropriately deployed. A continuous improvement mindset is prevalent in the organizational culture. Improvement efforts focus on innovation and problem solving, and are generally forward

looking. FLATE is dependent on tracking important performance measures to guide fact-based decision-making and process changes.

III. Summary

FLATE has a central focus on organizational sustainability. The Leadership Team has a clear vision for the future, and systematically seeks opportunities that align with sustainability options. Despite its small size, continuous improvement is embedded in the culture of FLATE leadership and staff. This evaluation demonstrates the results, culture, and capacity to fulfill its mission and meet the needs of the National Science Foundation (NSF), its customers, and stakeholders. Performance results validate FLATE's ability to gain the confidence of its stakeholders. This confidence has been demonstrated in a number of ways, and corroborated by performance results in this report, such as ET program adoptions and ET Program enrollments and completions. FLATE continues to develop and implement its options and strategies for sustaining its mission and functions, and for institutionalizing key functions.

Key strengths and opportunities for improvement are noted. The following comments summarize progress to date of the last reported areas of opportunity for improvement and additional recommendations are made;

Previous Recommendations (still pending):

- Create a system for identifying key measures requiring comparatives, select appropriate comparatives, and effectively use key comparisons to set goals and improve organizational performance.
  Progress: There is much progress in this area, as more comparison data are being collected, which should be continued. It is suggested that criteria and a procedure be developed to select the processes and areas of measurement requiring comparatives, and for identifying target comparative organizations. Comparison data needs should be established regarding relative performance in key areas. Comparisons are not needed in every area of performance.

- Follow-up to determine whether data can be collected that indicates effectiveness of outreach and professional development efforts in the classroom. In other words, try to answer the question: Do FLATE activities and efforts influence teacher and student behavior in the classroom?

  Progress: This is accomplished and ongoing. Data are collected through ET Forum and Stakeholder Surveys to judge behavior changes in the classroom.

- Based on results of the Stakeholder Survey (2009 and 2011), there is an opportunity to be more effective in the FLATE outreach campaign specifically from the perspective of the Business and Industry demographic group, but to make stakeholders generally more aware of FLATE, its services, and its impact on curriculum reform. As an example of what is needed, feedback from the stakeholder survey caused immediate action to improve the *Made in Florida* website.

  Progress: This is accomplished and ongoing. The need for greater outreach and increasing awareness of stakeholders is a perennial need. After the 2009 survey and again after the 2011 survey, FLATE stepped up outreach efforts to reach academia and industry with emphasis in the South Florida region and several new outreach initiatives were launched. Broward College in Fort Lauderdale has adopted and implemented the ET Degree program. The MIF website has been upgraded to make network connections between industry and sources of technical employee prospects at the colleges, the contact list has been up-scaled, and more. Additionally, the Industry Advisory Council (IAC) and the National Visiting Committee have both been expanded in size and geographical representation. Focus should continue on three aspects of outreach: outreach between FLATE and academia to increase awareness of FLATE's services and products; outreach between FLATE and industry to increase awareness of the workforce resources and sources of technical employees for manufacturers; networking connections between industry and academia.

- Develop an approach for aggregating feedback and opportunities for improvement from the range of various sources. The approach should include prioritizing the opportunities and developing action plans to implement improvements.

  Progress: This is accomplished and ongoing. Action plans are developed at Staff meetings

and Leadership meetings on a regular basis as performance results are reviewed and assessed. Continued guidance will be provided at leadership meetings where specifics are discussed to assist FLATE in developing appropriate feedback mechanisms.

- Data reported indicate that enrollments and completions at the secondary level and in the PSAV/technical schools are trending unfavorably. As these are pipelines/pathways to the AS/AAS ET Degree Program, problem solving should be applied, to determine root causes and develop an action plan and potential solutions to reverse the identified trends.
  Progress: The Post-Secondary Adult Vocational (PSAV) pathway to the ET degree program does not represent a significant source of ET degree enrollees. FLATE should shift attention and effort from PSAV programs to more direct recruiting of academy and high school student populations, building on interest and awareness, to increase enrollment and completions in the AS ET Degree and related programs. Efforts have been made to improve outreach to high schools through the regional manufacturers associations (RMA). The RMAs have been advised and provided materials for conducting outreach and building awareness among local populations of students and families to gain interest in education for technical careers. Additionally, partnership with the Manufacturers Association of Florida (MAF) and its *Dream !t Do !t* campaign has made additional awareness inroads to high school students and industry statewide.

- The CARCAM comparison needs refinement to establish comparison points relative to performance of each of the programs, not simply process comparisons. For instance, recognition of the similarities and difference between programs is necessary but not sufficient to make a determination whether one performs better than the other. Once performance differences are distinguished, then process similarities and differences can be analyzed to determine whether process changes are necessary to make improvement in performance.
  Progress: The CARCAM comparison and this previous recommendation will be dropped in future evaluation reports in favor of locating a more appropriate comparison.

- Collect data regarding college enrollments and growth overall to put context on the growth of

enrollment in the ET and related programs, including overall growth at the comparative organization.

Progress: This is accomplished, including the use of comparative data.

- The next three recommendations, while outreach-related and discussed indirectly in the earlier outreach recommendation, are the key recommendations coming from the 2011 Stakeholder Survey:

  o Data should be collected and reported regarding industry perceptions pre- and post-student tour events.
    Progress: There is still a need to collect industry perceptions, and actionable data, regarding student tour events.

  o Look into collecting data regarding the accomplishment of technical credentials and certifications in comparative programs.
    Progress: Pending

  o Research whether past years data are available for those high school programs that were in existence but for which data were not collected (until 2011) and are newly added into this evaluation report.
    Progress: Pending

- There is demand for more and more frequent and more accessible professional development opportunities for educators (e.g. ET- and STEM-related workshops, Summer Institute).
  Progress: This is accomplished. Results show ever-growing opportunities for professional development for faculty through the ET Forum, Summer Institute for faculty, the Toothpick Factory events and more.

- There continues to be a need for more outreach (with emphasis in South Florida) especially related to promoting exchange of ideas and greater cooperation between

industry, academia, students, and collaboration with other organizations with similar missions. While there has been some effort in this area already, such as the Outreach campaign materials distributed to RMAs, more is needed.

Progress: This is accomplished and ongoing. Greater outreach has been accomplished through more interaction with the regional manufacturers associations, industry (IAC and NVC interactions), and colleges (Broward College has adopted and implemented the ET Degree program and discussions are ongoing with Palm Beach State College, Indian River State College, and Edison College).

- Maintain a focus on manufacturers, and technical education, to help them understand what resources are available to them and what benefits can be derived by understanding and cooperating with FLATE efforts to build the pipeline for and enhance the manufacturing workforce.

  Progress: This is accomplished and ongoing. This is also a perennial need for greater awareness within industry to understand FLATE's relationship to development of the manufacturing workforce in Florida. The *"Hire an ET Grad"* feature on the Made In Florida website is very popular and useful to manufacturers and graduating students alike. FLATE's efforts have contributed to increased interest by industry in the MSSC Certified Production Technician credential. Partnership with the MAF and its Dream !t Do !t campaign has brought awareness to many manufacturers and schools of the advantages of manufacturing careers.

2013 Recommendations:

- While ET Degree program enrollment and completion continue to grow, it is not clear why overall ET and related program enrollment are flat, even as comparative program data show absolute growth, and growth relative to statewide enrollment in all AS programs. Effort should be made to identify root causes and determine whether action can be taken to improve this aspect.

- The data show that female participation in high school technology programs,

specifically the Automation and Production Technology program is trending unfavorably. The same is noted in ET and related program enrollment at the colleges. Effort should be made to increase female participation.

- Testing for ET program alignment with the MSSC test topic area of Maintenance Awareness should be undertaken.

- As a measure of industry engagement with FLATE, contributions (both cash and in-kind) have been trending flat since 2008. Review this measure to determine whether this is still a useful measure for industry engagement or replace it with one or more others which can provide actionable information.

Appendices
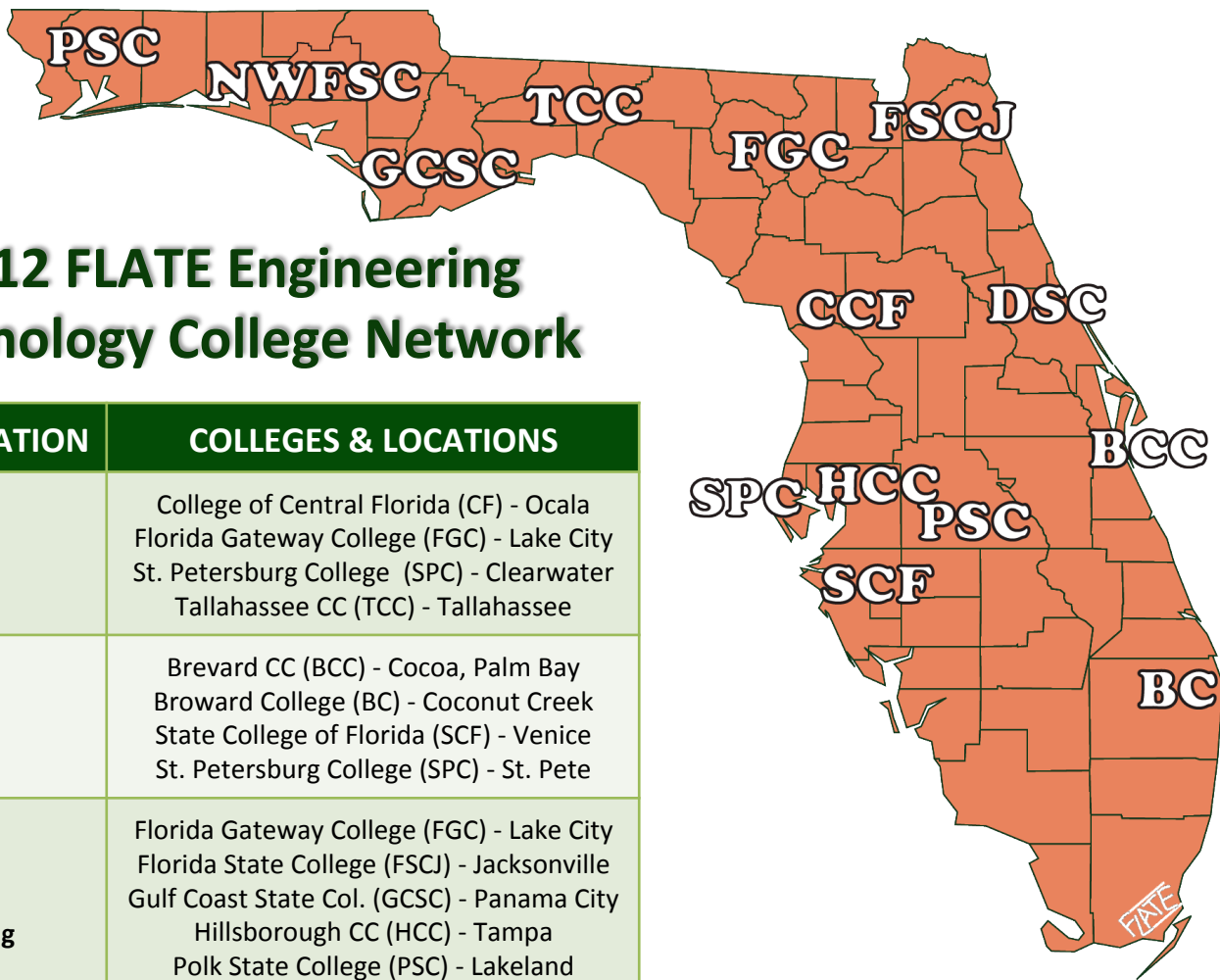
2012 FLATE Engineering Technology College Network

PSC NWFSC TCC FGC FSCJ GCSC CCF DSC BCC SPC HCC PSC SCF BC

SPECIALIZATION	COLLEGES & LOCATIONS
Quality	College of Central Florida (CF) - Ocala Florida Gateway College (FGC) - Lake City St. Petersburg College (SPC) - Clearwater Tallahassee CC (TCC) - Tallahassee
Electronics	Brevard CC (BCC) - Cocoa, Palm Bay Broward College (BC) - Coconut Creek State College of Florida (SCF) - Venice St. Petersburg College (SPC) - St. Pete
Advanced Manufacturing	Florida Gateway College (FGC) - Lake City Florida State College (FSCJ) - Jacksonville Gulf Coast State Col. (GCSC) - Panama City Hillsborough CC (HCC) - Tampa Polk State College (PSC) - Lakeland Tallahassee CC (TCC) - Tallahassee
Fabrication & Design	Gulf Coast State Col. (GCSC)-Panama City Florida State College (FSCJ) - Jacksonville Polk State College - Lakeland Tallahassee CC (TCC) - Tallahassee
Advanced Technology	Brevard CC (BCC)- Cocoa, Palm Bay Tallahassee CC (TCC)- Tallahassee
Biomedical Systems	Broward College (BC)- Coconut Creek St. Petersburg College (SPC) - Clearwater
Digital Design & Modeling	College of Central Florida (CF) - Ocala Gulf Coast State Col. (GCSC) - Panama City State College of Florida (SCF) - Venice St. Petersburg College (SPC) - St. Pete Tallahassee CC (TCC) - Tallahassee
Alternative Energy Systems	Brevard CC (BCC) - Cocoa, Palm Bay Broward College (BC) - Coconut Creek Gulf Coast State Col (GCSC) - Panama City Tallahassee CC (TCC) - Tallahassee

FLATE

NSF

Updated 11/11/2012

FLATE 2012 Online Publications, Products, Awards and Recognitions

FLATE's combined online resources: websites www.fl-ate.org and www.madeinflorida.org , curriculum resources, FLATE Best Practice Guides, and online FLATE *FOCUS* Newsletter have attracted the interest of over 84,000 visitors between 2009 and 2013.

Online Resources - Best Practice Guides

2012, Forging Positive Partnerships in Florida: Strategies for Starting and Sustaining School-Industry Partnerships, a FLATE Best Practices Guide (Finalized and printed Jan. 2013).

2012, FLATE Communications Program, a FLATE Best Practices Guide to Designing Strategic Communications Tools

2012, (Revised) Middle & High School Field Trips to Florida High Technology Manufacturing Facilities, a FLATE Best Practices Guide originally published in 2011.

2012, (Revised) Robotics Camp Survival Guide, a FLATE Best Practices Guide originally published in 2011.

All FLATE Best Practice Guides are available in print-ready format or online at http://www.fl-ate.org/

FLATE's model of continuous improvement led to 2011 Best Practice Guide revisions which included improved survey formats and forms based on benchmarking, staff and stakeholder feedback, and updated curriculum resources and associated references.

2012 Journal Publications

FLATE publications are downloadable resources available on the FLATE website at
http://www.fl-ate.org/news/publications.html

Barger, M., Gilbert, R., Owens, E., Aligning Florida's Manufacturing Programs with External Standards: Closing the Loops. *American Society of Engineering Education (ASEE)*, June, (2012).

Barger, M., Gilbert, R., Orozco, D., Wosczna-Birch, K., Weeks, P., Developing International Education Opportunities for U.S. Manufacturing Technician Students. *American Society of Engineering Education (ASEE)*, June, (2012).

Boyette, M., Industry Day Programs Connect Students with Florida Manufacturers," *National Career Pathways Network Connections*, p.4-6, v. 23-1, (2012). http://www.cordonline.net/connections/

2012 FLATE Awards and Recognitions

2012 Florida Career Pathways Network (NCPN) Best Practice Awards

NCPN honored FLATE with two leadership Best Practice Awards for outstanding leadership in support of Florida's career pathways:
> *Made in Florida* **Industry Tours: A Best Practice for Seeding Partnerships**
> **Pathways to great Manufacturing Careers**

FLATE

Florida Advanced Technological Education Center of Excellence
www.FL-ATE.org   ●   www.MadeInFlorida.org   ●   www.flate.pbwiki.com

2012 FLATE Awards and Recognitions

2012 Florida Career Pathways Network (NCPN) Best Practice Awards

NCPN honored FLATE with two leadership Best Practice Awards for outstanding leadership in support of Florida's career pathways:
> *Made in Florida Industry Tours: A Best Practice for Seeding Partnerships*
> *Pathways to great Manufacturing Careers*

2012 ePIE Award presented to FLATE in recognition of commitment to students of Manatee County and for dedication as an outstanding partner for the 2011-2012 School year

ePIE (**P**artners **I**n **E**ducation) connects businesses and organizations with schools (via the web) to initiate partnerships that enhance student learning and promote school involvement in the community. Through successful Partnerships In Education, schools and businesses will be able to develop unique methods of accomplishing educational goals that could not be realized without each other. These partnerships often result in opportunities for students that would otherwise be impossible.

18th Annual Communicator Award of Distinction for FLATE's *Made in Florida* online educational video

The Communicator Awards honor "work that transcends innovation and craft - work that makes a lasting impact." The Award of Distinction is presented for projects which exceed industry standards in quality and achievement. Winning entries for the Communicator Awards are selected by the International Academy of Visual Arts and judged to evaluate distinction in creative work, and based purely on quality of craft.

Green Genome Award

This first Green Genome Award, presented by the American Association of Community College's (AACC) Sustainability Education and Economic Development (SEED) Center, honors exemplary community colleges across the country that have taken a strategic leadership role in green economic and workforce development and sustainability. FLATE is recognized in the submission as part of the long-standing commitment HCC has to addressing regional and statewide workforce needs:

> A few years ago when the State of Florida began experiencing a shortage of engineering students, HCC's Florida Advanced Technological Education Center (FLATE) led a statewide effort to develop an Engineering Technology degree that has embedded certificates in the areas of Advanced Manufacturing, Alternative Energy, and Industrial Energy Efficiency. Additionally, we have utilized a sector-based approach to workforce development which provides students with cross-functional skills that enhances their ability to move within and between related industries.

HI-TEC Educator of the Year Award to Brad Jenkins, FLATE Co-PI, St. Petersburg College (SPC)

Brad was recognized for innovation in his programs and courses and for reshaping statewide technology programs. Co-PI of FLATE since 2002 and a member of the FLATE leadership team and co-chair of the Florida Forum on Engineering technology, Brad heads up curriculum and professional development for college faculty throughout Florida, and works with local and statewide industry organization and economic workforce development agencies to ensure alignment of academic programs with industry needs. Brad has served on SACS and TAC ABET visiting teams and the Engineering Technology Leadership Committee for ASEE at SPC. Although he holds an administrative position, he continues to teach at least one course each semester.

International Honor Society for Technology and Education Inducts Dr. Marilyn Barger

Congratulations to FLATE's Executive Director, Dr. Marilyn Barger for being inducted into Epsilon Pi Tau, the International Honor Society for Technology and Education. Dr. Barger was inducted based on the recommendation of colleagues from ITEEA during a special initiation ceremony for new exemplary practice members during the 74th International Technology and Engineering Educators Association Conference in Long Beach, CA on March 16, 2012. Plans are currently in progress to establish a Florida chapter at one of FLATE's partner colleges.