POS-IMPACT LLC
18331 Pines Boulevard, # 126
Pembroke Pines, FL 33029
Tel: 954.684.2642
Email: info@pos-impact.com
www.pos-impact.com

May 16, 2018

Dr. Celeste Carter
National Science Foundation
4201 Wilson Blvd.
Arlington, Virginia 22230

Dear Dr. Carter:

As the External Evaluator, I have completed the FLATE Annual Evaluation Report for the year ending December 31, 2017, and have enclosed it with this letter. Please contact me with any questions.

Sincerely,

Phil Centonze
Co-Founder and Managing Partner

Florida Advanced Technological Education Center (FLATE) Evaluation Report
For Year Ending December 31, 2017

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://fl-ate.org/about-us/sterling-evaluation/ 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 have assured stakeholders that FLATE operated 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 sections. Section I (page 3) is centered on FLATE's operational goals with a section that includes other elements of performance in key areas. Section II (page 9) includes effectiveness results measures relating, in four sections, to the four overall organizational effectiveness strategies: Sustainability, Curriculum Development and Reform, Outreach and Recruitment, and Professional Development, which speak directly to NSF's expectations for FLATE. Section III (page 27) has a different flavor than in past reports. Since this report comes at the end of a series of grant awards, it includes a summary of overall observations of best practices and lessons learned for improvement of similar centers and future grant awards.

***Key Best Practices and Lessons Learned**:*

- Use of the Baldrige-based, Florida Sterling management model for high performance in establishing Center strategy and as a basis for Center evaluation.
- Leadership's clear vision for the future of mission-elements sustainability.
- Strong focus on the needs and requirements of customers and stakeholders.
- Systematizing Center activities to collect input from and accommodate satisfaction of customers and stakeholders.
- Regular and consistent two-way communications systems with customers, stakeholders, staff, volunteers, evaluator, partners, and other collaborators; to enhance engagement.
- Innovative approach to curriculum development.
- Compartmentation of and a partnership approach towards enhancing durability of the Center's missions.
- Expansion and inclusion of geographically diverse stakeholders, customers, and partners.
- A systematic targeting for partnerships of potential customers and stakeholders.
- Early focus on recruitment of female and minority participants into manufacturing education programs.
- Management structure that quickly capitalizes on supplemental funding opportunities to address new needs identified by current or new partners (stakeholders).

I. FLATE Operational Goals

Section A. FLATE Goals

FLATE Goals as supported by their related Objectives and Effectiveness Measures were the foundation of FLATE strategies for operational performance success. Tables 1, 2, 3 and 4 align sustainability, curriculum development and reform, outreach, recruiting, and professional development goals to their corresponding Effectiveness Measures. The current Effectiveness Measures and their links to FLATE Specific Goals and Target Objectives for this current grant cycle, can be found in Appendix A.

For additional details and descriptions, please refer to the following link for Strategic Hierarchy in Appendix B or at http://fl-ate.org/wp-content/uploads/2015/01/FL-ATE-2012-2015-Strategic-Hierarchy-11-16-pc.pdf

Goal: Effectiveness of Sustainability Efforts. "To ensure that FLATE's mission is sustained." There were 10 target objectives with seven corresponding effectiveness measures (Table 1).

Table 1. Effectiveness of Sustainability Efforts

Measure/Indicator		Measure/Indicator	
SE-1	Hillsborough Community College-Brandon organizational chart with shared positions	SE-5	Publish transportable models addressing NSF-ATE needs and relationships
SE-2	Sterling Evaluation score trend chart	SE-6	Keep record and copy of submitted documents
SE-3	Stakeholder Survey trend chart scores	SE-7	Number of people and projects supported
SE-4	Receive Florida Sterling Challenge recognition		

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 were 11 target objectives with 14 effectiveness measures (Table 2).

Table 2. Effectiveness of Curriculum Development & Reform Efforts			
Measure		**Measure**	
CE-1	Number of adopting institutions from South Florida	**CE-8**	ET Student enrollment and completion report
CE-2	Number of Department of Defense (DOD) articulations adopted by Engineering Technology (ET) partner schools	**CE-9**	Number of curriculum modules adapted from ET core for pre-engineering
CE-3	Number of technician certifications earned	**CE-10**	Populate curriculum repository with ET core curriculum and include interface to ATE Central
CE-4	Aligned ET degree skills to additional stackable credentials	**CE-11**	Identified common cross cluster technical skills
CE-5	Aligned ET degree skills to Manufacturing Skills Standards Council (MSSC) standards	**CE-12**	Number of users of integrated ET content
CE-6	Aligned ET degree skills to international endorsed credential	**CE-13**	Number of ET related high schools and Post-Secondary Adult Vocational School (PSAV) programs
CE-7	Aligned skills to another state's same major manufacturer	**CE-14**	Number of ET degree colleges

Goal: Effectiveness of Outreach and Recruitment Efforts. "To provide an effective outreach platform for Florida's high school, community college, industry, and legislature to access information related to the requirements for, and impact of manufacturing education." There were six target objectives with six corresponding effectiveness measures (Table 3).

Table 3. Effectiveness of Outreach & Recruitment Efforts			
Measure		**Measure**	
OE-1	Number of students impacted by Made-In-Florida	**OE-4**	Number of Manufacturers Associations implementing regional manufacturing activities
OE-2	Published STEM education best practices	**OE-5**	Report on FLATE's Graduate Connection Program
OE-3	Number of outreach events and partnerships	**OE-6**	Number of website hits

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 were five target objectives with five effectiveness measures (Table 4).

Table 4. Effectiveness of Professional Development Efforts

Measure		Measure	
PDE-1	The number of teachers supported	PDE-4	Published Professional Development best practice
PDE-2	Professional development hours trend	PDE-5	List of professional development events
PDE-3	Number of statewide Forum models implemented		

Section B. Supplemental Projects in Support of FLATE Goals and Other Partnership Support

As indicated as a FLATE "key best practice", there are several supplemental projects that include activities coincident with FLATE objectives and goals that support its mission that FLATE initiated or executed in this reporting period. These supplemental projects allowed FLATE to:

(a) Develop a model for FLATE as an NSF-ATE Center of Excellence to interact with the Manufacturing USA Institutes as demonstrated with joint activities with PowerAmerica.

(b) Bring the Engineering Technology (ET) community together at ET Forum in Key West, Florida to show support for the new ET Degree program adoption at Florida Keys Community College. The relatively isolated and distant location of this college accented the impact of holding the ET Form at that location.

(c) Increase the numbers of Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) certified instructors within the Florida College system and its feeder Career and Technical Education (CTE) programs around the state.

(d) Develop a process for transferring FLATE to a State of Florida supported Center within the operating structure of FloridaMakes, the Manufacturing Extension Partnership (MEP) National Network member for Florida.

All of these projects aligned with FLATE's **Curriculum Development and Reform** goal. For example the project (a) with PowerAmerica was to establish a working partnership to define and identify the best opportunities for Advanced Technological Education (ATE) projects and centers to work with various Institutes. The project proposed several meetings between one or more of centers and the leadership of one or more of the institutes. Specific work with the PowerAmerica institute includes professional development for ATE center educator-stakeholders

related to the wide-band-gap technology of PowerAmerica. This included: three meetings with the Leadership of PowerAmerica; Four educator-stakeholders from three ATE centers, attended a two-day professional development workshop at PowerAmerica regarding wide band gap technologies and applications and; ongoing communication that will seed a strong working relationship with specific goals and objectives currently focused on more professional development opportunities. This specific project effort has also fostered working interactions with several other Manufacturing USA institutes including Advanced Functional Fabrics of America (AFFOA), Advanced Robotics Manufacturing (ARM), and NextFlex.

The other three projects (projects (b), (c) and (c) listed above focused on FLATE's **Outreach and Recruitment**, **Faculty Professional Development**, and **Sustainability** related goals**.** Interactions with FloridaMakes include the transition of FLATE's state-wide annual coordination role for MFG Day activities into FloridaMakes to assure focus is maintained post-FLATE. A Memorandum of Understanding (MOU) with FloridaMakes has been executed. FloridaMakes and FLATE have coordinated to support MFG Day 2017 in Florida. This project has led to more in-depth transition with a long-term goal to develop a world-class technical workforce that will be the backbone of Florida manufacturing. Besides MFG Day coordination, many other FLATE functions are being assimilated into FloridaMakes (See Appendix C, the FLATE Sustainability Workplan). FLATE will continue to support workforce education and development functions as part of FloridaMakes. This integration will allow the blending of focused resources and expertise of the two organizations to accomplish the overlapping manufacturing workforce development mission and ultimately provide manufacturers and educators more comprehensive and integrated services.

The project (c) with the Manufacturing Skills Standards Council (MSSC) related to Faculty Professional Development and thus to FLATE Goals for **Sustainability** and **Curriculum Development and Reform**. The goals of the project were twofold. The first is to strengthen the relationships and build the pipeline between the college ET AS degree programs and their local high schools offering Advanced Manufacturing Career and Technical Education programs. Second, is to increase the number of students from the high school programs using the statewide

articulation of the MSSC Certified Production Technician (CPT) credential for credit towards the ET AS Degree.

Additionally, this project was intended to expand a community of practice among high school educators so they can bolster their programs and increase the success rate of high school students taking the MSSC CPT assessments. Eleven high school educators were enrolled in a FLATE – facilitated training course for the CPT and passed the credential examinations. FLATE also brought these educators and others together to discuss and define important topics in which high school students have difficulty, to develop classroom activities to address these areas. While FLATE was working with educators, MSSC personnel visited manufacturers, industry groups, economic development organizations, and school administrators in those regions from which the educator participants have come, to inform more companies and stakeholder s of the values of the credentials.

The project's long term intent is to increase the Florida high school students' CPT assessments passing rate to 80%. This numeric goal is a longer-term objective beyond the timeline of this project. Partner educational institutions in this project were Armwood High School, Bayside High School, Heritage High School, F. Peterson Academies, Wakula High School, Northview High School, Eastern Florida State College, Florida State College at Jacksonville, Pensacola State College, Hillsborough Community College, Lake Sumter State College, College of Central Florida, and Tallahassee Community College.

II. Operational Performance Results

Section A. Effectiveness of Sustainability Efforts

Refer to Table 1 on page 3. FLATE had developed and updated a sustainability plan, in matrix format, to identify key functions and elements of the FLATE mission which should be sustained beyond the life of the NSF-ATE award. The plan is attached as Appendix C. The plan identifies potential partners willing and able to integrate certain elements of FLATE's functions into their own organizations. A number of those partners have already begun the transition of function. FloridaMakes, as a FLATE partner, will be playing a key role in providing sustainability to a number of FLATE functions by becoming the host organization for the NSF-ATE center in 2018 and providing financial support. This transition will ensure that previous investment by NSF-ATE in the center continues to have a positive impact on the manufacturing and education community in Florida for the long-term.

Results of Effectiveness Measures SE-1 and SE-6 (i.e. creating an organizational chart and keeping records of submitted documents) will not be reported here. These are administrative indicators. This report is focused on measures of effective performance.

There has been no update to Effectiveness Measure SE-2, with regard to the Florida Sterling bi-annual self-assessment. The latest information was reported in the evaluation report for 2016. Regarding related Effectiveness Measure SE-4: the Florida Sterling Challenge recognition had not been attempted.

There has been no update to Effectiveness Measure SE-3, with respect to the biannual Stakeholder Survey. The 2015 survey was the final survey of FLATE stakeholders.

Addressing Effectiveness Measure SE-5, FLATE has published ten Best Practice Guides recommended by stakeholders to fulfill part of its NSF mission by sharing organizational learning and expertise through dissemination. Since 2010 FLATE has developed and distributed both electronically and in hard copy, a "FLATE Best Practice Guide" series. The series of

booklets is a compilation of best practices derived from experience with organizational comparisons, focus groups and stakeholder feedback. The series has become very popular among educators. The series titles with descriptions were provided in the 2017 Evaluation Report. No new titles were added in 2017.

The following information addresses Effectiveness Measure SE-7. FLATE mentored a number of institutions in 2017. These and non-NSF-ATE mentoring efforts have increased FLATE's opportunity for mission sustainability, to provide ongoing professional development for the Florida educators and program coordinators regarding careers and educational pathways in manufacturing.

- Mentoring and support for PathTech LIFE and Colin College ATE projects. The PathTech LIFE project (NSF#1501999) supported analysis efforts at the University of South Florida's Department of Sociology and College of Education, and FLATE to conduct a national survey. Individuals were surveyed after completing coursework, certification, and AS/AAS degrees in advanced technologies at community colleges. The survey provided data to assess the impact of education, employment background, career goals, and work-life balance issues of community college students enrolled in advanced technology courses and certificate and degree programs. The project also provided unique reports to participating colleges with a statistically significant number of students completing the survey.

- Partnered with CORD and ET Degree educators in CORD's Necessary Skills Now grant, developed project-based learning modules that integrate employability skills in manufacturing modules. In 2017 the project provided SME's with pilot tested modules and conducted workshop training secessions with developed modules.

- FLATE continued working with partners, such as the DEAF-Tec Center and the AbleTrust, to increase opportunities for special needs students.

- Continued strengthening of the partnerships with the Florida Association for Career and Technical Education (FACTE), and the Florida Association for Industrial and Technical Educator (FAITE), a division of FACTE, by providing leadership and professional development for Florida CTE educators.

- FLATE, in partnership with the Centers Collaborative for Technical Assistance (CCTA), created a web portal project to provide coaching on programs and consortium issues, in-person convening, webinars support, and peer-to-peer learning.

- Mechatronics Community Exchange (MCE), as a growing national community, was developed and supported by FLATE, and provided professional development opportunities for its members and defined common knowledge and skill set components among the programs of Exchange members.

Section B. Effectiveness of Curriculum Development Efforts

Table 2 on page 4 lists the categories associated with the Effectiveness of Curriculum Development Efforts. There are 25 colleges in the Florida College System that could offer the FLATE-developed Engineering Technology (ET) AS degree program. By the end of 2017, 23 of these colleges with manufacturing-related programs had adopted and implemented the ET AS degree program. Valencia College at Osceola and St. Johns River State College at Orange Park are planning to adopt and implement the program in the 2018-2019 academic year. FLATE continued to mentor the new ET AS degree programs both in and outside of Florida. See Table B-1.

Table B-1 Academic Year – ET Degree Program Framework Adoptions

Academic Year	Number of Colleges
2007-2008	3
2008-2009	5
2009-2010	10
2010-2011	11
2011-2012	13
2012-2013	13
2013-2014	14
2014-2015	19
2015-2016	19
2016-2017	22

Eastern Florida State College (Cocoa)	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 State College
State College of Florida (Venice)	Tallahassee Community College
Northwest Florida State College (Niceville)	Broward College (Coconut Creek)
Gulf Coast State College (Panama City)	Seminole State College (Sanford)
Pasco-Hernando State College (Port Richey)	Palm Beach State College (Palm Beach Gard.)
Chipola State College (Marianna)	Lake Sumter State College (Leesburg)
Florida Keys Community College (Key West)	North Florida Community College (Madison)
South Florida State College (Avon Park)	St Johns River State College (Palatka)[&]
Valencia College (Orlando) [&]	Daytona State College (Daytona Beach)*

[&] first classes in 2018-2019 *DSC has also established a ET BS degree program incorporating FLATE ET frameworks

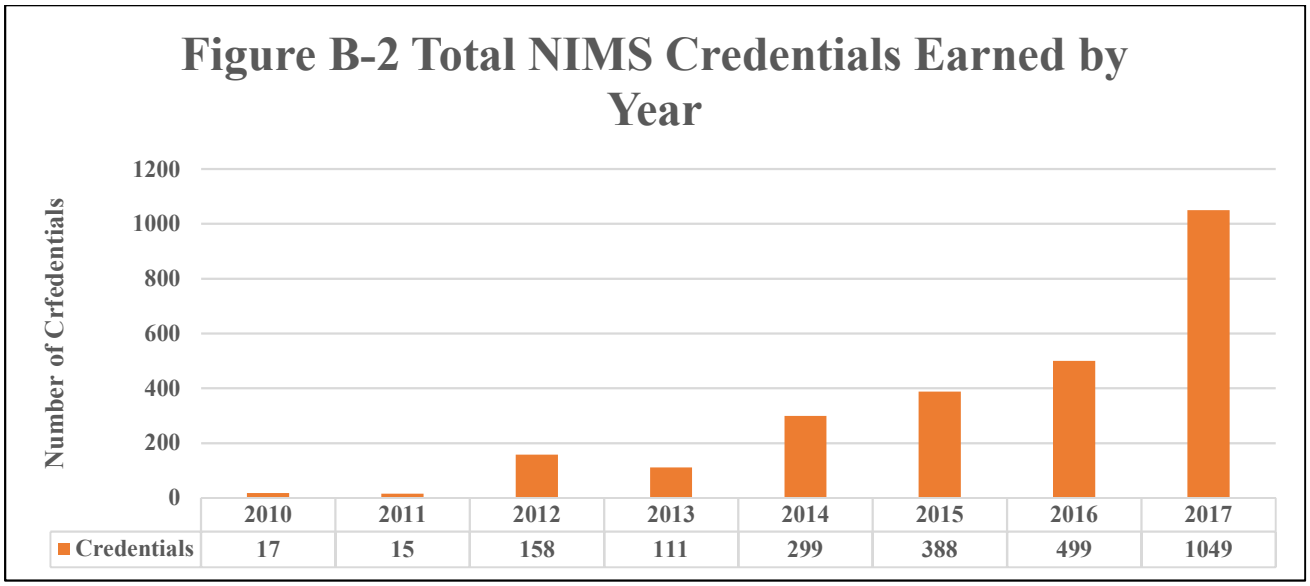
FLATE also developed 20 FLDOE frameworks, 20 college credit certificates, and 11 specializations. Frameworks are reviewed on a regular basis (legislatively mandated every three years) to maintain strong alignment to industry jobs and demands. FLATE continued to promote and expand the ET forum model to other advanced technology education programs (more information in the Student Enrollment Trend Study). This table addresses Effectiveness Measures CE-1 and CE-14.

Effectiveness Measure CE-2 relates to the number of DOD articulations adopted by ET partner schools. There are no articulation documents at this time. The current practice with the colleges offering the ET degree was to address the value of a student's military and DOD awarded credentials on an individual bases. The motivation for this practice was driven by the variations in the skills defined by each service for an issued credential. The practice is also optimal for colleges with a low or sporadic number of veteran applicants. FLATE continued to monitor this practice with the intent to facilitate an articulation effort when colleges have indicated their intent to execute such an agreement.

With regard to Effectiveness Measure CE-3, in 2017, an increase of 449 Manufacturing Skills Standards Council (MSSC) Certified Production Technicians (CPT) brought the cumulative total to 14,062 since introduction 11 years ago. The MSSC CPT certification is an advantage for students in the ET AS degree program as 15 college credit hours contribute towards the degree.

This is an industry certification also on the FLDOE approved credential list. The high number of certifications in Florida showed strong support for basic manufacturing knowledge. This was the first FLDOE approved articulation of industry certification for college credit. It is currently the only certification that carries Florida's Gold Standard (based on awarding 15 credit hours). FLATE was responsible for this achievement which now is a model for other programs in the state and across the country (e.g. Central Arizona College and Virginia Western Community College have emulated the model).

Figure B-2 Shows numbers of the National Institute for metalworking Skills (NIMS) credential certifications earned in Florida each year. The numbers have grown steadily since 2004.



Alignment of MSSC CPT, NIMS, and American Welding Society (AWS) certifications address effectiveness measures CE-4, CE-5, and CE-6. These certifications are aligned to the FLDOE curriculum frameworks at the secondary, post-secondary vocational, and college levels. These are posted on the FLATE wiki pages, http://flate.pbworks.com/w/page/49891236/ET%20Modules. These alignments to the certification standards make it easier to move forward with a strongly aligned secondary/post-secondary to community college program articulation. The statewide transportable articulation used with the stackable credentials provide efficient accelerated degree pathways.

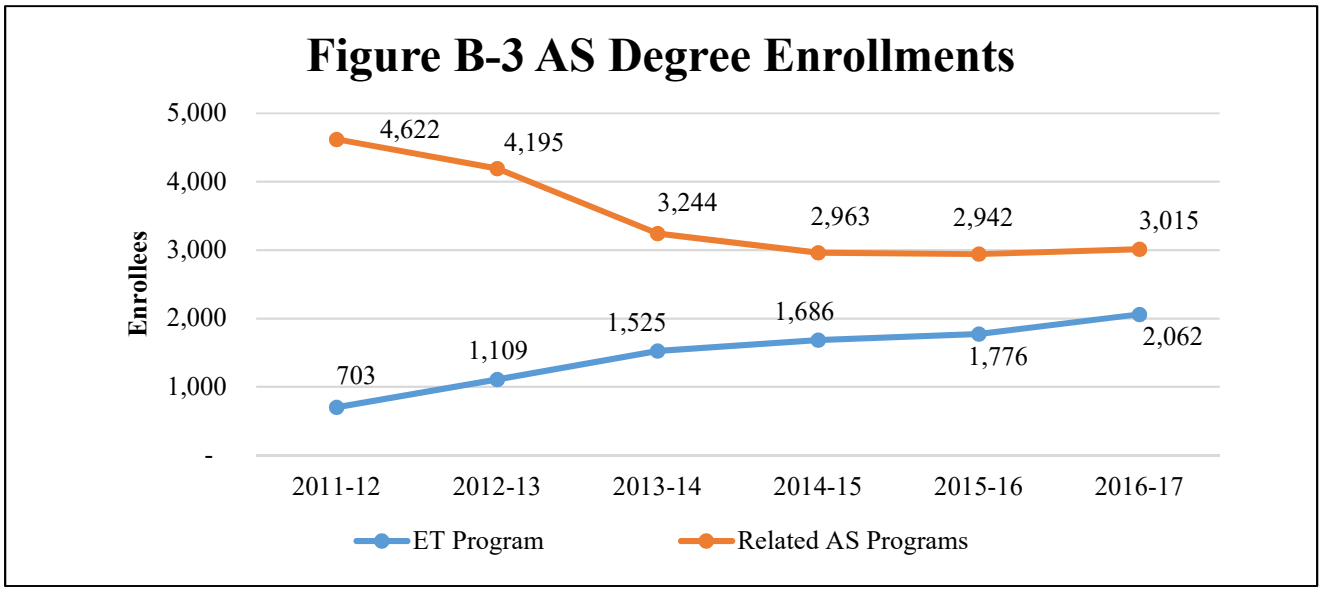
For the 2015-2016 academic year, three articulated high school frameworks were submitted to the Florida Department of Education (FLDOE). None were submitted in 2017. FLATE had reviewed, reformed, and aligned the FLDOE Machining Technologies framework with NIMS credentials for Machining-Level I and Level II; the FLDOE career and technical education (CTE) standards for the High School Welding Technology Fundamentals Program; the FLDOE Post-Secondary Adult Vocational (PSAV) Welding Technology-Advanced Program with the American Welding Society (AWS) National Standards for Level I-Entry Welder and Level II Advanced Welders.

The Florida Curriculum Frameworks completely document and direct all aspects of career and technical education in Florida. These CTE platforms was enhanced by FLATE's development with FLDOE a robust review process for the ET AS degree. In addition to the workforce skills and knowledge in defined occupations, the high school curriculum frameworks FLATE designed and developed includes alignment to academics (literacy, mathematics, science) and the new Florida standards. These standards enhance the skills-based training the students get with applied foundational knowledge of principles and processes used in the technologies providing a strong base for career advancement and life-long learning. The improved alignment between secondary and post-secondary programs came from re-defining the post-secondary programs to be the same length as the high school programs. A typical high school course is 150 contact hours during a year. To align with high school programs, the post-secondary adult vocation frameworks should support programs of the same length or an integer multiple of 150. Florida's frameworks should include skill expectations for appropriate industry skills and knowledge standards as well as demonstration of reading, writing, literacy and mathematics skills. All CTE programs must also include Common Career Technical Core - Career Ready Practices, common to all career pathways.

Obtaining feedback from industries is also vital to reviewing curriculum content of schools preparing a competent workforce to meet industries' needs. A survey to collect industry input was developed by FloridaMakes in partnership with Polk State College (PSC), the ET Forum and FLATE. It was designed to guide and define curriculum content of schools preparing a competent workforce to meet manufacturers' technician workforce needs. The results of the workforce competencies survey are in Appendix D.

Target Objective CE-7 (i.e. Aligned skills to another state's same major manufacturer activities) was abandoned. The original partner in this effort, Sikorsky, conducted manufacturing activities in Florida and Connecticut. The connection of expected skills and knowledge held by technicians in both plants was important to the company and represented a joint effort between FLATE and the Regional Center for Next Generation Manufacturing (RGNCM). As the data acquisition phase began, the company shifted the targeted manufacturing operations back to Connecticut and no suitable alternative was found for this cross-state, company specific project.

Figure B-3, addressing Effectiveness Measure CE-8, displays enrollment data, respectively, for the ET AS degree program. The figure indicates a continued favorable trend and growing enrollment for the program.



No new data have reported by the FLDOE regarding completions in the 2016-2017 academic year. More detail about historic and current enrollment and completion data is available in Appendix E.

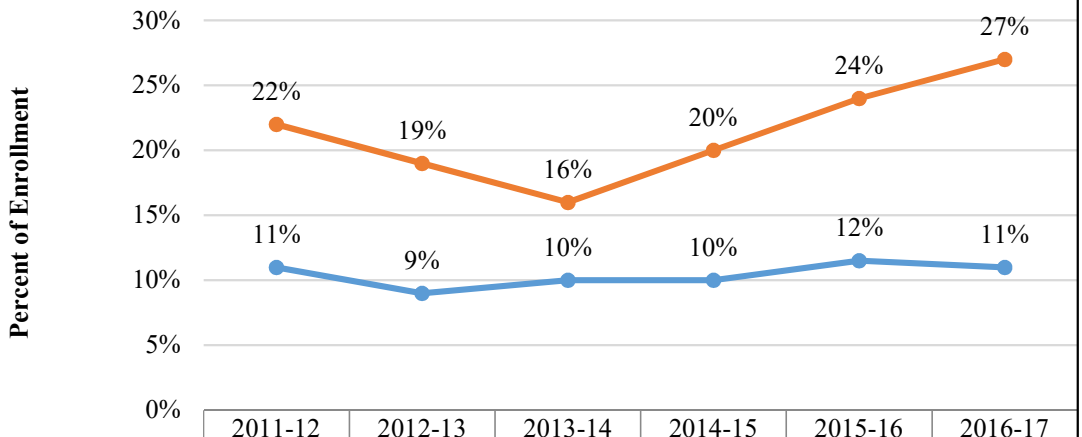
Especially noteworthy are the comparative enrollment data for related technology programs in Florida as shown in Figure B-3. These programs include Aerospace Technology; Biomedical Engineering Technology; Chemical Technology; Computer Integrated Manufacturing; Drafting & Design Technology; Electrical Distribution Technology; Electrical Power Technology; Electronics Engineering Technology; Industrial Management Technology; Manufacturing Technology; Simulation and Robotics Technology; and Supply Chain Management.

The number of students enrolled in the ET degree program since the 2011-2012 academic year shows an average positive slope of about 256 enrollments per year, while that in all the rest of the AS manufacturing related programs shows an average negative slope of 345 enrollments per

year. The relative annual growth in enrollments in the ET AS degree program in consistently higher than other related technology AS degree programs.

The next two figures, Figures B-4 and B-5, provide data on another aspect of ET AS degree program enrollment. These data indicate trends in growth of the minority and female enrollee populations in the ET AS degree program. The female enrollment trend (Figure B-4) lags in both, level and rate of increase when compared to female enrollment in other related AS programs.

Figure B-4 Percentage Female Enrollment

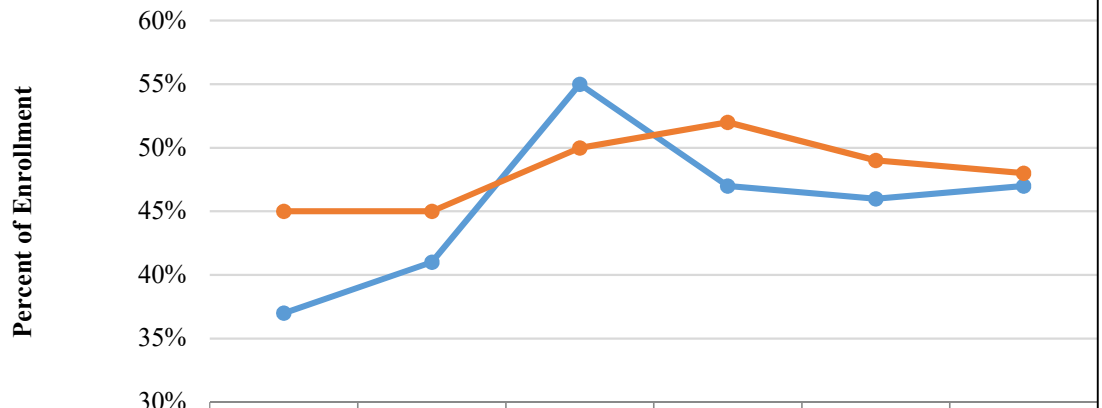


	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
ET Program	11%	9%	10%	10%	12%	11%
Related AS Programs	22%	19%	16%	20%	24%	27%

FLATE had continuous effort encouraging female participation in the enrollment pipeline, including the All-Girls Robotics Camps, girl camp scholarships, a webinar (recorded) about recruiting girls, a wiki page with resources for female recruitment, and, *Women in Manufacturing,* a video with a teacher resource guide.

The data in Figure B-5 show that minority enrollment in the ET AS program has grown to match minority enrollment in comparable related degree programs, at 47%.

Figure B-5 Percentage Minority Enrollment



	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
ET Program	37%	41%	55%	47%	46%	47%
Related AS Programs	45%	45%	50%	52%	49%	48%

The curriculum modules adapted from the ET core courses and MSSC CPT Certification address Effectiveness Measure CE-9. FLATE facilitated implementation of the modules in high schools. (e.g. East Lake High School in Pinellas County and Middleton High School in Hillsborough County). FLATE coordinated and mentored the integration of the MSSC CPT into the pre-engineering course of instructions at Middleton High School.

Effectiveness Measure CE-10 is addressed by the following information. FLATE reviewed its resources on its wiki site to determine which should be archived on ATE Central and worked with ATE Central to format appropriately for the repository. ATE Central has been designated the NSF ATE archive site for all NSF ATE resources, providing indefinite access to these resources. FLATE archived items on ATE Central were reviewed annually to update the archived versions of FLATE materials. This new designation of ATE Central as the NSF ATE archive site provides long-term sustainability of FLATE's digital resources.

Effectiveness Measure CE-11 relates to identified common cross-cluster technical skills. The Florida Department of Education has diminished support for AS degree programs that could be

incorporated into the ET and EET degrees. With this shift in mind, FLATE's cross-cluster technical skills identification first phase effort is defined by the MSSC cross referenced skills and how these skills match Standards and Benchmarks for the ET degree. Additional work with this Standard and Benchmark matching exercise is scheduled for the fall 2018 ET Forum. A Florida Department of Education program director has agreed to act as the facilitator for this ET Forum event.

Table B-6 addresses Effectiveness Measure CE-12, number of resource users. FLATE wiki page provides the resources and that content. The wiki does not have reliable user/visit tracking; however, it is freely accessible to educators, a fundamentally simple platform, and easy to use. There are no Google analytics tracking for ET pages or additional resources. However, K-12 user data were obtainable for 2017 as follows: High School Resources - 142 pages viewed, 68 users; and Middle School Resources - 149 pages viewed, 83 users. It is uncertain how and if resources will continue to be tracked since the data collection and analytics are not consistent.

Table B-6 Wiki Resource Users

	2017 Visits	2016 Visits	2015 Visits	2014 Visits
High School Resources	142	149	217	250
Middle School Resources	149	169	193	356
Career CTE Resources	319	399	308	195

FLATE's wiki site has evolved and matured in recent years to not only host curriculum resources (per table B-6) but other pages, including outreach, professional development, and recruiting resources, as well as curriculum to support the ET AS degree program, and related industry credentials. Visits on these additional resource pages have not been tracked.

Table B-7 addresses Effectiveness Measure CE-13, relating to the number of Secondary and Post-Secondary Adult Vocational (PSAV) school programs. Five new program offerings were on

tap in the 2016-2017 school year. As the data in the table show, total programs offered, enrollment, and completers in Secondary Schools spiked sharply in a favorable direction in the 2016-2017 academic year, after several years of nearly flat or declining growth. At the same time, the PSAV trend is unfavorable. It is unclear what has instigated these respective trends. However, all of these programs support manufacturing careers and are aligned and articulated to the ET AS degree, so their enrollment helps in tracking how students are using public manufacturing education suppliers.

Table B-7 Secondary and PSAV Programs Offered; Enrollments and Completions

Academic Year	2012-13	2013-14	2014-15	2015-16	2016-17
Secondary School					
Programs Offered	654	647	613	587	832
Enrollment in Programs	23,807	23,292	21,449	21,298	33,134
Program Graduates	3,529	3,384	3,266	3,269	5,058
PSAV					
Programs Offered	6	8	5	14	18
Enrollment in Programs	1,475	1,639	1,773	2,358	1,401
Occupational Completion Point (OCP) Earners	2,392	2,617	2,953	2,470	1,090
Full Program Completers	525	596	457	352	106

Effectiveness measure CE-14 is addressed coincident with Effectiveness Measure CE-1, the number of adopting institutions in Florida.

Section C. Effectiveness of Outreach and Recruitment Efforts

Refer to Table 3 on page 4. Also, see information addressing Effectiveness Measure SE-5 near the bottom of page 9. That information also applies and addresses Effectiveness Measure OE-2, relating to published STEM education best practices. Effectiveness Measures OE-1, OE-3, and OE-4 are addressed by the following data and information. In 2017, FLATE facilitated nearly 300 tours to 130 high-tech, manufacturing facilities throughout Florida for over 8,900 students, and 1,400 educators and parents. FLATE activities have provided students with exposure to real Science, Technology, Engineering, and Math (STEM) workplaces, primarily in manufacturing.

FLATE continued to coordinate statewide events on MFG Day and Month again in 2017, working with FloridaMakes and Regional Manufacturers Associations, and other partners and collaborators around the state. In September 2017, nearly the entire State of Florida was impacted by the direct effects of Hurricane Irma, which disrupted the normal flow of planned events for MFG Day. Many planned MFG Day events were rescheduled to accommodate the disruption. Despite this, FLATE and FloridaMakes were still able to garner impressively favorable impact numbers around MFG Day activities. The data in Table C-1 show the results of manufacturing community activity, with continuous growth in student involvement.

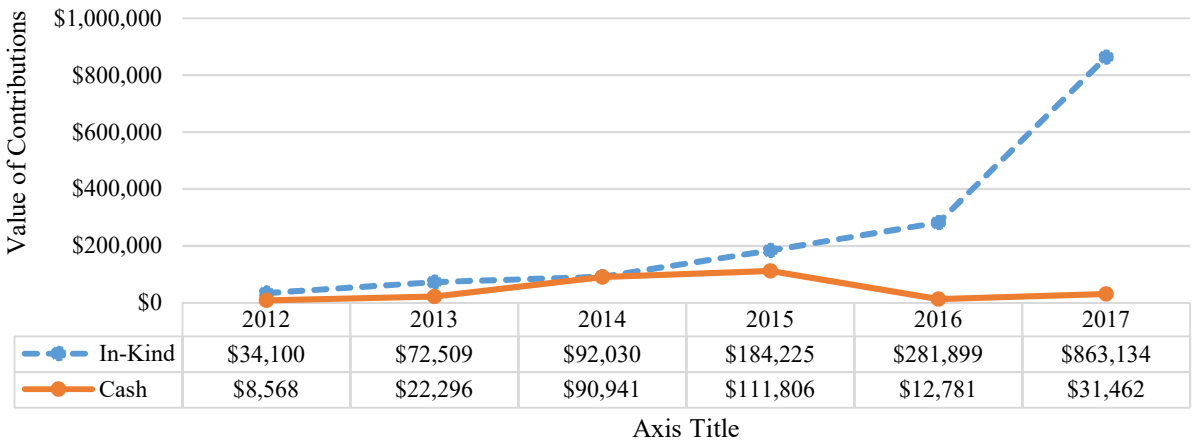
Table C-1 Key MFG Day Activities Trends

Year	# Tours	# Manufacturing Employees Involved	# Teachers	# Parents	# Students
2013	72	225	110	66	2307
2014	95	350	174	113	3150
2015	159	636	318	318	4770
2016	186	569	268	217	4.846
2017	293	515	259	120	5,020
Cumulative Totals	1,807	N/A	1,714	1,337	24,065

FLATE has developed and implemented processes for organizing and deploying effective student tours of manufacturing facilities and determining the impact they have on students and educators. Tour resources are available on the FLATE wiki page and best practice guides. Data collected include anecdotal evidence based on feedback from students, industry hosts, staff, and teachers as well as aggregated survey results from eight years of student tours of manufacturing facilities.

Partner engagement included participation in Made-In-Florida tours, MFG Day tours and activities, and sponsorships and other cash and in-kind donations, hosting FLATE meetings and events, and general outreach. The number of Regional Manufacturers Associations (RMA) participating across the state continued to remain strong. RMAs partnering with FLATE in 2017 included Bay Area Manufacturers Association, Upper Tampa Bay Manufacturers Association, Manufacturers Association of Central Florida, Mid-Florida Regional Manufacturers Association, Sarasota Manatee Manufacturers Association, Northwest Florida Manufacturers Council, and Southwest Regional Manufacturers Association, half of the active RMAs state-wide. Figure C-2 depicts the levels and trends in partner contributions, both cash and in-kind, to FLATE activities. These too were affected by the inclement weather conditions experienced in both 2016 and 2017. Cash contributions remained at low levels while in-kind contributions, mostly related to involvement in MFG Day activities, increased sharply in 2017 as is indicated in the figure.

Figure C-2 Partner In-Kind & Cash Contributions

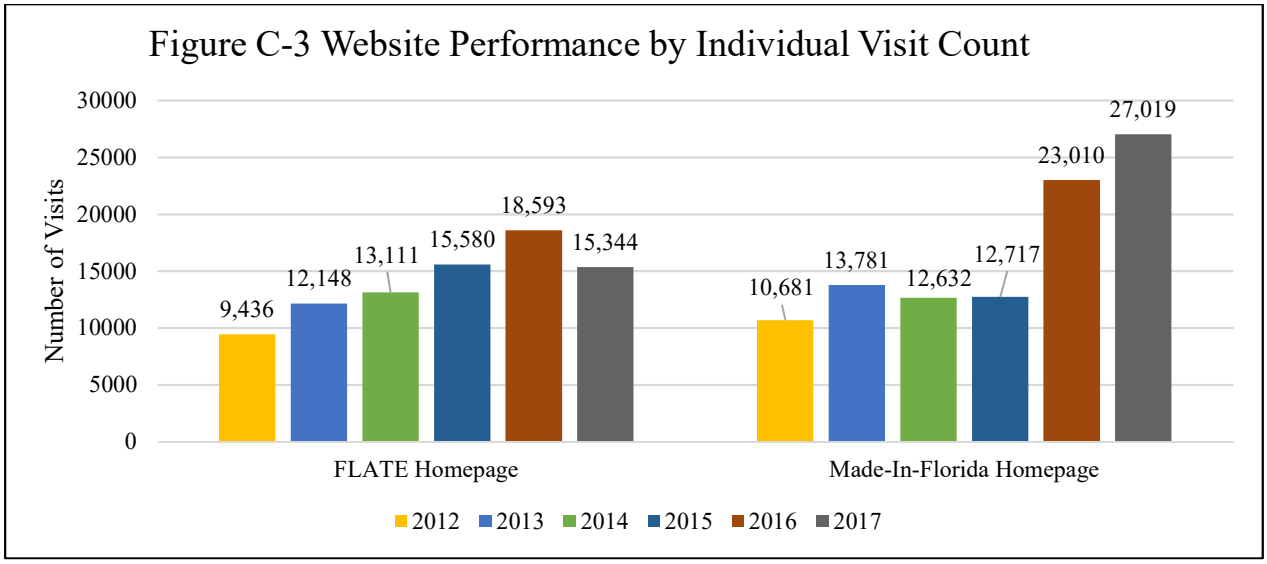


	2012	2013	2014	2015	2016	2017
In-Kind	$34,100	$72,509	$92,030	$184,225	$281,899	$863,134
Cash	$8,568	$22,296	$90,941	$111,806	$12,781	$31,462

Addressing Effectiveness Measure OE-5: In an effort to establish a connection with ET AS degree graduates in Florida, follow and track their career and educational pathways once they graduate from one of the colleges offering the degree, FLATE had established the LinkedIn® group: Graduate Connection Program. The effort represents a direct, call-to- action based upon the suggestions and feedback received during the National Visiting Committee meeting in 2014. FLATE created a site that interfaced with users' LinkedIn® profiles. FLATE maintained a "LinkedIn® profile" and moderated the exclusive LinkedIn® group. The profile worked similarly to an individual profile and was mainly a vehicle for FLATE to connect with industry and educational partners. The group was exclusive and open to ET degree alumni, students, and industry/employers. The LinkedIn® profile had grown to 200 industry and educator connections; the ET alumni page grew to 96 members comprised primarily of ET students, alumni, and some educators. The next phase of this effort is being drafted as a proposal plan for implantation is 2018 with FloridaMakes to track graduates into work and define the Return on Investment.

Figure C-3 addresses Effectiveness Measure OE-6. The data in Figure C-3 provide the summary view of the FLATE homepage and the Made-In-Florida home page performance. The data indicate the Made-In-Florida home page is trending favorably; FLATE home page visits had grown in visit count each year since 2009 except in 2017. The generally favorable trend in and growth of Made-In-Florida has outstripped the FLATE page hits. This could reflect the fact that, by composition, the Made-In-Florida content is more utilitarian for members of industry, education, and student populations.

Figure C-3 Website Performance by Individual Visit Count



Section D. Effectiveness of Professional Development Efforts

Refer to Table 4 on page 5. Addressing Effectiveness Measures PDE-1 and PDE-2: The curriculum FLATE presents in its workshops reflects the current technical knowledge and skill industry needs in its technical workforce. It will be made sustainable by the adoption of presented ideas into other resources used by STEM and career and technical educators, and passed along to students and other educators. Continuation of partnerships with the Florida Association for Career and Technical Education (FACTE), and the Florida Association for Industrial and Technical Educator (FAITE), have increased the opportunity to provide ongoing professional development for Florida educators and program coordinators about careers and educational pathways in manufacturing. FLATE has been a frequently requested partner and presenter for teacher professional study days. FLATE provided workshops onsite at its host college, or offsite at local schools. Of all the multiple day workshops, FLATE's summer workshops, typically for Florida educators, were the most popular. Some of these included, the FLATE Advanced Manufacturing Summer Institute on Robotics (AMSIR), co-sponsored by FACTE, and Lego Mind Storms Workshops, Introductory and Intermediate.

Subject matter experts were invited to workshops as panelists and teachers, to share relevant experience and best practices. FLATE shared professional development and workshop curriculum and instructional resources for educators through its free, online wiki at www.flate.pbwiki.com. FLATE maintained professional development curriculum and resources current by monitoring trends in education and industry needs, through close association and feedback from a cohort of vendor-partners, through informal and formal focus group sessions at meetings, and by integrating manufacturing topics into STEM education so that more teachers, students, and parents are exposed to advanced manufacturing concepts. FLATE workshops often included an introduction to its unique and award winning industry connected educational resources.

In 2017, FLATE provided 9,089 hours of professional development to 3,268 educators (K-14) and to 2,280 industry workforce members, economic and manufacturing personnel, and parents in multi-day workshops, presentations, and through online webinars at hundreds of events in Florida, nationally, and worldwide. Professional Development workshops predominately

included K-14 educators and staff, such as counselors and administrators, who attended FLATE workshops to learn more about STEM in advanced manufacturing and related subjects. FLATE delivered continuously increasing numbers of professional development hours provided to educators in a wide variety of venues.

Addressing Effectiveness Measure PDE-3: The ET Forum continues to be a popular and productive, well-attended event, which allows state college faculty direct interaction with Florida DOE program administrators, industry panels discussing their workforce needs, and professional development workshops. The ET Forum provides a viable means for industry and educators across the state to meet twice each year at different college locations to discuss common interests and issues surrounding the education of tomorrow's advanced manufacturing workforce. Representatives from over half of Florida's colleges regularly attended under FLATE's coordination. FLATE's sustainability plan describes a partner relationship with Hillsborough Community College to take over, control, and continue implementation of the ET Forum beyond the life of the FLATE grant.

The FLATE model for curricula topic Forums (i.e. ET Forum) among the state and community colleges have been duplicated in Florida. In 2008, Florida legislation was enacted which among other directives, commissioned FLATE to partner with the Florida Energy Systems Consortium (FESC) to prepare and execute a technician workforce plan that will put an alternative energy workforce in place. One of the specific accomplishments of this partnership has been the design, development, and implementation of the second statewide forum model, the annual Community and State Colleges Energy Education Workshop and Forum. Since then additional Forums have been developed and implemented in Florida.

There are three statewide programs that adopted and implemented the ET Forum model. These are the Florida Aviation and Aerospace Forum, the Fire Fighters education programs, meeting twice annually, and the Florida Energy Teachers Network (FETN) meeting once each year. In 2016, the FESC education workshop had merged with the FETN, an energy curriculum workshop and forum supported by the Florida Energy Workforce Consortium (FEWC).

Addressing Effectiveness Measure PDE-4: FLATE continued to distribute a guide for its FLATE Best Practices Series: *Professional Development*. The guide, as are all FLATE best practices guides, was and is available free of charge as an online flipbook or in print copy by request. It was disseminated at appropriate conferences and workshops. FLATE professional development experiences provided a practical understanding of advanced manufacturing and brought the opportunity of working with real equipment to Florida educators, who in turn relayed these experiences to their students.

Addressing Effectiveness Measure PDE-5, Table D-1 lists many of the FLATE initiated, sponsored, and implemented professional development events offered in 2017. Partnerships, including those with Able Trust, the Florida Association for Career and Technical Education (FACTE), and the Florida Association of Industrial and Technical Educators (FAITE), have presented many more opportunities for creating and presenting professional development for educators and program coordinators. In 2017, professional development activity participant feedback was that overall development value was scored at an average of 4.8 on a scale of 1 to 5 (1 = Poor; 2 = Fair; 3 = Good; 4 = Very Good; 5 = Excellent).

Table D-1 Selected FLATE Professional Development Events, 2017

Event Name	PD Hours
Outreach in Marion & Alachua County-Sara Lefills	1,890
CIEC Annual Conference	110
Nat'l Center for Supply Chain Automation Industry & Academic Forum	230
Black Brown College Bound Conf (Tampa)	114
CCTA partnership webinar	110
Spring ET Forum	475
Robotics Open House	108
FACTE-FLATE MSSC Partnership Project Workshop	152
EV3 Lego Mindstorms Teacher's Workshop	56
FLATE Manufacturing USA Strategic Partners Webinar 2	111
FANUC Robot Teachers Training	77
AVS SEW Workshop for Mid-Atlantic Section	256
Intro-Lego Mindstorms Robotics Teachers Workshop	77
Intermediate-Lego Mindstorms Robotics Teachers Workshop	84
51st FACTE Annual Conference & Trade Show	293
HITEC Conference and CCTA Convening	564
Fall ET Forum	303
AVS SEW Workshop Annual Conference	304
FLATE - Stavros Industry and Innovation	120

III. Summary

Based on outcome data and program implementation evaluation as assessed by the Florida Sterling criteria, FLATE has been a high performing organization. With the end of the grant award approaching, FLATE leadership and staff had focused on mission sustainability and continuous improvement of activities and processes. Currently those efforts have paid off. A number of FLATE key missions have found endurance in partnerships developed by FLATE during its life. A wide range of partnerships have been developed alongside a leadership and management system that intently listened to the voice of stakeholders for new opportunities and refinement of approaches in every aspect of FLATE operations. The organization was outwardly focused, finding means to share best practices within Florida and nationally, supporting and facilitating activity around the country to enhance technical education of the manufacturing workforce. FLATE had been recognized as a high performer as demonstrated by a range of awards earned by the organization, as well as the number of inquiries and requests made for mentoring assistance for development of similar programs in colleges across the country.

The leadership team's clear vision for sustainability of key elements of the FLATE mission is resulting in real return of the NSF-ATE investment. Customer and stakeholder focus is at the core of this result. Annual evaluation demonstrated the results, culture, and capacity to fulfill its mission, during the life of the award, in meeting the needs of the National Science Foundation, its customers, and stakeholders. Performance results validated the confidence of FLATE stakeholders and engagement of partners, as demonstrated through performance results, dissemination of and adoption of best practices in the state and nationally.

As this is the last evaluation report for the core FLATE Center NSF-ATE award, activities, and outcomes, key strengths and opportunities for improvement will not be discussed, as has been the format in previous evaluation reports. Rather, key best practices and lessons learned over the life of the FLATE Center are identified.

Key Best Practices and Lessons Learned from the life of the FLATE Center NSF-ATE Award:

- Use of the Baldrige-based, Florida Sterling management model for high performance to establish an evaluation plan focused on effectiveness and high-level outcomes of the center was strategically important. This industry-recognized model of high performing organizations, provided an organization-wide view of systems focused by visionary leadership in striving to meet the needs and requirements of stakeholders and customers, and then implementing processes to those ends. This approach was instituted by FLATE in its early stages of development. The model for high performance guided strategic and tactical decisions of leadership and staff. It aided FLATE leadership's clear vision for the future. This approach guided progress in systematizing Center activities enabling their absorption by partners and continued beyond the life of the Center.

- Focus on the needs and requirements of customers and stakeholders, followed up with processes and systems designed to accommodate those needs was indispensable to success. This was enhanced by regular and consistent two-way communications systems with customers, stakeholders, staff, volunteers, evaluator, partners, and other collaborators. The objective of two-way communications systems is to provide information, guide performance, and transfer feedback and learning, with the intent to fully engage participants at all levels. Engagement is defined as the intellectual and emotional commitment to the mission of the organization. Stakeholder and customer relationships grew in strength and number over the Center's life.

- FLATE's innovative approach to integration of an industry-recognized certification into manufacturing-related curricula was hugely attractive to stakeholders in industry and colleges. This aspect of the FLATE Center is a direct result of communication and engagement as described above. The ET AS degree program became a standard in Florida, widely-accepted, across the state, eventually even by those state and community colleges which were initially resistant.

- FLATE's compartmentation approach to addressing sustainability or endurance of the Center's missions is essential to experience a return on NSF-ATE investment in the long-term. This approach should be emulated. FLATE's segmentation and prioritization of its missions and functions enabled the Center to target specific partnerships capable and willing to assume designated functions, beyond the life of the Center.

- Expansion and inclusion of geographically diverse stakeholders, customers, and partners should be established early. This is especially important in a large region, such as the State of Florida, to ensure full engagement of participation and that the services and capabilities of the center are well-known and understood by potential customers and stakeholders.

- Early focus on recruitment of female and minority participants into manufacturing education programs is necessary. FLATE had fairly good success in attracting and guiding minorities into manufacturing and related programs. Relating to low rates of female participation, FLATE's efforts evolved to improve messaging and attractiveness to potential female participants.

- An approach to identify potential stakeholders (i.e. those not aware of the Center's mission, products, and services), to solicit input and listen for actionable information useful in improving and expanding deployment of products and services was an essential aspect of early deployment of the Center.

Appendices

Appendix A: FLATE Goals and Target Objectives

Appendix B: FLATE Strategic Hierarchy

Appendix C: FLATE Sustainability Workplan

Appendix D: Workforce Competencies Survey

Appendix E: 2012-2017 Student ET and Related Program Enrollment and Completions

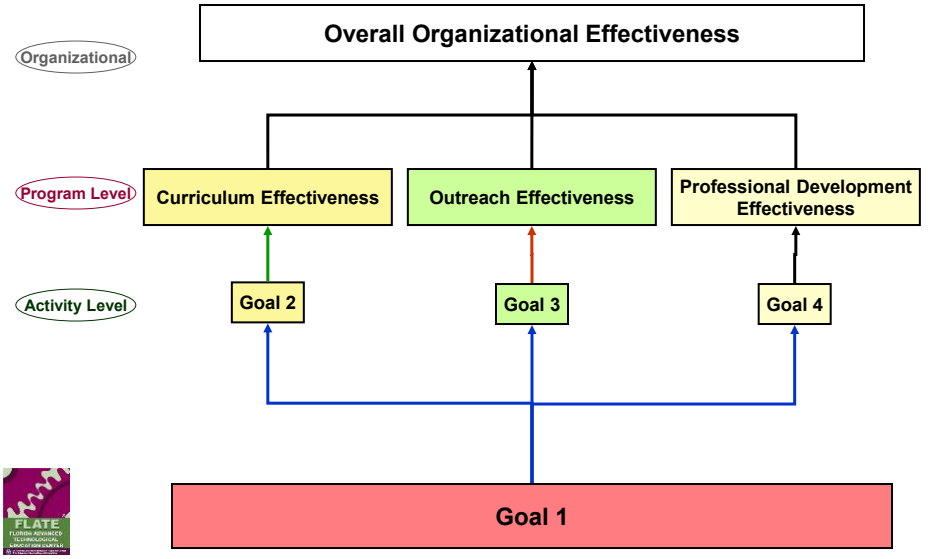
	FLATE Specific Goals and Target Objectives (2012-2015)	Effectiveness Measures
GOAL 1. To ensure that FLATE's mission is sustained.		
1.1	Execute the Center's institutionalization plan.	SE-1, SE-2, SE-3, SE-4, SE-5
1.2	Conduct, analyze, and act on bi-annual Sterling Assessment.	SE-2
1.3	Conduct, analyze, and act on bi-annual Stakeholders Survey.	SE-3
1.4	Conduct FLATE operations using defined Sterling quality principles & practices.	SE-4
1.5	Disseminate FLATE Best Practices for goals 2, 3, and 4.	SE-5
1.6	Execute Goal 2, 3, and 4 objectives to optimize their institutionalization.	SE-4
1.7	Maintain quality expectations of award winning "Made in Florida" campaign.	SE-5
1.8	Develop benchmarking approaches for ATE program impact data.	SE-7
1.9	Mentor ATE PIs and projects and organizations to impact technician education.	SE-7
1.10	Conduct NSF evaluation and reporting activities.	[SE-2,SE-3,SE-6,SE-2,CE-3,CE-14,OE-1,OE-4]
GOAL 2. 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.		
2.1	Expand south Florida student access to the A.S. ET degree.	CE-1, CE-14
2.2	Increase ET degree course & certificate articulations with Department of Defense technical training.	CE-2
2.3	Increase Florida student numbers with endorsed industry certification15%.	CE-3
2.4	Ensure ET Degree maintains its alignment with industry standards.	CE-4, CE-5, & CE-6
2.5	Facilitate academic alignment of stackable credential outside of Florida.	CE-7, CE-8
2.6	Develop content/expertise to support FLDOE manufacturing related clusters.	CE-10,CE11
2.7	Integrate ET content applications into a pre-engineering curriculum.	CE- 9
2.8	Offer faculty a shared online repository for ET related curriculum content.	CE-10, CE-12
2.9	Produce at least two industry aligned online Lesson Plans per year.	CE-10, CE-12
2.10	Facilitate 3 pre-ET degree programs.	CE-13
2.11	Support enrollment and completion for ASET to BSET programs in Florida.	CE-8
GOAL 3. To provide an effective outreach platform for Florida's high school, community college, industry, and legislature to access information related to the requirements for, and impact of manufacturing education.		
3.1	Continue to support and improve the "Made in Florida" campaign.	OE-1 through OE-6
3.2	Provide initiatives for female student enrollment and retention.	OE-1, OE-3
3.3	Provide STEM programs for traditional, at risk or special student populations.	OE-1, OE-3
3.4	Facilitate regional industry/local school partnerships.	OE-3 OE-4
3.5	Connect manufacturers to ET programs with graduating students.	OE-5
GOAL 4. 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.		
4.1	Support teacher externships with industry within Florida.	PDE-1
4.2	Implement annual faculty Summer Institute focused on emerging ET skills.	PDE-2, PDE-3
4.3	Offer STEM professional development opportunities for advanced technician education	PDE-2, PDE-4, PDE-5
4.4	Install FLATE Faculty PD forum model into other dicipline areas.	PDE-1, PDE-3
4.5	Support K-14 faculty certification relevant to Florida ET programs.	PDE-2, PDE-5

FLATE Specific Goals and Target Objectives (2012-2015)	Effectiveness Measures

Key to Effectiveness Measures:		
	SE-1	HCC Brandon organizational chart with shared positions
	SE-2	Sterling evaluation score trend chart
	SE-3	Stakeholder survey trend chart scores & response
	SE-4	Receive Florida Sterling Challenge recognition
	SE-5	Publish transportable models addressing NSF-ATE needs relationships
	SE-6	Keep record and copy of submitted documents
	SE-7	Number of people and projects supported
	CE-1	Number of adopting institutions from south Florida
	CE-2	Number of DOD articulations adopted by ET partner schools
	CE-3	Number of technician certifications earned
	CE-4	Aligned ET degree skills to additional stackable credentials
	CE-5	Aligned ET degree skills to MSSC standards
	CE-6	Aligned ET degree skills to international endorsed credential
	CE-7	Aligned skills to another state's same major manufacturer
	CE-8	ET student enrollment and completion report
	CE-9	Number of curriculum modules adapted from ET core for pre-engineering
	CE-10	Populate curriculum repository with ET core curriculum and include interface to ATE Central
	CE-11	Identified common cross cluster technical skills
	CE-12	Number of users of integrated ET content
	CE-13	Number of ET related high schools and PSAV programs
	CE-14	Number of ET Degree Colleges
	OE-1	Number of students impacted by MIF
	OE-2	Published STEM education best practices
	OE-3	Number of outreach events and partnerships
	OE-4	Number of MAs implementing regional Manufacturing activities
	OE-5	Report on FLATE's Graduation Connection Programs
	OE-6	Number of website hits
	PDE-1	Report the number of teachers supported
	PDE-2	Professional development hours trend chart
	PDE-3	Number of statewide Forum models implemented
	PDE-4	Published professional development best practice
	PDE-5	List of professional development events

FLATE Strategic Hierarchy

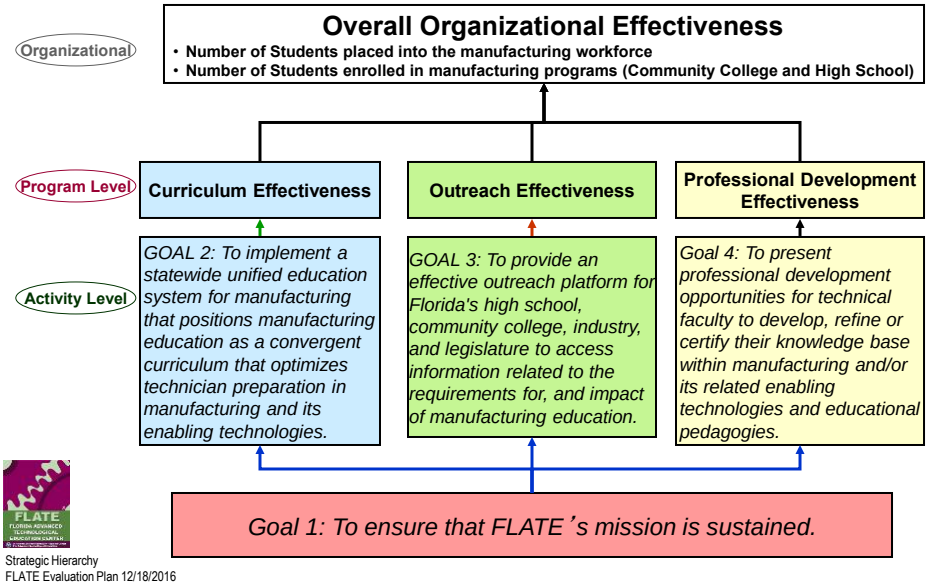
2012-2016



Strategic Hierarchy
FLATE Evaluation Plan 12/18/2016

FLATE Strategic Hierarchy

2012-2016



Strategic Hierarchy
FLATE Evaluation Plan 12/18/2016

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Overall Organizational Effectiveness Measures

- **Number of Students placed into the manufacturing workforce**
- **Number of Students enrolled in manufacturing programs (Community College and High School)**

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Curriculum Effectiveness Measures

- **CE-1** Number of adopting institutions from south Florida
- **CE-2** Number of DOD articulations adopted by ET partner schools
- **CE-3** Number of technician certifications earned
- **CE-4** Aligned ET degree skills to additional stackable credentials
- **CE-5** Aligned ET degree skills to MSSC standards
- **CE-6** Aligned ET degree skills to international endorsed credential
- **CE-7** Aligned skills to another state's same major manufacturer
- **CE-8** ET student enrollment and completion report
- **CE-9** Number of curriculum modules adapted from ET core for pre-engineering
- **CE-10** Populate curriculum repository with ET core curriculum and include interface to ATE Central
- **CE-11** Identified common cross cluster technical skills
- **CE-12** Number of users of integrated ET content
- **CE-13** Number of ET related high schools and PSAV programs
- **CE-14** Number of ET Degree Colleges

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Outreach Effectiveness Measures

- **OE-1** Number of students impacted by MIF
- **OE-2** Published STEM education best practices
- **OE-3** Number of outreach events and partnerships
- **OE-4** Number of MAs implementing regional Manufacturing activities
- **OE-5** Report on FLATE's Graduation Connection Programs
- **OE-6** Number of website hits

Professional Development Effectiveness Measures

- **PDE-1** Report the number of teachers supported
- **PDE-2** Professional development hours trend chart
- **PDE-3** Number of statewide Forum models implemented
- **PDE-4** Published professional development best practice
- **PDE-5** List of professional development events

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Sustainability Effectiveness Measures

- **SE-1** HCC Brandon organizational chart with shared positions
- **SE-2** Sterling evaluation score trend chart
- **SE-3** Stakeholder survey trend chart scores & response
- **SE-4** Receive Florida Sterling Challenge recognition
- **SE-5** Publish transportable models addressing NSF-ATE needs relationships
- **SE-6** Keep record and copy of submitted documents
- **SE-7** Number of people and projects supported

Strategic Hierarchy
FLATE Evaluation Plan 12/18/2016

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Target Objectives for Goal 2. 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.

2.1 Expand south Florida student access to the A.S. ET degree.
2.2 Increase ET degree course & certificate articulations with Department of Defense technical training.
2.3 Increase Florida student numbers with endorsed industry certification 15%.
2.4 Ensure ET Degree maintains its alignment with industry standards.
2.5 Facilitate academic alignment of stackable credential outside of Florida..
2.6 Develop content/expertise to support FLDOE manufacturing related clusters.
2.7 Integrate ET content applications into a pre-engineering curriculum.
2.8 Offer faculty a shared online repository for ET related curriculum content.
2.9 Produce at least two industry aligned online Lesson Plans per year.
2.10 Facilitate 3 pre-ET degree programs.
2.11 Support enrollment and completion for ASET to BSET programs in Florida.

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

Target Objects for Goal 3. GOAL 3. To provide an effective outreach platform for Florida's high school, community college, industry, and legislature to access information related to the requirements for, and impact of manufacturing education.

3.1 Continue to support and improve the "Made in Florida" campaign.
3.2 Provide initiatives for female student enrollment and retention.
3.3 Provide STEM programs for traditional, at risk or special student populations.
3.4 Facilitate regional industry/local school partnerships.
3.5 Connect manufacturers to ET programs with graduating students.

Target Objectives for Goal 4. 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.

4.1 Support teacher externships with industry within Florida.
4.2 Implement annual faculty Summer Institute focused on emerging ET skills.
4.3 Offer STEM professional development opportunities for advanced technician education
4.4 Install FLATE Faculty PD forum model into other discipline areas.
4.5 Support K-14 faculty certification relevant to Florida ET programs.

Strategic Hierarchy
FLATE Evaluation Plan 12/18/2016

FLATE Strategic Hierarchy

2012-2016

Organizational

Program Level

Activity Level

***Target Objectives* for Goal 1. To ensure that FLATE's mission is sustained.**
(enabler and supporter for all Goals 2 through 4)

1.1 Execute the Center's institutionalization plan.

1.2 Conduct, analyze, and act on bi-annual Sterling Assessment.

1.3 Conduct, analyze, and act on bi-annual Stakeholders Survey.

1.4 Conduct FLATE operations using defined Sterling quality principles & practices.

1.5 Disseminate FLATE Best Practices for goals 2, 3, and 4.

1.6 Execute Goal 2, 3, and 4 objectives to optimize their institutionalization.

1.7 Maintain quality expectations of award winning "Made in Florida" campaign.

1.8 Develop benchmarking approaches for ATE program impact data.

1.9 Mentor ATE PIs and projects and organizations to impact technician education.

1.10 Conduct NSF evaluation and reporting activities.

FLATE Sustainability Workplan

OUTREACH				
PROGRAM	**Partner(s)**	**Partner Role**	**Progress**	**Post-Its**
FLATE Awards	FACTE[1]/ FAITE[2]/ Award sponsors/FloridaMakes	FAITE, a division of FACTE, will take over and "host" the FLATE awards – keeping the FLATE name and FLATE with FloridaMakes will continue to support.	The first FLATE awards at FACTE occurred at the 2016 FACTE annual conference. FLATE will now start to transition the sponsors to FAITE for the 2018 Awards.	FLATE is working closely with FACTE/FAITE to fully transition the FLATE awards. FLATE recruited sponsors; FACTE has added FLATE to its awards pack; both will recruit nominees and judge. The transition should be done by the 2018 Awards.
"Made in Florida" website	The website is transitioning to FloridaMakes[3]. Important documents and products are archived on ATE Central.	Host and maintain all/some of the videos and resources online.	Limited conversations about some content being maintained by FAITE/FACTE and FloridaMakes have been initiated.	Much to do to transition this to FloridaMakes. Requires resources to support postings, future revisions, etc.
"Made in Florida" and "Women in Manufacturing" DVDs/Videos	Transitioning to FloridaMakes	Maintaining current posting of 2015 Video on YouTube, and a Florida website as well as maintain master video.		Plans include distribution of the MIF/ WIM DVD copies until current stock is gone. Video will be archived on ATE Central & Youtube accessible through fl-ate.org & madeinflorida.org
FLATE Summer Robotics Camps @ HCC	HCC Brandon AS ET Degree program for camps 2018 and onward.	Host camps and take over the ownership and maintenance of the robot hardware. Take over organizing and running the summer camp programs.	The 2016 published FLATE camp curriculum will help sustain the quality of the camp locally and across the state. The curriculum and Camp survival guide are free and available resources.	FLATE Robotics camps at HCC have been very successful and popular. Transition has some issues but since we work closely with the ET degree team, we anticipate it will be smooth with much mentoring). Cost might go up, and integrity down as well as fewer camp sessions offered.
FLATE Summer Robotics Camps @ other locations	Many colleges/ schools/ community organizations.	Host and run camps using FLATE curriculum and its surveying tools, and data aggregation and continuous improvement.	Published standard camp curriculum for intro and intermediate levels. Update Camp Guide in 2016 and archived the revisions.	Continue to support existing camps with curriculum, processes, student and parent surveys. Camps should continue locally un-interrupted. May lose statewide impact/comparisons.

This work is funded under grant DUE# 1204751 from the National Science Foundation Advanced Technological Education (ATE) program. Opinions and findings expressed herein are those of the authors and do not necessarily reflect the views of the National Science Foundation.

FLATE Sustainability Workplan

OUTREACH [Continued]				
PROGRAM	**Partner/s**	**Partner Role**	**Progress**	**Post-Its**
Industry Tours (individual tours of schools to manufacturers)	Manufacturers/schools/ RMAs[4]/ Colleges/ other community organizations.	Facilitate local connections for schools-companies and support tour logistics.	Transferred most of the transportation cost to the school districts/schools and connected schools to companies. A lot of capacity has been built with RMAs.	These connections will hopefully continue as teachers make time, the partners stay connected, and school districts/others (or grants) support transportation. We've established defined impact.
Manufacturing Day Coordination	Manufacturers/schools/ colleges/RMAs/ FloridaMakes.	Regional and statewide coordination efforts for max impact. Local partners are working well now in most counties. Partner needed to connect regions for defining state impact.	Statewide coordination will transition to FloridaMakes and the RMAs[4]. Will continue to coordinate student survey data under FloridaMakes.	Local/regional coordination continues to improve and expand.
Student/Teacher Outreach (Robotics)	School districts/ college partners/ industry partners	Logistics, costs, data collection (surveys/photos), dissemination.	Related to robotics camps equipment. Not clear where these will transition.	This is a one-to-one activity so it depends on individual relationships/ partnerships.
K12 curriculum/lesson plans/Best Practice Guides	ATE Central (NSF ATE document/resource repository)/FloridaMakes	Archive documents in online database and resource portal. FLATE wiki will transition to FloridaMakes.	All current middle schools, high schools, colleges, and community resources on the wiki are now archived on ATE Central.	Survey data, consistency, some PD teacher training resources may end. Updates to archived materials will not be made, and nothing new will be added.
Public relations for manufacturing (school/community presentations/ replies to national requests for FLATE expertise	Professional organizations/ college technical programs/ local/RMAs/ FloridaMakes/ other organizations.	Connect manufacturers with students and educators to secure partnerships.	Continuously transitioning knowledge, content, contacts, and building capacity and continuing under FloridaMakes to some extent.	This will transition to FloridaMakes. We hope we have built some capacity in our partners and colleges to continue the work they are now doing somewhat on their own.
FLATE Focus newsletter/social media/dissemination	FloridaMakes, RMAs	Publish blog articles of interest to our stakeholders.	Continuing efforts until FLATE funding expires.	This activity will continue under FloridaMakes.

This work is funded under grant DUE# 1204751 from the National Science Foundation Advanced Technological Education (ATE) program. Opinions and findings expressed herein are those of the authors and do not necessarily reflect the views of the National Science Foundation.

FLATE Sustainability Workplan

PROFESSIONAL DEVELOPMENT [PD]				
PROGRAM	**Partner/s**	**Partner Role**	**Progress**	**Post-its**
Engineering Technology Forum	Colleges/ vendors/ FLDOE permanent chair/FloridaMakes	Meetings are self-funded. Meals are provided by vendors, forum chair and host provide logistics; and colleges support travel. FLATE supplies PD, impact data, organization and funds for some colleges to attend.	The ET Forum will transition to FloridaMakes oversight. It is secure in most areas but extra funding from FLATE for some colleges, focused PD sessions, some organization/logistics, and website/social media.	The ET Forum will go on and hopefully not lose its tight connection between industry and local colleges, while continuing to maintain partnership with FLDOE, and continue to provide robust networking and strong community among colleges. Hope to increase industry connections through FloridaMakes.
Florida/ national A.S. Program mentoring	None			This activity may be transitioned to fee-based private consulting.
Other Educator Professional Development Workshops	Current partners include: SkillsUSA/ FACTE/ High School-High Tech program of the Able Trust/ FAITE/ professional societies/ equipment vendors/FloridaMakes.	Various partners host some events, provide travel, and sustenance support for educators and sometimes need volunteer partners for logistics. FloridaMakes will provide some support for college level workshops.	Continuing efforts to transition more ownership of workshops totally to other organizations. Do not yet have any confirmed commitments.	Most K12 FLATE PD events will probably stop. They require personnel time to organize, disseminate and produce. No organization has been identified to take on these activities; however, we are working to transition some events. FloridaMakes will support college level workshops.
Conference attendance support	State Colleges/ school districts/ local education foundations.	College and high school faculty will rely on other sources/partners (colleges, school districts, or other grants.)	Continuing efforts until FLATE NSF funding expires.	FLATE supported faculty conference attendance every year by request and with good rationale. This will terminate.

This work is funded under grant DUE# 1204751 from the National Science Foundation Advanced Technological Education (ATE) program. Opinions and findings expressed herein are those of the authors and do not necessarily reflect the views of the National Science Foundation.

FLATE Sustainability Workplan

CURRICULUM				
PROGRAMS	**Partner Role**	**Partner Role**	**Progress**	**Post-its**
Secondary/post-secondary curriculum frameworks reviews and alignments.	FLDOE[5] Florida College System/FloridaMakes	FLDOE will maintain its tri-annual review cycle for frameworks to keep them industry relevant. Colleges will have to coordinate the reviews by Engineering Technology's discipline areas.	Transitioning to FloridaMakes with some support from RMAs[4]. Providing mentoring for faculty to learn the process.	FLATE's coordinating role will continue under FloridaMakes.
Engineering Technology enrollment /completion/ graduate reporting (secondary/ postsecondary)	FLDOE/ possibly Daytona State College/FloridaMakes	All data available from FLDOE, but not in the currently aggregated report FLATE has developed for the programs that support FL manufacturing.	This activity and data collection will transition to FloridaMakes.	Most recent reports will be archived (some on ATE Central) at end of the NSF grant.
Credential alignment to Florida manufacturing programs	None	No partner with required expertise has been identified.	Continuing efforts until FLATE's NSF funds end. Unclear about transitioning to FloridaMakes	Its unclear if this will transition to FloridaMakes and continue. Alignments will become outdated but archived on ATE Central. This could be a revenue source.
International Student/ Educator Exchange	Educational /government partners in other countries and US/ college international programs.	Funding and organization of exchange events and travel with all required partners.	Researching funding opportunities domestically and overseas.	Ongoing activity could transition to the private partners for overall coordination and implementation if funding is identified and secured.
Mentoring/support of new Engineering Tech programs	Engineering Technology Forum Community/FloridaMakes	Voluntary mentoring of new and transitioning manufacturing related programs.	This will transition to FloridaMakes with help from ET faculty. Capacity is building in the Engineering Technology Forum Community to continue.	This activity is very important for development and growth of ET /manufacturing programs. It could provide small consulting revenues for FloridaMakes.

[1] FACTE: Florida Association for Career and Technical Education
[2] FAITE: Florida Association for Industrial and Technical Educators
[3] FloridaMakes: Florida (MEP) - Technology's Manufacturing Extension Partnership
[4] RMAs: Regional Manufacturers Associations
[5] FLDOE: Florida Department of Education

This work is funded under grant DUE# 1204751 from the National Science Foundation Advanced Technological Education (ATE) program. Opinions and findings expressed herein are those of the authors and do not necessarily reflect the views of the National Science Foundation.

2017 Florida Manufacturing Technician Competencies Survey

Obtaining feedback from industries is vital to reviewing curriculum content of schools preparing a competent workforce to meet industries' needs. The survey was developed by FloridaMakes in partnership with Polk State College (PSC), the Florida Forum for Engineering Technology (ET Forum) and FLATE (Florida Advanced Technological Education Center of Excellence). It was designed to define curriculum content of schools preparing competent workforce to meet manufacturers technician workforce needs.

The 15 minute survey was distributed to manufacturers in Florida via (a) FloridaMakes; (b) Florida Regional Manufacturers Associations (RMA's); and (3) State and Community colleges offering A.S. ET Degrees. The survey was open for 2 weeks in November 2017. Eighty-eight respondents from across Florida completed the survey during that time period.

Section 1 of the survey focused on Technical Skills and requested two responses for each item: one for the importance of the item and the second for the frequency performed. For each importance item, respondents were asked to rank the importance responses using a scale from 1 to 5, with 5 being "Most Valuable" and 1 being "Least Important." Respondents could also select "N/A" (Not Applicable) as an option if appropriate. For frequency performed, respondents were asked to select one of three choices: "Never", "Sometimes" or "Always". If N/A was selected for the importance response, respondents were asked to select "Never" for the frequency response.

Section 2 was for personal and teamwork skills. Section 2 requested responses for only the level of importance and used the same 1-5 scale as that used for the technical skills in section 1.

This material is based upon work supported by the National Science Foundation under Grant No. 1204751. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Competencies/Learning Objectives Descriptions Competency Descriptions (1-20)	**Frequency of Use**			**Knowledge Levels**	**Specialized Skills Levels**
Technical Skills: A highly skilled employee at this plant is expected to have in-depth technical knowledge, critical thinking and judgement abilities, and systems thinking abilities in order to:	Never	Sometimes	Always	1-8 Level of credentials Ranked highest at 1-5 of importance	1-8 Level of credentials Ranked highest at 1-5 of importance
1. Implement all related safety codes and regulations in industrial working environments	2%	24%	74%	L 3 Rank 5 @ 70%	L 3
2. Perform tasks in a specialized technical area.	1%	41%	58%	L 4 Rank 5 @ 46%	L 3
3. Work with computer aided drafting and create geometric part files.	21%	52%	27%	L 3 Rank 3 @ 25%	L 3
4. Work at the entry level with traditional materials removal machines (milling, lathe, drill press, cut-off-saws).	22%	55%	24%	L 1 Rank 4 @ 26%	L 1
5. Understand mechanical and process characteristics of common materials.	6%	58%	37%	L 4 Rank 4 @ 58%	L 2
6. Operate materials testing tools and equipment.	8%	67%	25%	L 4	L 5 Rank 4 @ 31%
7. Operate, maintain, and repair mechanical, hydraulic and pneumatic systems.	18%	58%	24%	L 3	L 3 Rank 4 @ 27%
8. Operate AC electric-powered tools, and equipment	8%	47%	45%	L 2	L 2 Rank 5 @ 31%
9. Operate DC electric-powered tools and equipment.	18%	52%	30%	L 2	L 2 Rank 3 @ 30%
10. Operate electronic sensors, switches, and controls.	9%	50%	41%	L 2	L 2 Rank 4 @ 29%
11. Operate programmable logic controllers and use systems schematics.	14%	59%	27%	L 3	L 3 Rank 4 @ 33%
12. Diagnose causes and troubleshoot systems operations, using schematics and ladder logic diagrams.	17%	61%	21%	L 7	L 5 Rank 3 @ 25%
13. Report total quality improvements of a unit and the entire systems operation.	19%	63%	18%	L 8	L 7 Rank 3 @ 34%
14. Evaluate the results of tasks performed in accordance with standard operating procedures (SOPs).	8%	43%	49%	L 4	L 3 Rank 4 @ 34%
15. Perform root cause analysis and recommend corrective actions.	7%	58%	35%	L 7	L 7 Rank 4 @ 35%
16. Participate in planning and evaluating processes.	5%	70%	25%	L 7	L 7 Rank 3 @ 37%
17. Compare and contrast process alternatives.	14%	66%	20%	L 7	L 7 Rank 3 @ 34%
18. Recommend new solutions and consider effects on various processes even in circumstances where requirements are subject to frequent changes.	7%	62%	31%	L 8	L 8 Rank 5 @ 31%
19. Demonstrate a high level of independent judgment in a range of technical functions and articulate significant challenges involved.	3%	43%	54%	L 7	L 7 Rank 5 @ 42%
20. Participate in the development of an existing and/or new product and/or operation.	11%	56%	33%	L 8	L 8 Rank 5 @ 34%

Rank 3

Rank 4

Rank 5

Competencies/Learning Objectives Descriptions Competency Descriptions (1-20)	**Frequency of Use**			**Personal Skills Level**	**Social Skills**
Personal & Team Skills: Index factors for personal and team skills are based on self-sufficiency, responsibility, and self-awareness, and reflectiveness. In addition team skills are measured based on communication, involvement, work ethic, character, adaptability, problem solving, critical observation, teamwork, and leadership. Employees should be able to demonstrate the ability to:	% Ranked @ the most important. WEIGHTED AVERAGE xx/5.0			1-8 Level of credentials Ranked highest at 1-5 of importance	1-8 Level of credentials Ranked highest at 1-5 of importance
1. Use required learning guides and request learning guidance when needed.	53.4%	WA	4.4	L 2	
2. Use initiative to set their own enhanced learning objectives related to daily tasks and performance.	38.7%	WA	4.1	L 3	
3. Evaluate personal strengths and weaknesses of knowledge and performance related activities.	27.3%	WA	3.9	L 4	
4. Define objectives for new simple applications and establish tasks to accomplish the objectives.	25.0%	WA	3.8	L 4	
5. Share with team members alternative ideas and strategies to define the objectives of complex applications.	46.6%	WA	4.2		L 3
6. Express the mission, goals, and objectives of the workplace.	39.8%	WA	4.1	L 3	
7. Take responsibility for work environment.	81.8%	WA	4.8	L 5	
8. Demonstrate interpersonal communication.	60.2%	WA	4.5		L 1
9. Follow rules and regulations in the workplace.	87.5%	WA	4.8	L 2	
10. Execute team assignments competently.	70.5%	WA	4.6		L 3
11. Listen effectively.	80.7%	WA	4.7		L 2
12. Effectively participate in a diverse work environment	63.6%	WA	4.5		L 3
13. Communicate clearly, timely, and relevant information on processes and results at all levels.	62.5%	WA	4.5		L 4
14. Conduct, analyze, interpret, and present complex facts and provide solutions.	27.3%	WA	3.9	L 8	L 6
15. Take appropriate corrective actions based upon provided feedback.	59.1%	WA	4.5	L 5	
16. Build consensus from group discussions.	27.3%	WA	3.9		L 3
17. Demonstrate the ability to transfer information and specialized skills to others.	36.4%	WA	4.1		L 6
18. Set short-term and long-term goals.	33.0%	WA	4.0	L 4	
19. Represent the organization in a professional manner.	71.6%	WA	4.6		L 8
20. Demonstrate appropriate social skills.	59.1%	WA	4.5		L 6

Rank 3

Rank 4

Rank 5

The level indicators were taken from work of the Lumina Foundation and assigned to the program competencies by the educators in partnership with industry. Over 150 competencies were defined for the Advanced Manufacturing in the Engineering Technology A.S. degree program. These were grouped to the 40 items in the industry survey and the indicators carried forward to the combined competencies. The cognitive indicators were not included/visible in the industry survey.

Knowledge Levels

1. Demonstrates General Knowledge.
2. Demonstrates and uses basic knowledge.
3. Demonstrates and applies extended knowledge for predictable problems.
4. Demonstrates comprehensive theoretical & technical knowledge.
5. Demonstrates integrated & special professional knowledge.
6. Demonstrates broad integrated knowledge regarding scientific principles & practical application of scientific subject.
7. Demonstrates specialized knowledge in subject, & can involve in professional activities.
8. Demonstrates specialized knowledge in adjoining disciplines including knowledge in a new discipline or profession.

Specialized Skills Levels

1. Demonstrates basic cognitive & practical skills to perform tasks within stipulated rules.
2. Demonstrates skills needed to establish correlations among functions and tasks.
3. Demonstrates cognitive & practical skills for perform tasks & problem solve.
4. Demonstrates ability to select alternative actions based on reciprocal effects on other functional areas.
5. Plans and evaluates processes while considering alternatives and impacts.
6. Develops & evaluates new solutions & considers effect on various criteria.
7. Demonstrates technical & conceptual skills to analyze, consolidate, and synthesize knowledge toward strategic activities.
8. Demonstrates comprehensive skills in R&D or innovations in profession

Personal Skill Levels

1. Takes responsibility for learnings.
2. Uses stipulated learning guides and seeks guidance if needed
3. Sets one's own learning & work objectives
4. Initiates planning & designing technical learning objectives.
5. Takes responsibility for overall actions and outcomes.
6. Exercises autonomy & responsibility for planning and development of processes that support substantial changes.
7. Defines objectives for new applications reflecting on societal, economic, & cultural implications.
8. Selects appropriate means & develops new ideas & processes.

Social Skills Levels (Associates)

1. Respects others' actions & accepts critique and feedback.
2. Listens effectively & uses comprehension skills to receive direction & information
3. Helps shape the work within a heterogeneous, working /learning group.
4. Communicate solutions to moderately complex, controversial, sensitive matters.
5. Demonstrates advanced interpersonal abilities to convey complex facts to cross-disciplinary audiences.
6. Demonstrates ability to work with and lead expert groups.
7. Demonstrates ability to lead expert debates, build consensus, & promote professional development of others.
8. Leads groups in complex or interdisciplinary tasks, promotes organizational goals.

2011-2017 Florida Engineering Technology (ET) and Related Program Student Enrollment and Completion

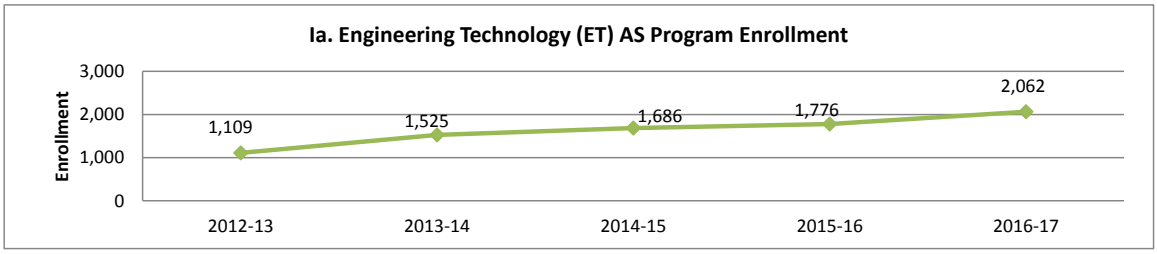
5-Year Trend Study

FLATE, a National Science Foundation Regional Center of Excellence, annually requests and compiles student enrollment and completion data for the Engineering Technology (ET) and related A.S. and B.S. degrees and college credit certificate (CCC) programs for Florida colleges, and for related technology programs at the secondary and PSAV level. These data, provided by the Florida Department of Education, are reliable but do not include enrollment for undeclared majors or enrollment in duplicate programs (such as certificates under degree programs). College Registrar reporting/cut dates also result in some reported enrollment discrepancies. Minor anomalies may occur as older program titles are collapsed and added program titles are added. This review contains five sections and an appendix with individual ET adopting college performance, and presents a 5-year trend study which includes the 2016-17 FLDOE report year.

Section I: Florida Engineering Technology (ET) and Related AS Degree Program Student Enrollment

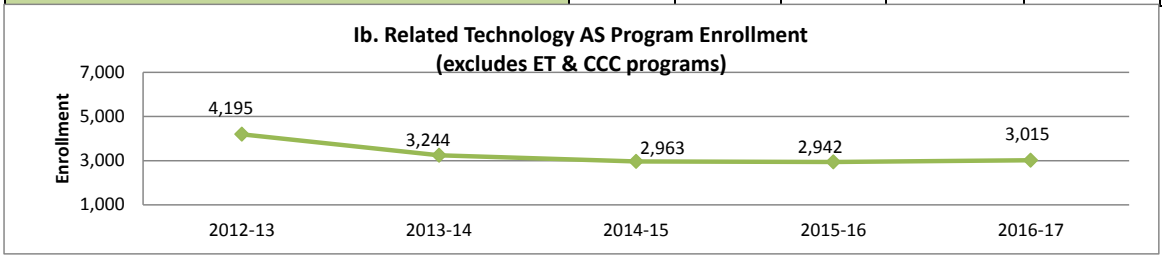
I a. ET AS Degree Program Student Enrollment Excluding CCC	2012-13	2013-14	2014-15	2015-16	2016-17
ET AS Student Enrollment	1,109	1,525	1,686	1,776	2,062
Number of Colleges Adopting the ET Program*	14	15	19	19	19

***Out of Florida's 28 Community and State Colleges**



This work is funded under grant DUE# 1204751 from the National Science Foundation Advanced Technological Education (ATE) program. Opinions and findings expressed herein are those of the authors and do not necessarily reflect the views of the National Science Foundation.

I b. Related Technology AS Degree Program Student Enrollment Excluding ET Degree and CCC Programs	2012-13	2013-14	2014-15	2015-16	2016-17
	4,195	3,244	2,963	2,942	3,015



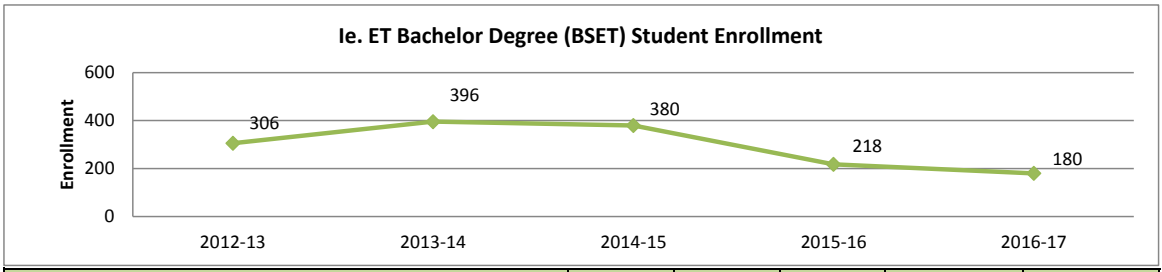
In 2015-16 ET AS Degree program represented 38% of total Florida technology AS degree program enrollment (N=4,718).
In 2016-17 ET AS Degree program represented 41% of total Florida technology AS degree program enrollment (N=5,054).

I c. Selected Demographic Profile for ET and Related Technology AS Degree Program Enrolled Students	2012-13	2013-14	2014-15	2015-16	2016-17
ET Technology Program % Female Enrollment	9%	10%	10%	12%	11%
Related Technology Program % Female Enrollment	19%	16%	20%	24%	27%
ET Technology Program % Minority Enrollment	41%	55%	47%	46%	47%
Related Technology Program % Minority Enrollment	45%	50%	52%	49%	48%

I d. Engineering Technology and Related Technology Enrollment by Program (does not include certificates) ( ) Indicates number of colleges offering the program for the 2015-16 Academic Year. ATC: Advanced Technology Credit for POST AA/AS degree students. AS Degree Programs					
(19) Engineering Technology (ET) Degree Enrollment	1,109	1,525	1,686	1,776	2,062
Note - FLDOE does not provide ET enrollment by specialization.					
(1) Aerospace Technology	66	89	103	112	126
(5) Biomedical Engineering Technology	380	242	201	183	209
(3) Biomedical Egineering Technology ATC (added)					29
(3) Chemical Technology	611	267	382	645	804
(11) Drafting & Design Technology	742	609	530	506	500
(1) Electrical Distribution Technology	31	35	31	27	30
(3) Electrical Power Technology	433	319	230	184	173
(7) Electronics Engineering Technology	1,333	1,187	1,071	965	870
(15) Industrial Management Technology	542	459	399	294	238
(1) Manufacturing Technology	16	10	0	10	*
(1) Simulation and Robotics Technology	27	19	16	16	13
(1) Telecommunications Engieering (added)					*
Total Degree Enrollment / ET and Related	5,290	4,761	4,649	4,718	5,054

I e. ET Bachelor Degree (BSET) Student Enrollment with # Offering Colleges Shown in ( )	2012-13	2013-14	2014-15	2015-16	2016-17
Total BSET Enrollment Offering College & Program Name with Enrollment	610 (4)	675 (4)	567 (4)	538 (4)	486 (3)
Daytona State College* - Engineering Technology	306	396	380	218	180
State College of Florida** - Energy Technology Management	15	23	27	none reported	
Miami Dade College - Electronics Engineering Technology	73	95	125	143	118
Valencia College - Electronics Engineering Technology	66	96	143	177	188

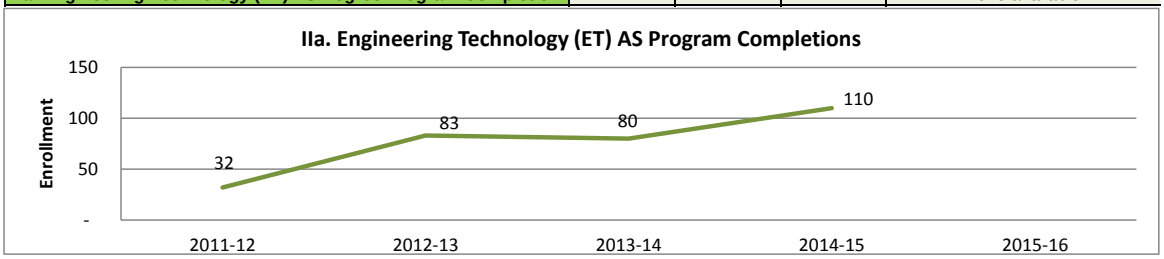
* Hybrid online program **Selected courses available online



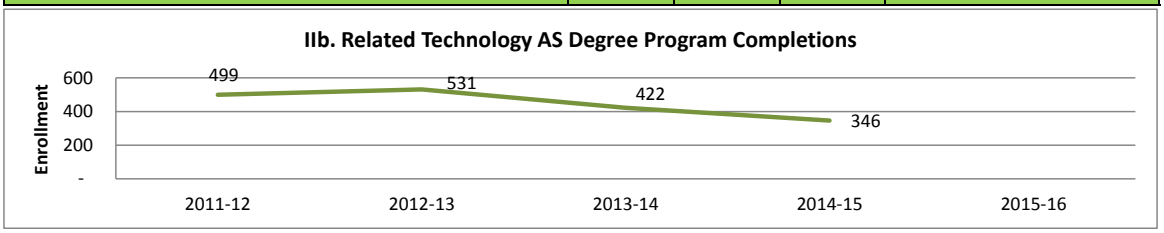
I f. BSET Enrollment Demographic Profile	2012-13	2013-14	2014-15	2015-16	2016-17
% Female BSET Enrollment	19%	17%	16%	14%	12%
% Minority BSET Enrollment	40%	54%	51%	28%	33%

Section II: Florida Engineering Technology (ET) and Related Degree Program Student Completion

	2012-13	2013-14	2014-15	2015-16	2016-17
II a. Engineering Technology (ET) AS Degree Program Completion	83	80	110	none available	



	2012-13	2013-14	2014-15	2015-16	2016-17
II b. Related Technology AS Degree Completion					
Excludes ET Degree and College CCC Programs	**531**	**422**	**346**	none available	

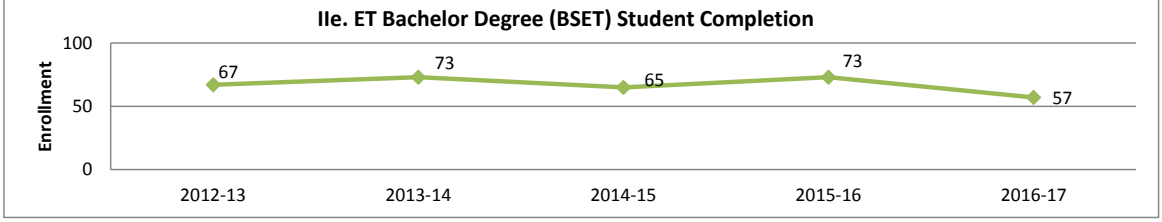


In 2014-15 the ET AS Degree program represented 24 % of total Florida technology AS degree program completions (N=456).
In 2015-16, 2016-17 the ET AS Degree program completions were not available

II c. Selected Demographic Profile for ET and Related Technology AS Degree Program Completion					
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**
ET Technology Program % Female Completion	12%	17%	7%	none available	
Related Technology Program % Female Completion	19%	17%	16%	none available	
ET Technology Program % Minority Completion	33%	34%	36%	none available	
Related Technology Program % Minority Completion	30%	39%	51%	none available	

II d. Engineering Technology and Related Technology College Degree Completion by Program					
Does not include college credit certificates-CCC					
AS Degree Completion	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Aerospace Technology	9	13	18	none available	
Biomedical Engineering Technology	53	38	27	none available	
Biomedical Equipment Technician (added)				none available	
Chemical Technology	34	23	21	none available	
Computer Integrated Manufacturing	2	2	0	none available	
Drafting & Design Technology	90	79	60	none available	
Electrical Distribution Technology	3	2	2	none available	
Electrical Power Technology	87	49	29	none available	
Electronics Engineering Technology	107	116	123	none available	
Engineering Technology	**83**	**80**	**110**	none available	
Industrial Management Technology	134	141	98	none available	
Manufacturing Technology	4	3	0	none available	
Robotics & Simulation Technology	7	2	2	none available	
Telecommunications Engineering Technology (added)				none available	
Total College Completion	**531**	**548**	**490**	**none available**	

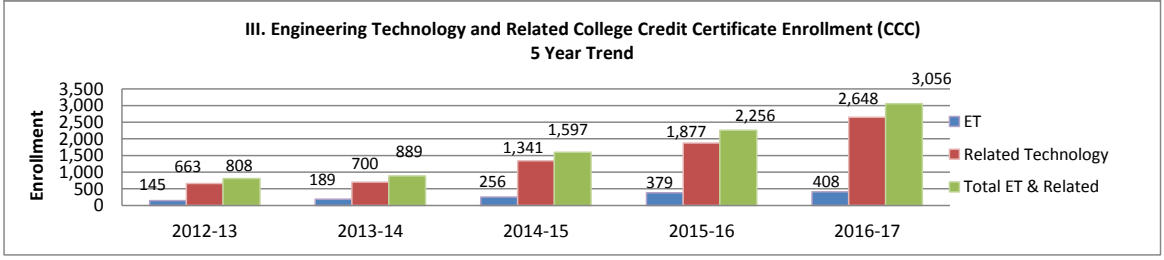
II e. ET Bachelor Degree (BSET) Completion	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Total BSET Completion	**67**	**73**	**65**	**73**	**57**



II f. BSET Demographic Profile	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
BSET % Female Completion	13%	17%	20%	*19%	0%
BSET % Minority Completion	66%	36%	46%	42%	48%*
* Small numbers such as n=1 or n=2 skew percentage relevance	*n=1			*n=2	*n=1

Section III: Florida ET and Related College Credit Certificate (CCC) Student Enrollment by Program

ET Program College Credit Certificate Enrollment (CCC)	2012-13	2013-14	2014-15	2015-16	2016-17
(3) CCC - Alternative Energy Systems Specialist	9	12	0	none reported	none reported
(1) CCC - Applied Technology Specialist	9	6	0	none reported	none reported
(5) CCC - Automation	7	9	10	17	32
(4) CCC - CNC Machinist	16	32	18	66	45
(2) CCC - CNC Machinist Operator/Programmer				none reported	none reported
(1) CCC - Composite Fabrication & Testing	7	4	0	none reported	none reported
(3) CCC - Computer- Aided Design & Drafting	14	21	19	31	36
(3) CCC - Electronics Aide	1	3	0	none reported	13
(17) CCC - Engineering Technology Support Specialist	36	33	105	129	133
(1) CCC - Lean Manufacturing	1	2	0	none reported	none reported
(2) CCC - Lean Six Sigma Green Belt	10	16	29	16	24
(3) CCC - Mechatronics				43	51
(1) CCC - Mechanical Designer and Programmer *(added)*				none reported	none reported
(1) CCC - Medical Quality Systems	3	16	14	10	none reported
(8) CCC - Pneumatics, Hydraulics & Motors for Manufacturing	5	21	48	40	47
(1) CCC - Rapid Prototyping Specialist (added)				27	27
(1) CCC - Six Sigma Black Belt	13	9	13	none reported	none reported
Total ET Program CCC Enrollment	**131**	**184**	**256**	**379**	**408**
Related Technology College Credit Certificate Enrollment by Program					
(3) CCC - Alternative Energy Engineering Technology	14	13	5	0	13
(13) CCC - AutoCAD foundations (added)					226
(3) CCC - Basic Electronics Technician	79	89	83	68	63
(2) CCC - Chemical Laboratory Specialist	30	52	58	65	54
(1) CCC - Computer Automation Technology (added)					none reported
(1) CCC - Computerized Woodworking	1	1	0	0	0
(1) CCC - Digital Manufacturing Specialist (added)					none reported
(1) CCC - Electrical Distribution, Advanced	6	4	3	0	none reported
(1) CCC - Electrical Distribution, Basic	22	26	29	34	21
(4) CCC - Electronics Technician	17	22	16	41	96
(3) CCC - Laser and Photonics Technician	12	15	17	34	25
(10) CCC - Logistics & Transportation Specialist (added)	40	248	152	92	553
(3) CCC - Robotics and Simulation Technology (added)	2	0	0	0	27
(3) CCC - Scientific Workplace Prep	1	21	159	803	1558
(1) CCC - Solar Energy Technician (added)					12
Related Technology CCC Enrollment	**224**	**491**	**522**	**1137**	**2,648**
Combined ET & Related Technology CCC Enrollment	**355**	**675**	**778**	**1516**	**3,056**



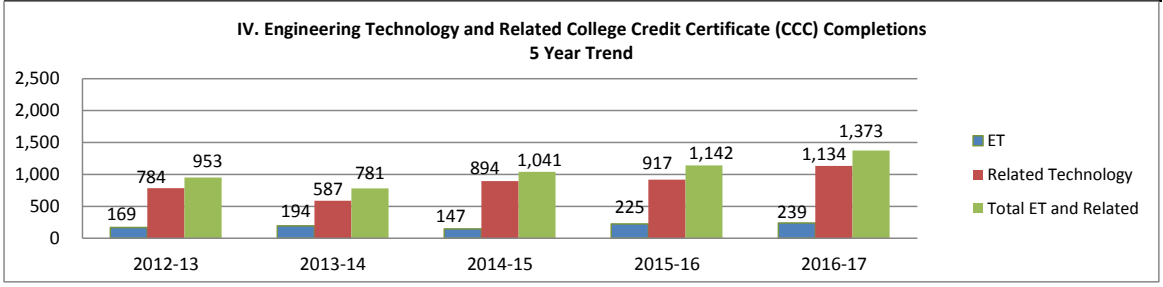
III. ET & Related College Credit Certificate (CCC) Enrollment Demographic Profile	2012-13	2013-14	2014-15	2015-16	2016-17
% ET & Related CCC Female Enrollment	29%	33%	52%	55%	55%
% ET & Related CCC Minority Enrollment	52%	44%	47%	50%	53%

Growth to 55 in % female enrollment in 2016-17 is primarily attributed to 1,203 females enrolled in Scientific Workplace & 81 in Logistics and Transportation Specialist at FL State College at Jacksonville.

Section IV: Florida ET and Related College Credit Certificate (CCC) Student Completion by Program

ET Certificate Student Completion by Program	2012-13	2013-14	2014-15	2015-16	2016-17
(3) CCC - Alternative Energy Systems Specialist	9	9	0	none reported	none reported
(1) CCC - Applied Technology Specialist	7	8	0	0	none reported
(5) CCC - Automation	7	8	2	0	10
(4) CCC - CNC Machinist	21	33	8	29	18
(2) CCC - CNC Machinist Operator/Programmer *(added)*				none reported	none reported
(1) CCC - Composite Fabrication & Testing	12	5	0	0	4
(3) CCC - Computer Aided Design & Drafting	3	8	5	10	15
(3) CCC - Electronics Aide	6	15	0	4	12

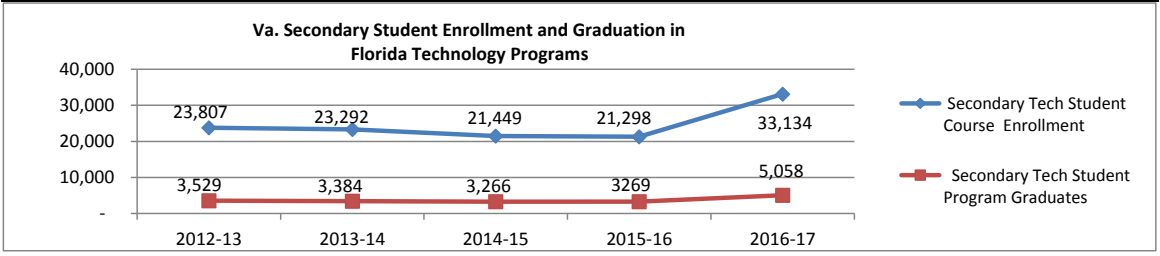
ET Certificate Student Completion by Program (*Cont.*)	2012-13	2013-14	2014-15	2015-16	2016-17
(17) CCC - Engineering Technology Support Specialist	43	61	93	72	96
(1) CCC - Lean Manufacturing	1	4	0	3	none reported
(2) CCC - Lean Six Sigma Green Belt	1	4	0	27	24
(3) CCC - Mechatronics (added)	28	27	23	20	18
(1) CCC - Mechanical Designer and Programmer *(added)*				0	none reported
(1) CCC - Medical Quality Systems	28	27	23	8	none reported
(8) CCC - Pneumatics, Hydraulics & Motors for Manufacturing	6	22	25	21	19
(1) CCC - Rapid Prototyping Specialist (added)				28	23
(1) CCC - Six Sigma Black Belt	21	10	16	0	none reported
Total ET Certificate Completion by Program	**172**	**231**	**179**	**222**	**239**
Related Technology Program Certificate Completion	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
(2) CCC - Alternative Energy Engineering Technology	4	4	0	3	3
(13) CCC - AutoCAD foundations (added)	419	211	183	137	130
(3) CCC - Basic Electronics Technician	78	102	57	61	51
(2) CCC - Chemical Laboratory Specialist	12	32	31	24	13
(1) CCC - Computer Automation Technology (added)				none reported	none reported
(1) CCC - Computerized Woodworking	7	2	0	8	5
(1) CCC - Digital Manufacturing Specialist (added)				none reported	none reported
(1) CCC - Electrical Distribution, Advanced	1	1	0	5	none reported
(1) CCC - Electrical Distribution, Basic	1	2	12	3	5
(4) CCC - Electronics Technician	10	25	15	33	55
(3) CCC - Laser and Photonics Technician	13	20	31	17	24
(10) CCC - Logistics & Transportation Specialist (added)	203	126	39	47	90
(3) CCC - Robotics and Simulation Technology (added)	0	0	0	7	20
(3) CCC - Scientific Workplace Prep	36	37	491	575	727
(1) CCC - Solar Energy Technician (added)					11
Related Technology Program Certificate (CCC) Completion	**333**	**386**	**859**	**917**	**1,134**
Total Certificate Completion ET & Related CCC	**461**	**529**	**953**	**781**	**1,373**



ET & Related College Credit Certificate Completion Demographic Profile	2012-13	2013-14	2014-15	2015-16	2016-17
% ET & Related CCC Female Completion	34%	25%	49%	52%	53%
% ET & Related CCC Minority Completion	61%	50%	42%	46%	99%

Section V: Secondary Student Enrollment and Graduation in Florida Technology Programs

V a. Total Secondary Student Enrollment and Graduation - 5 Year Trend					
For 2016-17 report, five secondary programs were added	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Number of Secondary Technology Programs Offered	**654**	**647**	**613**	**587**	**832**
Total Secondary Technology Student Course Enrollment	**23,807**	**23,292**	**21,449**	**21,298**	**33,134**
Total Secondary Technology Student Program Graduates	**3,529**	**3,384**	**3,266**	**3,269**	**5,058**



V b. Secondary Student Enrollment by Technology Program					
Program Title	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Applied Engineering Technology (added)					6079
Applied Robotics (added)					3533
Applied Welding Technologies	1,116	1,495	1,488	808	368
Automation & Production Technology (FLDOE adopted 2010)	186	336	494	686	1,178
Drafting/Illustrative Design Technology (added)					574

Program Title (Cont.)	2012-13	2013-14	2014-15	2015-16	2016-17
Electronic Technology	383	301	244	431	80
Energy Technician (added)					340
Engineering Assisting	97	113	73	64	147
Engineering Pathways	9,669	10,682	11,648	13,421	15,640
Engineering Technology (Secondary)	7,329	6,050	3,831	1,793	669
Industrial Biotechnology	336	508	694	1,036	1,356
Machining	157	172	280	214	114
Materials and Processes Technology	1,964	1,694	1,466	1,583	1,576
Power and Energy Technology (added)					327
Production Technology	2,081	1,373	877	1,008	818
Solar Energy Technology (FLDOE adopted 2011)	66	118	68	122	38
Technology Systems	222	211	28	132	297
Total Secondary Student Course Enrollment	**22,490**	**21,558**	**19,703**	**20,490**	**33,134**

V c. Secondary Level Technology Student Graduates by Technology Program					
Program Title	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Applied Engineering Technology (added)					606
Applied Robotics (added)					460
Applied Welding Technologies	731	254	266	212	96
Automation & Production Technology	114	49	63	64	168
Drafting/Illustrative Design Technology (added)					146
Electronic Technology	121	49	36	62	13
Energy Technician (added)					67
Engineering Assisting	14	26	18	14	35
Engineering Pathways	940	1,500	1,665	1,788	2,333
Engineering Technology (Secondary)	933	652	505	295	182
Industrial Biotechnology	69	78	88	123	239
Machining	58	11	38	38	22
Materials and Processes Technology	171	347	261	374	326
Power and Energy Technology (added)					43
Production Technology	301	304	247	279	313
Solar Energy Technology (FLDOE adopted 2011)	*	31	14	20	2
Technology Systems	35	15	0	none reported	7
Total Secondary Student Technology Program Graduates	**2,756**	**3,062**	**2,935**	**3,057**	**5,058**
Programs including Internships					
	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**
% Female Students of Total Secondary Enrollment	16%	15%	18%	19%	20%
% Minority Students of Total Secondary Enrollment	49%	48%	48%	51%	52%
% Female Students of Total Secondary Graduates	17%	16%	18%	19%	48%
% Minority Students of Total Secondary Graduates	49%	48%	49%	52%	80%
Secondary Technology Program Internships	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Total Number of Internships*	6	0	8	20	34
Number of Females Placed in Internships	0	0	2	4	8
Number of Males Placed in Internships	6	0	6	16	26
% Females for Total Placed in Internships	0%	0%	25%	20%	24%
% Minorities Placed in Internships	83% (n=5)	0%	75% (n=6)	35% (n=7)	62%

VI. Post-Secondary Adult Vocational (PSAV) Enrollments, OCP, and Completions					
PSAV FLDOE Categories	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Enrollment	1,475	1,639	1,773	2,358	1,401
Occupational Completion Point (OCP) Earners	2,392	2,617	2,953	2,470	1,090
Full Program Completer	525	596	457	352	106
Number of Programs Offered	6	8	5	14	18
Number of Participating Institutions	35	33	35	32	30
Total Industry Certificaton - MCCS Taken (added)					11
Total Industry Certificaton - MCCS Passed (added)					11
PSAV Enrollment by Program					
Program Title	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Applied Welding Technologies	1,248	1,335	1,492	842	191
Automation & Production Technology	0	2	0	11	12
CWE - Engineering and Technology (added)					none reported
CWE-Manufacturing (added)				20	none reported
CWE-Transportation, Disribition & Logistics (added)				691	547
Electrical & Instrumentation Technology 1 & 2	0	34	0	29	31
Electronic Technology 1 & 2	4	2	0	331	200
Energy Technician				40	27
Industrial Machinery Maintenance & Repair	44	39	38	10	18
Industrial Technology	9	9	14	13	none reported
Machining - APR	165	212	229	163	134
Manufacturing Cooperative Education-OJT (added)					12
Sheet Metal Fabrication Technology - APR (added)				151	141
Solar Photovoltaic Syst Desing, Inst, Maint-Entry Level	0	6	0	28	63
Solar Thermal Design, Installation, & Maintenance*	3	5		none reported	none reported
Turbine Generator Maintenance, Inspection & Repair (added)				29	25

Appendix: Total ET & Related Technology Enrollment by College

Includes Total Student Enrollment by College for ET and Related Technology AS Degrees and ET and Related College Credit Certificates

Source: FLDOE College Credit Student Data Base

Highlight indicates adoption of ET Degree	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Broward College	346	361	417	429	608
College of Central Florida	85	65	44	52	94
Chipola College (added 2015 adoption)	0	0	0	23	29
Daytona State College	152	147	155	248	125
Eastern Florida State College	1003	835	921	1132	1165
Florida Gateway College	20	30	19	37	59
Florida SouthWestern Florida State College (Formerly Edison)	123	63	23	none reported	none reported
Florida State College at Jacksonville	574	581	1276	1959	2256
Gulf Coast State College	108	114	123	113	85
Hillsborough Community College	324	319	325	546	435
Indian River State College	335	281	282	204	282
Lake Sumter State College (added 2015 adoption)	58	58	65	64	111
Miami Dade College	498	408	364	624	258
Northwest Florida State College	229	172	146	247	179
Palm Beach State College (added 2015 adoption)	182	158	156	182	246
Pasco-Hernando State College (added 2015 adoption)	65	64	63	105	137
Pensacola State College	275	259	170	141	151
Polk State College	137	187	165	224	213
St. Johns River State College	27	26	15	68	11
St. Petersburg College	313	362	434	461	507
Santa Fe College	132	78	80	93	112
Seminole State College	51	56	78	74	214
South Florida Community College	33	15	0	31	17
State College of Florida Manatee-Sarasota	153	154	122	98	89
Tallahassee Community College	137	102	73	71	87
Valencia Community College	752	763	730	795	663
Total Enrollment for all Institutions*	**6,112**	**5,658**	**6,246**	**8,021**	**8,133**

*The Total Enrollment by College appendix includes AS enrollment for Engineering Technology (ET) and Related Technology AS programs and ET and Related Technology College Credit Certificates (CCC). All data reported here is extracted by reports provided by the FLDOE. Reporting by FLATE in this report begins with college ET adoption year. Some added adopters and programs are too recent to display FLDOE data.

Enrollment discrepancies may exist due to enrollment coding at the individual institutional level, for instance, a student working towards the ET AS degree may be coded as a certificate enrollment, change of major form has not been recorded, or reporting by the office of the registrar may be in error, etc. Certificates refer to College Credit Certificates (CCC).

5-Year Enrollment **Breakout for Colleges Adopting the Engineering Technology (ET) Degree Program**					
College Name and Enrollment Type	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Broward College (BC) Adopted ET 2012					
ET AS Degree Enrollment	147	271	327	259	334
ET Certificate Enrollment	3	0	30	20	36
Related AS Degree Enrollment	181	75	41	123	24
Related Certificate Enrollment	15	15	19	27	214
Total	346	361	417	429	608
College of Central Florida (CCF) Adopted ET 2008					
ET AS Degree Enrollment	56	48	44	52	94
ET Certificate Enrollment	1	3	0	na	na
Related AS Degree Enrollment	28	14	0	na	na
Related Certificate Enrollment	0	0	0	na	na
Total	85	65	44	52	94
Chipola College (CC) Adopted ET 2016					
ET AS Degree Enrollment				23	29
ET Certificate Enrollment				na	na
Related AS Degree Enrollment				na	na
Related Certificate Enrollment				na	na
Total				23	29
Daytona State College (DSC) Adopted ET 2012					
ET AS Degree Enrollment		na			27
ET Certificate Enrollment				na	na
Related AS Degree Enrollment	147	134	141	236	86
Related Certificate Enrollment	5	13	14	12	12
Total	152	147	155	248	125
Eastern Florida State College (EFSC) Adopted ET 2008					
ET AS Degree Enrollment	174	198	172	157	165
ET Certificate Enrollment	32	30	10	19	20
Related AS Degree Enrollment	750	443	568	825	871
Related Certificate Enrollment	47	164	171	131	109
Total	0	835	921	1132	1,165
Florida State College at Jax (FSCJ) Adopted ET 2009					
ET AS Degree Enrollment	84	136	141	150	145
ET Certificate Enrollment	15	166	121	152	189
Related AS Degree Enrollment	196	208	203	300	134
Total					
Florida Gateway College (FGC) Adopted ET 2009					
ET AS Degree Enrollment	8	20	19	18	24
ET Certificate Enrollment	5	2	0	*	12
Related AS Degree Enrollment	1	0	0	19	23
Related Certificate Enrollment	6	8	0	*	na
Total	20	30	19	37	59
Gulf Coast State College (GCSC) Adopted ET 2012					
ET AS Degree Enrollment		51	104	113	85
ET Certificate Enrollment	2	1	0	*	na
Related AS Degree Enrollment	101	57	19	*	na
Related Certificate Enrollment	5	5	0	*	na
Total	108	114	123	113	85
Hillsborough Community College (HCC) Adopted ET 2008					
ET AS Degree Enrollment	73	105	130	155	143
ET Certificate Enrollment	11	11	0	none reported	13
Related AS Degree Enrollment	201	168	130	294	171
Related Certificate Enrollment	39	35	65	97	108
Total					282
Lake Sumter State College Adopted ET 2015					
ET AS Degree Enrollment	not yet reported				47
ET Certificate Enrollment					13
Related AS Degree Enrollment			31	27	30
Related Certificate Enrollment			34	37	21
Total	0	0	0	0	258

College Name and Enrollment Type continued	2011-12	2012-13	2013-14	2014-15	2015-16
Northwest Florida State College (NWFSC) Adopted ET 2012					
ET AS Degree Enrollment	67	72	135	135	141
ET Certificate Enrollment	7	0	29	29	na
Related AS Degree Enrollment	96	74	83	83	38
Related Certificate Enrollment	2	0	*	*	na
Total	172	146	247	247	179
Palm Beach State College (PBSC) Adopted ET 2015					
ET AS Degree Enrollment				33	113
ET Certificate Enrollment				none reported	na
Related AS Degree Enrollment			156	149	120
Related Certificate Enrollment				none reported	13
Total	182	158	156	182	246
Pasco-Hernando State College (PHSC) Adopted ET 2015					
ET AS Degree Enrollment				44	74
ET Certificate Enrollment				*	na
Related AS Degree Enrollment			63	61	63
Related Certificate Enrollment				*	na
Total	65	64	63	105	137
Pensacola State College (PSC) Adopted ET 2008					
ET AS Degree Enrollment	75	77	78	69	72
ET Certificate Enrollment	14	12	0	0	na
Related AS Degree Enrollment	180	164	92	72	79
Related Certificate Enrollment	6	6	0	0	0
Total	275	259	170	141	151
Polk State College (PSC) Adopted ET 2009					
ET AS Degree Enrollment	118	168	165	140	143
ET Certificate Enrollment		0	0	*	17
Related AS Degree Enrollment	19	19	0	84	na
Related Certificate Enrollment		0	0	*	53
Total	**132**	**78**	**80**	**93**	112
State College of Florida Manatee-Venice (SCF) Adopted ET 2009					
ET AS Degree Enrollment	148	146	145	122	89
ET Certificate Enrollment		1	2	0	na
Related AS Degree Enrollment	23	6	3		na
Related Certificate Enrollment			4	0	*
Total	171	153	154	122	89
Seminole State College (SSC) Adopted ET 2014					
ET AS Degree Enrollment					24
ET Certificate Enrollment					na
Related AS Degree Enrollment			37	28	154
Related Certificate Enrollment			19	50	36
Total			**56**	**78**	214
South Florida State College (SFSC) - added					
ET AS Degree Enrollment					na
ET Certificate Enrollment					na
Related AS Degree Enrollment					na
Related Certificate Enrollment					17
Total					11
St. Petersburg College (SPC) Adopted ET 2008					
ET AS Degree Enrollment	160	183	221	265	258
ET Certificate Enrollment	32	46	66	95	98
Related AS Degree Enrollment	93	84	75	74	151
Related Certificate Enrollment	7		0	0	na
Total	292	313	362	434	507
Tallahassee Community College (TCC) Adopted ET 2011					
ET AS Degree Enrollment			18	47	55
ET Certificate Enrollment	4	1	5	0	na
Related AS Degree Enrollment	150	128	74	26	19
Related Certificate Enrollment	1	8	5	0	13
Total	151	137	84	73	87
Valencia					
ET AS Degree Enrollment					na
ET Certificate Enrollment					10
Related AS Degree Enrollment					489
Related Certificate Enrollment					164
Total	752	763	730	795	663