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August 14, 2019

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

Dear Dr. Carter:

As the External Evaluator, I have completed the latest FLATE Annual Evaluation Report for the year ending June 30, 2019, and have enclosed it with this letter. Please contact me with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Phil Centonze', is written over a light gray rectangular background.

Phil Centonze
Co-Founder and Managing Partner

Florida Advanced Technological Education Center (FLATE) Supplemental Evaluation
Report
Ending June 30, 2019

Executive Summary

This supplemental report examines and evaluates organizational performance over the last period of the FLATE supplemental award 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 has been an integral element in spurring FLATE's progress and effectiveness. 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 the evaluation 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.

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 had been 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.

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. Included are these below.

- FLATE together with FloridaMakes and the NIST-Manufacturing Extension Partnership (MEP) National network continue to collaborate in developing a series of workforce development workshops to interact with the Florida regional manufacturers associations to establish partnership paths for stakeholder organizations in relevant technician education, workforce training, and recruiting specifically to address workforce challenges and critical skills to meet the demands of advanced manufacturing. The intent of this project is to build and foster partnerships to create a vibrant community of practice that supports manufacturing education in Florida.
- FLATE has worked with the Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) program within the Florida College system and its feeder Career and Technical Education (CTE) programs around the state. This project design was to increase the passing rate of Florida high school students’ CPT assessments to 80%.

Twenty educators from twelve high school and six post-secondary institutions participated in the 2018 FLATE-facilitated training course for the MSSC CPT and CPT + workshop for educators. The event was sponsored by FACTE, MSSC, and training equipment distributors. As an element of the workshop, FLATE included an educator and industry panel with distinguished guests to discuss important topics and issues relating to student difficulties and classroom activities to address MSSC-related areas. Partner educational institutions in this project include Armwood High School, Freeport High School, Manatee High School, Milton High School, Nature Coast Technical High School, Northview High School, Osceola County Schools, Rutherford High School, St. Lucie

Public School, West Technical Education Center, Osceola Technical College, College of Central Florida, Lake Sumter State College, Hillsborough Community College, Polk State College, and St. Petersburg College.

- AVS (Science and Technology of Materials, Interfaces, and Processing) and FLATE Partnership Project for Technical Faculty Professional Development is based on opportunities that developed because of FLATE's activities as an NSF-ATE Center of Excellence in developing a mechatronics skills supportive workforce for Florida manufacturing and FLATE leadership team involvement with the AVS National Education Committee. Meeting with the AVS began in the summer of 2108 and have proceeded to date. The results include the outline of a two-year college STEM faculty professional development workshop that will extend skills within mechatronics to include the important technician sector that is responsible for the maintenance of controlled environments in critical Department of Defense, (DOD), Florida Department of Education (FLDOE), and National Institute of Standards and Technology (NIST) related technologies.
- A collaborative process for transferring FLATE functions and mission to a State of Florida Supported Center within the operating structure of FloridaMakes, the Manufacturing Extension Partnership (MEP) National Network member for Florida. Efforts to accomplish this objective began with initial conversations with FloridaMakes to establish interest in assimilating FLATE. A strategy was developed that included interactions with the Florida Legislature, the FLDOE, and NIST. Meetings with the Florida Legislature began in the late fall of 2018 and a bill to support FLATE as an element of FloridaMakes was introduced into the Florida House in January 2019. Meetings with NIST continued through 2018 and spring of 2019. The House bill remained in play until the last days of the legislative session when it was struck with other bills during the balance the budget process. The interactions with NIST continue. An initial proposal (NSF 1939173) was submitted and is currently pending. In addition, a partnership action proposal between NIST and NSF-ATE is being developed (Temporary Proposal # 793519) by FloridaMakes for submission by FloridaMakes by October 2020.

The first three projects align with FLATE's **Curriculum Development and Reform** goal. The last aligns with the **Sustainability** goal.

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. This plan 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, regarding 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 an updated version of the best practice booklet "ET High Tech Camps for High School Students", which is now available. FLATE has published ten Best Practice Guides, and since 2010 has developed and distributed both electronically and in hard copy, the "FLATE Best Practice Guide" series.

The following information addresses Effectiveness Measure SE-7. FLATE mentored several institutions in 2018. 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.

The following itemizes the mentoring relationships in which FLATE a has participated as an indication of FLATE's support for advancing the effectiveness of manufacturing education in Florida and across the country:

- Continuous mentoring to Valencia College, Chipola College, St. John River State College, and North Florida Community College for the development of specializations, certifications under within the Engineering Technology (ET) AS degree program.
- PathTech LIFE (NSF#1501999): data analysis.
- PathTech LISTEN- Mixed methods Longitudinal Investigations of Students in Technician Education (NSF #1801163): national research study project, awarded on fall of 2018, examines the transition from taking community college courses, to attaining associates and baccalaureate degrees, to reaching career goals, such as better pay and job promotion. Currently the project is in the pilot state and plan to complete the first full wave of national interviews on summer of 2019 with technician students who participated in LIFE.
- Continues partnership 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 2018 the project provided to the Society of Manufacturing Engineer's (SME) developed modules for workshop training sessions.
- 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 opportunities 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 convenings, 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, defining common knowledge and skill set components among the programs of Exchange members.
- Continued partnership with Advanced Robotics for Manufacturing (ARM) Institute Partnerships in Florida, The Association for Packaging and Processing Technologies (PMMI) Education, and the M-PEC Center.

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. In the first year, 2007-08, the ET AS degree program was implemented, there were three colleges which had adopted it. This number had grown to 13 in 2013. By the end of 2018, 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 2020 academic year. FLATE continued to mentor the new ET AS degree programs both in and outside of Florida. See Table B-1.

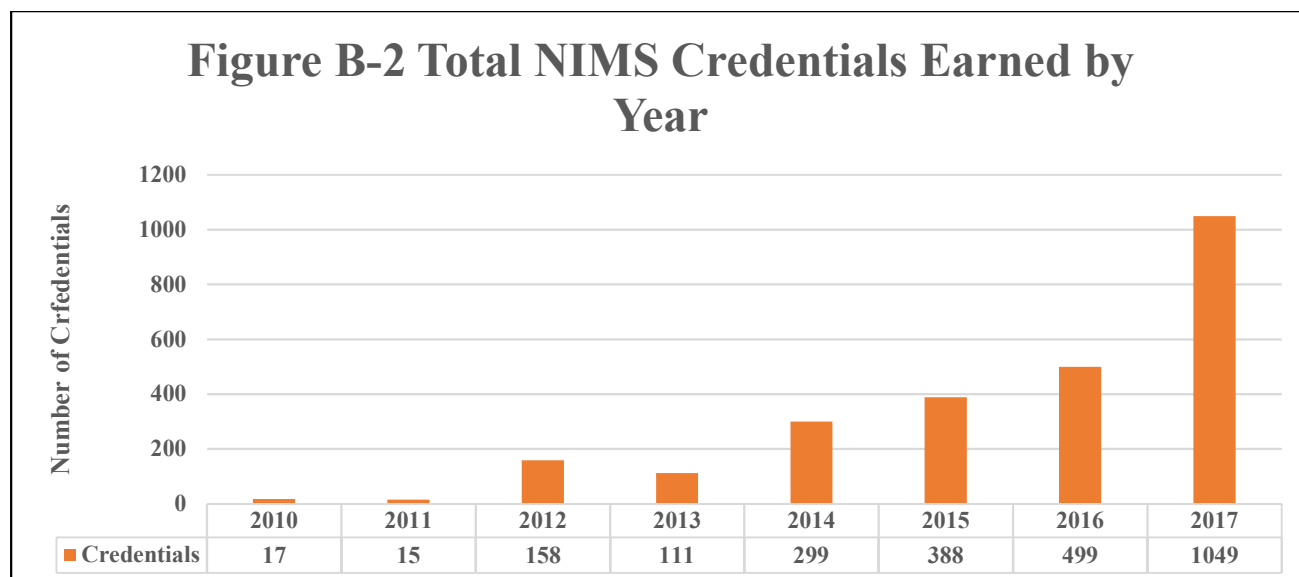
Table B-1 Academic Year – ET Degree Program Framework Adoptions	
Academic Year	Number of Colleges
2012-2013	13
2013-2014	14
2014-2015	19
2015-2016	19
2016-2017	22
2017-2018	23
2018-2019	23
Eastern Florida State College (Cocoa)	St. Petersburg College (Clearwater)
College of Central Florida (Ocala)	Polk 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 2020 *DSC has also established an 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). Table B-1 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 to report currently.

The following information addresses Effectiveness Measure CE-3. MSSC has released data for its assessments and awarded credentials. To date Florida is the second highest nationally in terms of MSSC Credentials used for 2018. The MSSC Certified Production Technicians (CPT) the cumulative total for Florida increased from 14,062 in 2017 to 19,387 in 2018, with 5,325 certifications earned in the year. Please see the 2018 MSSC Florida Fact sheet attached as Appendix D. The MSSC CPT certification is an advantage for students in the ET AS degree program as 15 college credit hours earned from the certification contribute towards the degree. The CPT is an industry certification also on the Florida Department of Education (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.

Figure B-2 Shows numbers of the National Institute for metalworking Skills (NIMS) credential certifications earned in Florida each year through 2017, which 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. No articulated high school frameworks were submitted in 2018.

Target Objective CE-7 (i.e. Aligned skills to another state's same major manufacturer activities) was abandoned, as reported last year, therefore no data are reported.

Figure B-3, addressing Effectiveness Measure CE-8, displays enrollment data, respectively, for the ET AS degree program. The figure indicates a continued favorable and growing enrollment trend for the program, beginning to flatten in the last 2 academic years. Figure B-4 is a comparative measure to show complementary decrease in enrollment in related technology AS programs enrollment.

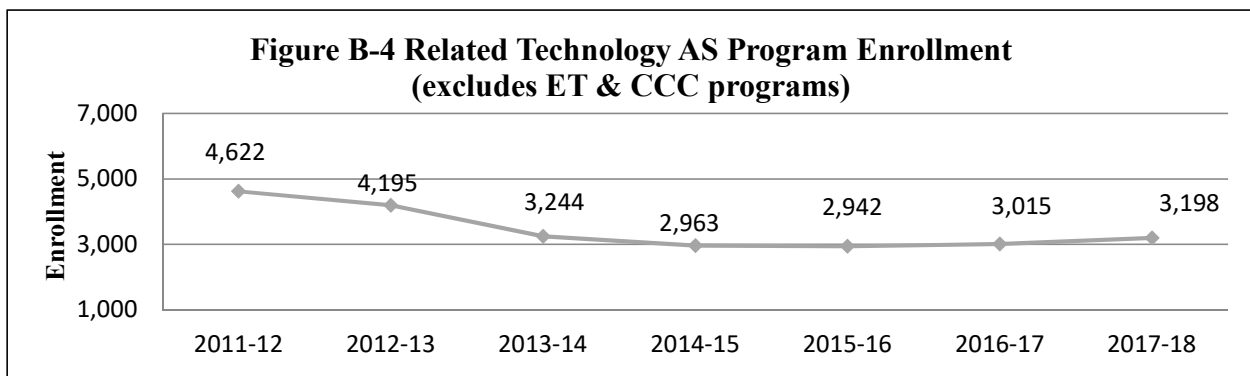
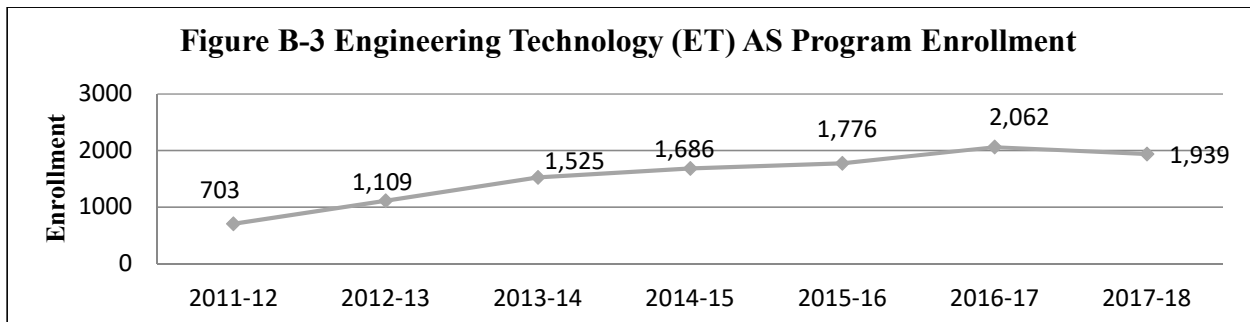
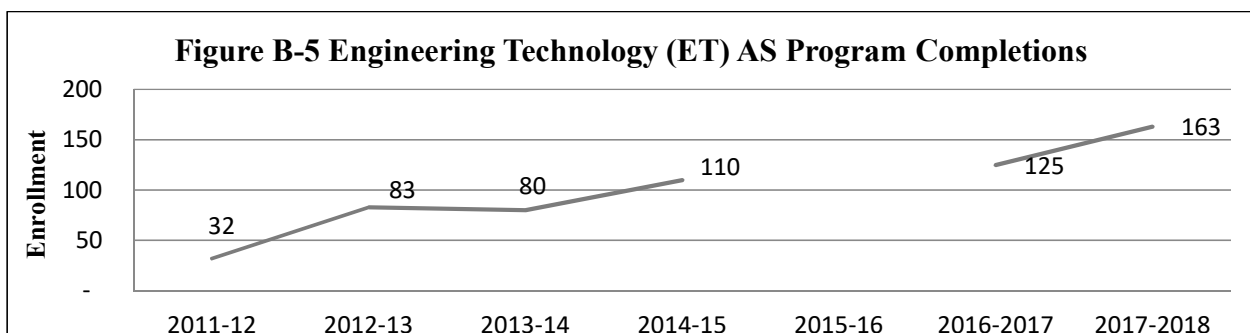


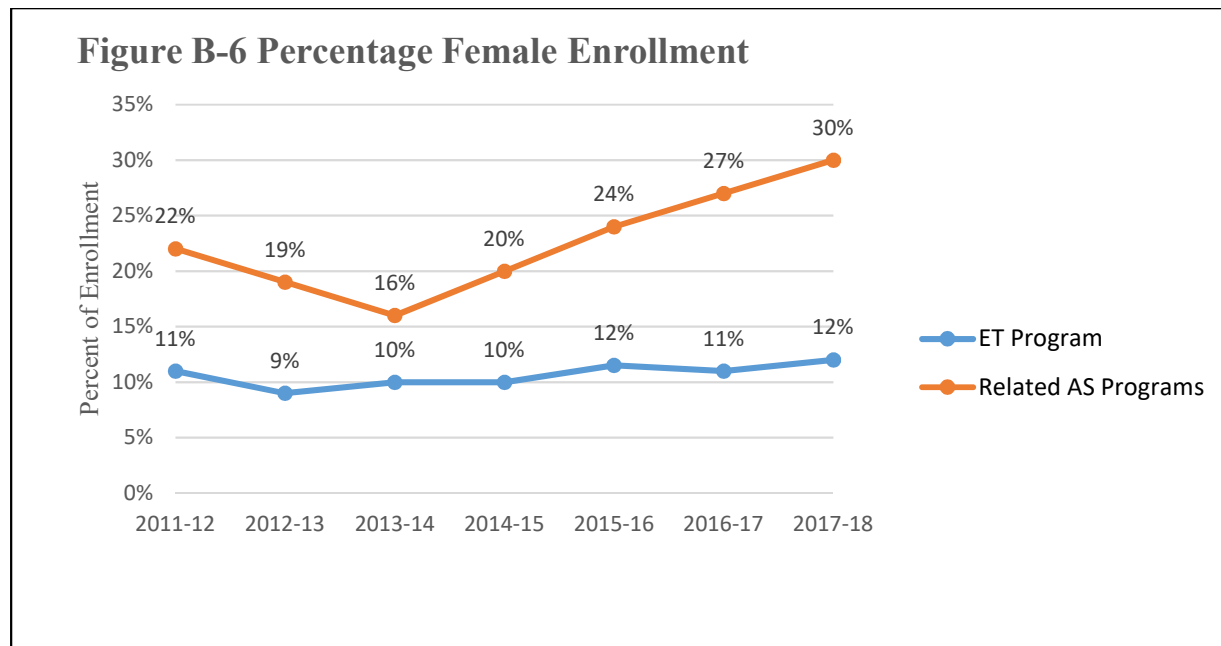
Figure B-5 shows data that reflect growth in ET AS program completions. A favorable growth trend is depicted, although no data were available for the 2015-16 academic year. These related programs include Aerospace Technology; Biomedical Engineering Technology; Chemical Technology; Computer Integrated 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.



Appendix E provides more detail about historic and current enrollment and completion data.

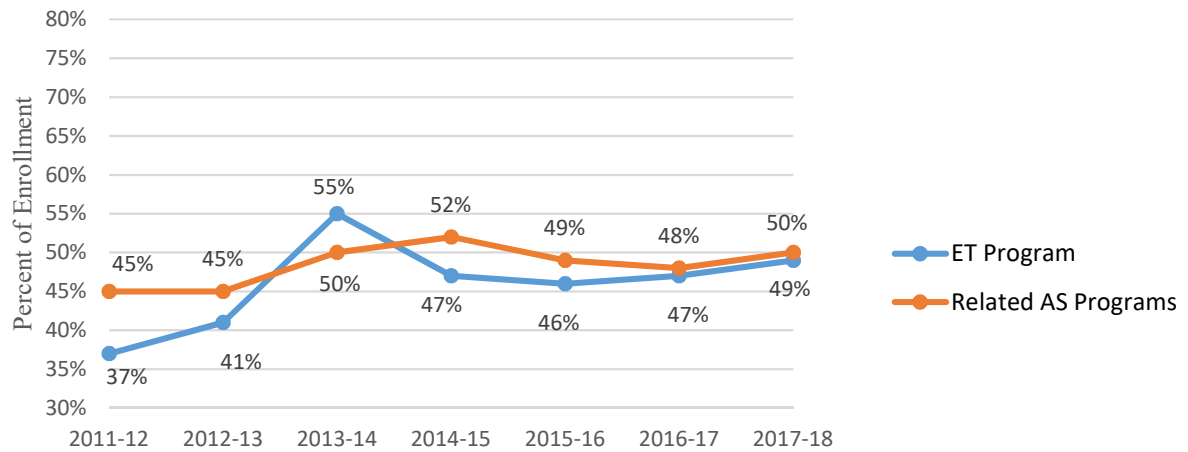
The next two figures, Figures B-6 and B-7, provide data on other aspects of ET AS degree program enrollment. Specifically, these data indicate trends in the minority and female enrollee populations in the ET AS degree program. The female enrollment trend (Figure B-4) lags in both, level and rate of increase when compared to female enrollment in other related AS programs.

FLATE had continuously endeavored to encourage female participation in the enrollment pipeline. Among the efforts are included the All-Girls Robotics Camps, girl camp scholarships, a webinar (recorded) about recruiting girls, a wiki page with resources for female recruitment, and the Women in Manufacturing video with a teacher resource guide.



The data in Figure B-7 show that minority enrollment in the ET AS program has favorably grown to match minority enrollment in comparable related degree programs, at 49% and 50% respectively.

Figure B-7 Percentage Minority Enrollment



The following information addresses Effectiveness Measure CE-9. For 2018 there are two new curriculums for the LEGO Mindstorms EV3 Robotics camps for introductory and intermediate levels. Both levels include a five-day curriculum with theory, hands on activities and challenges for students, and materials for the instructor. The new-updated curriculum is available online at the FLATE wiki. FLATE continues to support the MSSC CPT approach for pre-engineering courses of instruction at Middleton, Armwood, Freeport, Manatee, Milton, Nature Coast Technical, Rutherford, and Northview High Schools, Osceola County Schools, and St. Lucie Public Schools.

Relating to Effectiveness Measure CE-10, FLATE continues the archiving process of documents onto ATE Central. ATE Central has been designated the NSF ATE archive site for all NSF ATE resources, providing indefinite access to these resources, providing long-term sustainability of FLATE's digital resources.

Addressing Effectiveness Measure CE-11, FLATE, with the support of the FLDOE, continues its cross-cluster technical skills identification and review of engineering technology frameworks. This review was performed during the fall 2018 ET Forum. This effort was part of the three-year cycle requirements and procedures.

Table B-8 Wiki Resource Users

	2018 Visits	2017 Visits	2016 Visits	2015 Visits	2014 Visits
High School Resources	109	142	149	217	250
Middle School Resources	173	149	169	193	356
Career CTE Resources	289	319	399	308	195

Table B-8 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. The Table shows data for the last 5 years.

Table B-9 Secondary and PSAV Programs Offered; Enrollments and Completions					
Academic Year	2013-14	2014-15	2015-16	2016-17	2017-18
Secondary School					
Programs Offered	647	613	587	832	797
Enrollment in Programs	23,292	21,449	21,298	33,134	34,674
Program Graduates	3,384	3,266	3,269	5,058	5,029
PSAV					
Programs Offered	8	5	14	18	20
Enrollment in Programs	1,639	1,773	2,358	1,401	1,472
Occupational Completion Point (OCP) Earners	2,617	2,953	2,470	1,090	522
Full Program Completers	596	457	352	106	28

Table B-9 addresses Effectiveness Measure CE-13, relating to the number of Secondary and Post-Secondary Adult Vocational (PSAV) school programs. 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 and remained at a high level in 2017-18. At

the same time, the PSAV trends are unfavorable. It is unclear why these trends exist. However, all 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.

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

Section C. Effectiveness of Outreach and Recruitment Efforts

Refer to Table 3 on page 4. Also, see information addressing Effectiveness Measure SE-5 on page 8. 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. With FloridaMakes, FLATE continued to coordinate statewide events on MFG Day and Month again in 2018, planning for MFG Day 2019 in Florida, and collaborating with regional manufacturers associations, and other partners around the state. For FLATE, this effort has further reinforced the transition of the FLATE mission for enduring development of a world-class technical workforce that will be the backbone of Florida manufacturing.

In 2018, MFG Day & month continued efforts and made a tremendous impact in raising awareness about the importance of manufacturing to the state and national economies, and in building a pipeline of next generation high-tech, high-skilled workers. Statewide approximately 798 people from industry provided 178 student tours and 126 industry sites in 21 counties across Florida with participation by 5,075 students, 392 educators, and 129 parents and chaperons. This marked a significant increase from last year in terms of the number of participating students, educators and manufacturers.

As examples on the local level, in Hillsborough County, 639 students and 36 educators and chaperons from 15 middle and high schools toured 11 industry sites for MFG Day & Month. In Pasco-Hernando County, approximately 893 students, 47 educators and chaperons from 22 schools toured 21 industry sites. In Polk County 233 students, 20 educators and chaperons from 10 schools toured 10 industry sites, and in Pinellas County 614 students and 36 educators/chaperones from 15 schools toured 17 industry sites for MFG Day & Month.

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.

In keeping with the ongoing strategy to survey all MFG Day & Month participants and gauge the overall impact of manufacturing events, FLATE surveyed students, educators, parents, chaperons and industry hosts. In 2018, FLATE received and tabulated surveys from 1,237 students, 42 educators and 22 industry hosts. Of the surveys received, nearly 94% of students stated the tour gave them new information about careers in advanced manufacturing. Approximately 89% stated the tour helped them understand how STEM subjects are applied in advanced manufacturing industries. Nearly 92% of surveyed students said they would recommend other students have the opportunity of experiencing the tours. The post event survey data and demographic breakdown show approximately 131.5% increase in the number of girls (73 to 169), and 61.2% (253 to 408) of boys considering a career in advanced manufacturing after the tour as before the tour. Overall, these data show a 77.1% increase in students considering careers in advanced manufacturing after the tour.

Industry hosts also deem the industry tour is a valuable investment of their company time. Of the 22 industry tour hosts that responded to FLATE's surveys, 95.5% said the tour was a good use of company time and resources. Of the educators and parents surveyed, 100% agreed the tours should be recommended to other students, tours promote careers in advanced manufacturing, and are helpful in understanding high-tech jobs and career opportunities. Among all the many positive comments made by educators, one said, *"These kinds of events change lives . . . doors are opened that these students have never walked through before and today some REALLY liked what they saw inside."*

The number of regional manufacturers associations (RMA) participating across the state was strong again in 2018. RMAs partnering with FLATE and FloridaMakes in 2018 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; six of the 13 RMAs statewide.

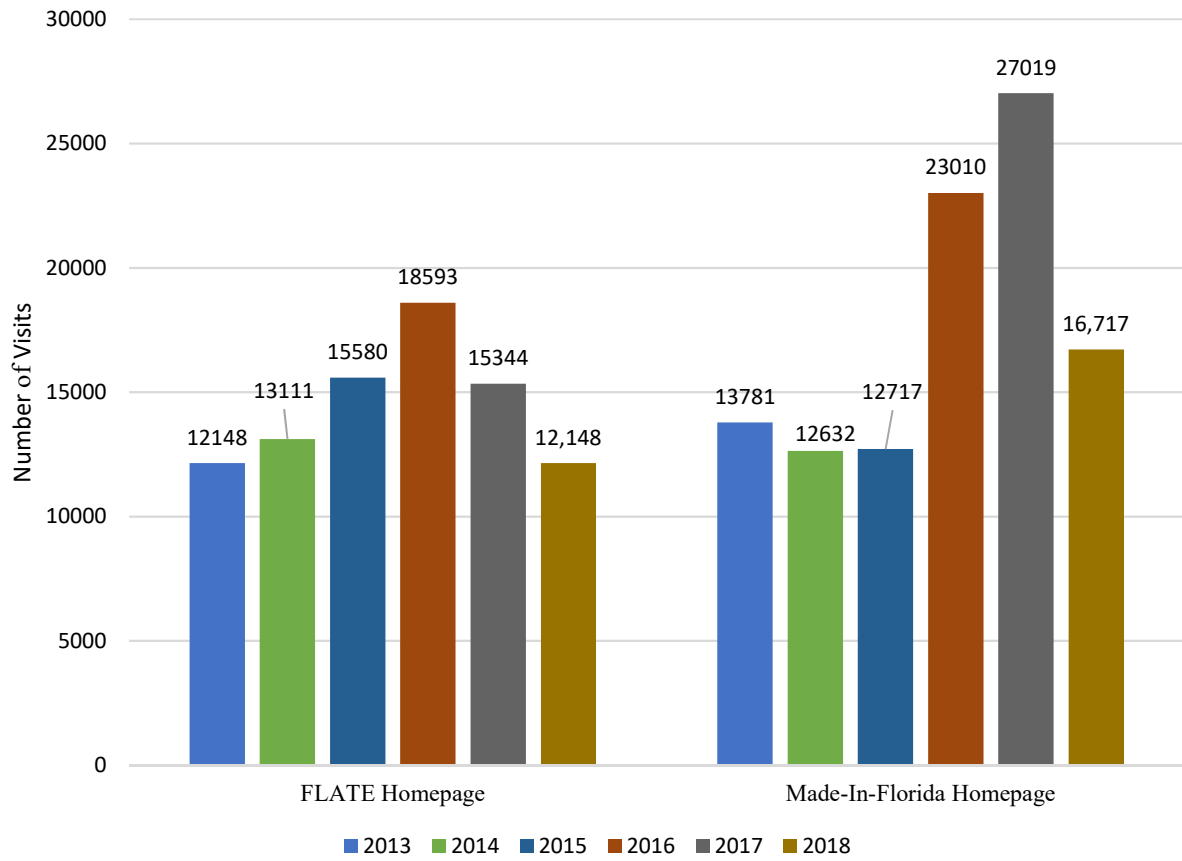
Addressing Effectiveness Measure OE-5: In an effort to establish and maintain connection with ET AS degree graduates in Florida, to follow and track their career and educational pathways after completion of the program at one of the colleges offering the degree, FLATE had established the LinkedIn® group: Graduate Connection Program. FLATE created a site that interfaced with users' LinkedIn® profiles. The group was exclusive and open to ET degree alumni, students, and industry/employers. The LinkedIn® profile had grown to over 200 industry and educator connections; members comprised primarily of ET alumni, and some educators. The LinkedIn page is currently under renovation to include all the ET Community including current students, colleges offering the ET AS Degree program and related manufacturing careers, and industry partners including RMAs.

One of the purposes of the Graduate Connection program is to track employment of ET graduates. FLATE also uses the Florida Education and Training Placement Information Program (FETPIP) data to track employment of ET graduates and to learn about their employment and earnings outcomes. The FETPIP report is attached as Appendix F. On review it can be seen there are several favorable trends, relating to ET graduates, such as placements and earnings. Follow-up studies are conducted annually by matching records of the student graduates, completers or exiters from the numerous public and independent organizations with information resources available to FETPIP.

According to the 2016-17 FETPIP data provided by FLDOE a total of 144 individuals reported information for follow-up after completing the E.T. A.S. Degree program. Of these, 112 (78%) were found employed. Similar percentages were found in 2014-15, 2015-16 at 77%. The average annual earnings for 2016-17 was \$51,384, which is an increase of more than 12% over the 2015-16 level.

Figure C-1 addresses Effectiveness Measure OE-6. Data reported for 2018 show unfavorable declines in page visits to the FLATE and the Made-In-Florida homepages. While it's unclear why this is, it may be one consequence of the reduced staff as the primary grant award expired in 2018.

Figure C-1 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 continued providing 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. These included the Women in STEM workshop at St. John River State College, the MSSC CPT & Workshop for Educators sponsored by MSSC and FACTE, Advanced Regenerative Manufacturing Institute Education & Workforce Development Summit Pathways ET Forum, the Summer Working Connections Level 1 Teacher Workshop at the Florida State College of Jacksonville-Advanced Technology Center, the FLATE Advanced Manufacturing Summer Institute on Robotics Skills workshop (introductory and intermediate) co-sponsored by FACTE, the FLATE-FAITE full day session strand at the Annual FACTE conference in Orlando.

In 2018, FLATE provided 7,488 hours of professional development to 3,559 educators (K-14) and to 1,488 industry workforce members, and parents and chaperons, in multi-day workshops, presentations, and through online webinars at hundreds of events in Florida, nationally, and worldwide.

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 FLDOE 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, 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.

Addressing Effectiveness Measure PDE-4: FLATE continued the dissemination (digital and hard copy) of ten Best Practice Guides recommended by stakeholders to fulfill part of its NSF mission to share organizational learning and expertise within the educational and NSF community.

Addressing Effectiveness Measure PDE-5, Table D-1 lists many of the FLATE initiated, sponsored, and implemented professional development events offered in 2018.

In 2018, professional development activity participant feedback solicited in eight events was that overall development value was scored at an average of 4.7 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, 2018

Event Name	Total # Educators	Total PD Hours
FCPN Annual Symposium	25	115.5
Women in STEM Workshop	22	84.0
Mechatronics Community Exchange Monthly Meeting	4	5.0
Virginia Children's Engineering Conference-A Successful Math/Engineering Elementary School Curriculum	20	25.0
FLATE -FACTE MSSC CPT & Workshop for Educators	33	307.0
ASEE – SE section Annual Conference	57	28.5
League of Innovation	60	38.2
MCA monthly meeting	12	12.0
CCTA Webinar	70	105.0
Spring ET Forum	55	491.0
Necessary Skills Now Conference	22	77.0
Evolution & Growth of Mechatronics A.S.	15	15.0
ARMI: Education & Workforce Development Summit Pathways ET Forum	40	100.0
Summer Working Connections Level 1 Teacher Workshop	18	18.0
51st FACTE Annual Conference & Trade show	196	166.4
HITEC Conference	612	869.8
FSU- Chipola AM pathways grant meetings	20	20.0
CTE Robotic Skills Workshop for Educators	16	112.0
Marion County Sara-Lefils Cont. PD & Outreach	560	1,230.5
Fall ET Forum	36	780.0
STEM Ecosystems Convention	10	45.0
Florida Educational Research Association 63rd Annual Con.	170	30.2
ACTE Vision Conference	93	44.4

III. Summary

Based on outcome data and program implementation evaluation as assessed by the Florida Sterling criteria, FLATE has been a high performing organization. As the end of the primary grant award and supplemental, and remaining funds dwindled, FLATE leadership and staff had focused on mission sustainability and continuous improvement of activities and processes. This Summary section does not change much from the Summary reported in last year's evaluation report. The efforts and resources allocated to reinforcing the durability of FLATE missions and functions appear to be bearing fruit, especially when considering the nurturing of the FLoridaMakes partnership. Several FLATE key missions have found homes in partnerships developed by FLATE during its life. FLATE was outwardly focused, regularly sharing best practices and organizational knowledge 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.

Focus on customers and stakeholders was at the core of the FLATE strategy emphasized internally through use of the Baldrige and Florida Sterling framework for performance excellence. 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 as identified in the last evaluation report are repeated here.

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 were 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 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: FL ATE 2012-2019 Strategic Hierarchy

Appendix C: FLATE Sustainability Workplan

Appendix D: 2018 MSSC Florida Fact Sheet

Appendix E: 2013-2018 Student ET and Related
Program Enrollment and Completions

Appendix F: 2012-17 FETPIP Report

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 &	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"	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	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	CE-10,CE11
2.7	Integrate ET content applications into a pre-engineering curriculum.	CE-10
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	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	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

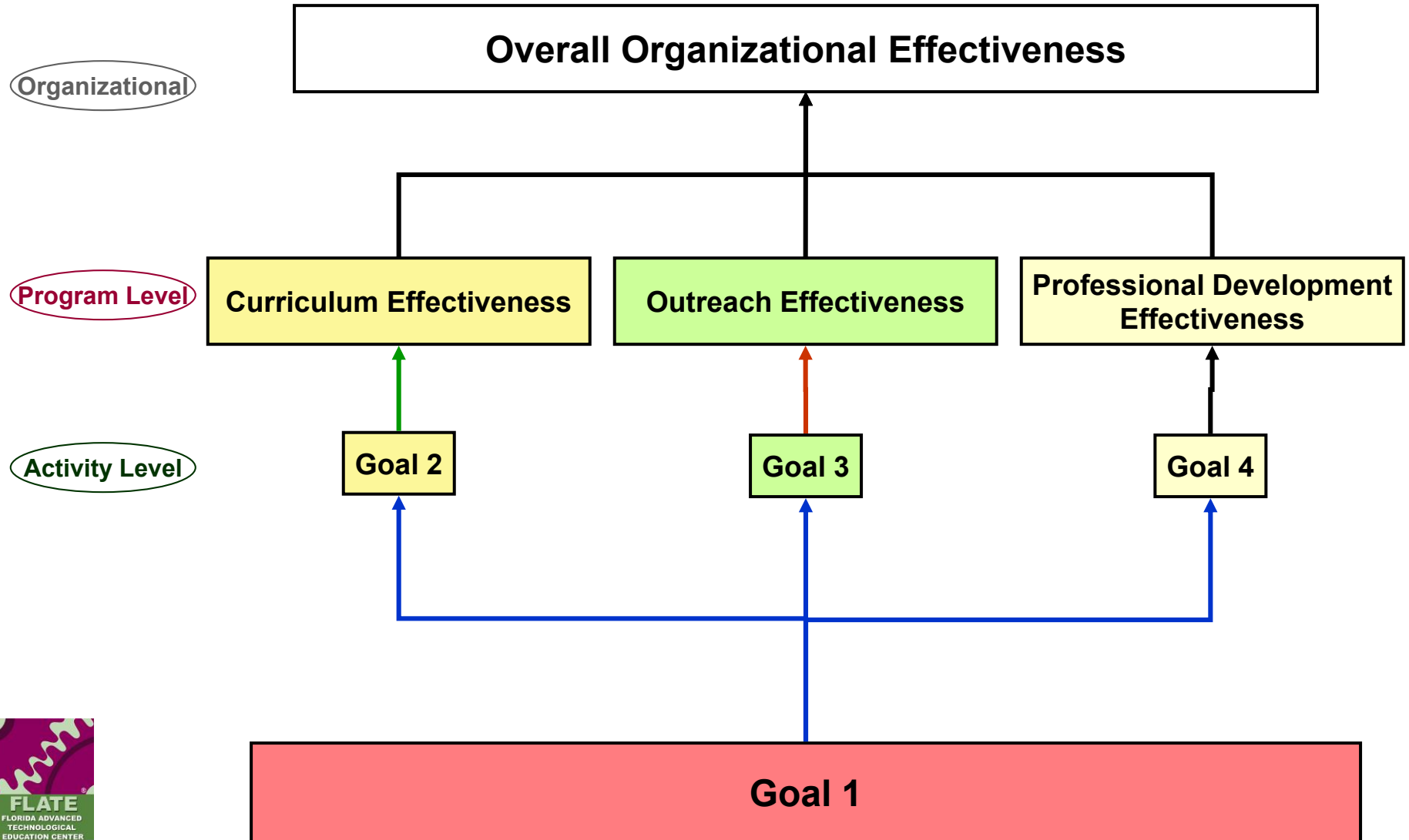
GOAL 4. To present professional development opportunities for technical faculty to develop, refine or certify their knowledge base within manufacturing and/or its related enabling technologies and educational pedagogies.

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

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

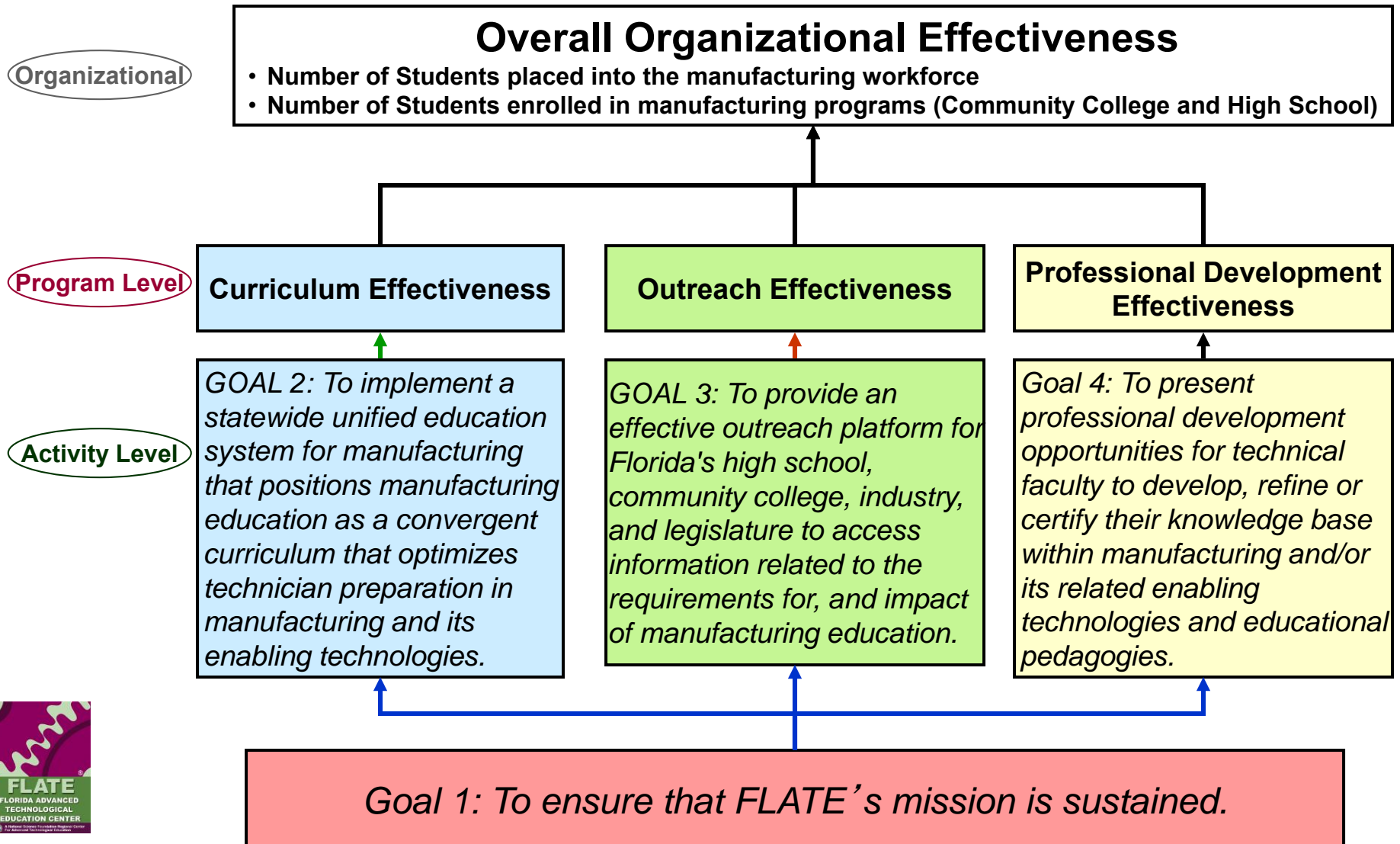
FLATE Strategic Hierarchy

2012-2019



FLATE Strategic Hierarchy

2012-2019



FLATE Strategic Hierarchy

2012-2019

Organizational

Overall Organizational Effectiveness Measures

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

Program Level

Activity Level



FLATE Strategic Hierarchy

2012-2019

Curriculum Effectiveness Measures

Organizational

- **CE-1** Number of adopting institutions from south Florida
- **CE-2** Number of apprenticeships to ET Degree
- **CE-3** Number of student earned ET degree related certifications
- **CE-4** Aligned ET degree skills to additional stackable credentials

Program Level

- **CE-5** Aligned ET degree skills to 2012 MSSC standards
- **CE-6** Aligned ET degree skills to international endorsed credential
- **CE-7** Aligned skills to another state's same major manufacturer

Activity Level

- **CE-8** National manufacturer satisfaction survey
- **CE-9** Number of tools developed related to outreach and enrollment
- **CE-10** Populate curriculum repository with 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 E.T. related high schools and PSAV programs
- **CE-14** Number of articulations



FLATE Strategic Hierarchy

2012-2019

Organizational

Outreach Effectiveness Measures

- **OE-1** Number of student contacts and enrollments
- **OE-2** Published STEM recruitment program
- **OE-3** Number of outreach events and partnerships
- **OE-4** Number of RMA's to develop regional Manufacturing activities
- **OE-5** Launch FLATE's Graduation Connection Program
- **OE-6** Number of Web Site hits

Program Level

Professional Development Effectiveness Measures

- **PDE-1** Publish Professional Development transfer best practice
- **PDE-2** Professional development hours trend chart
- **PDE-3** Report number of people who have taken and passed MSSC tests
- **PDE-4** Report the number of teachers supported

Activity Level



FLATE Strategic Hierarchy

2012-2019

Sustainability Effectiveness Measures

Organizational

- **SE-1** HCC Brandon organizational chart with shared positions
- **SE-2** Sterling evaluation score trend chart
- **SE-3** Stakeholder survey trend chart scores for total % agree

Program Level

- **SE-4** Receive Florida Sterling Challenge recognition
- **SE-5** Publish transportable models addressing NSF-ATE needs
- **SE-6** Keep record and copy of submitted documents

Activity Level



FLATE Strategic Hierarchy

2012-2019

Organizational

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.

Program Level

- 2.1 Expand south Florida student access to the A.S. ET degree.
- 2.2 Increase ET degree articulations with Department of Defense technical training courses and FLDOE apprentice programs.
- 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 benchmarking tools for ATE program impact data.
- 2.7 Develop content/expertise to support FLDOE manufacturing related clusters.
- 2.8 Integrate ET content applications into a pre-engineering curriculum.
- 2.9 Offer faculty a shared online repository for ET related curriculum content.
- 2.10 Produce at least two industry aligned online Lesson Plans per year.
- 2.11 Facilitate 3 pre-ET degree programs.
- 2.12 Facilitate articulations from ASET to new BSET programs in Florida.

Activity Level



FLATE Strategic Hierarchy

2012-2019

Organizational

Target Objects for 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.

Program Level

3.1 Continue support and improvement of the "Made in Florida" campaign.

3.2 Provide assistance for females that respond to Florida Trend NEXT advertorial.

3.3 Develop STEM recruitment program for potential "first time in College" students.

3.4 Strengthen regional industry/local school partnerships.

3.5 Connect manufacturers to ET programs with graduating students.

Activity Level

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 that emphasize essential advanced technician education for all manufacturing sectors.

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

4.5 Install FLATE Faculty PD forum model into another A,S. degree sector.

4.6 Support K-14 faculty certification testing relevant to Florida ET programs.



FLATE Strategic Hierarchy

2012-2019

Organizational

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.

Program Level

1.4 Conduct FLATE operations using defined Sterling quality principles and 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 Conduct NSF evaluation and reporting activities.

Activity Level



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.

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.

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.

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

FLORIDA FACT SHEET



Manufacturing & Logistics State Employment Profile

	Total State Industry Jobs	Front-line Industry Jobs	Total Industry as % of State Workforce
Production	314,550	220,185	3.74%
Logistics (TDL)	525,490	367,843	6.24%
Total M&L	840,040	588,028	9.98%

*BLS Occupational Employment Statistics 2017

Manufacturing production workers: \$14.53/hour + benefits

Transportation and material movers: \$13.79/hour + benefits

Retail: \$12.14/hour

*BLS 2017 State Wage Data



FLORIDA & MSSC

FL Company Participation

Companies involved with MSSC Standards Development & Deployment

ABB	Radiant Power Corporation
American Welding Society	The Employers Association of Florida
Arizona Chemical	Southern Machine Tool and Rebuilders
Autoprod Incorporated	The Columbia Group ESD
Cargill, Inc.	Walt Disney World
East Lake	
Essilor	
Harris Corporation- GCSD	
PGT Industries	

FL MSSC Activity

Authorized Assessment Centers- Listed on Reverse Side

FL Assessment Delivery & Certification Attainment

	Assessments	Certificates	Pass Rate
CPT	27,270	19,387	71%
CLT	1,847	1,306	71%
Total	29,117	20,693	71%

MSSC National Perspective

M&L Employment

Total:	19,002,950
Manufacturing:	9,024,560
Logistics:	9,978,390

Front-line:	13,186,208
Manufacturing:	6,317,192
Logistics:	6,869,016

Top 10 MSSC User States

1. Indiana
2. **Florida**
3. South Carolina
4. Ohio
5. Wisconsin
6. Texas
7. Illinois
8. California
9. Kentucky
10. North Carolina

Infrastructure

- 2,308+ instructors trained
- 1,504 assessment centers
- 49 states
- 196,791+ assessments
- 144,339+ credentials issued

FL Authorized Assessment Centers

Assessment Centers: Secondary Education

Armwood High School
Auburndale High School
Bartow Senior High
Bay District Schools
Bayshore High School
Bayside High School
Bellevue High School
Boyd H. Anderson High School
Brooks DeBartolo Collegiate High School
Broward College- North Campus
Citrus County School District
Columbia High School
Creeside High School
First Coast High School
Frank H. Peterson Academies of Technology
Freeport High School
George Jenkins High
Hamilton School District
Heritage High School
Kathleen Senior High
Keystone Heights Jr/Sr High School
Lake Region High
Lake Wales High School
Lake Weir High School
Lakewood Ranch High School
Machining Solutions
Manatee High School
Manatee Technical Institute
Marion Technical Institute (MTI)
Middleton High School
Mid-Florida Tech
Mulberry High School
Nature Coast Technical High School
North Florida Technical College
Northwest Florida State College
Okaloosa County School District
Palm Beach State College - Belle Glade Campus
Pine Ridge High School
Polk County Schools
Ridge Community High
Riverview High School
Robert E. Lee High School
Sarasota County School District
Tampa Bay Academy of Hope
The School District of Escambia County
Treasure Coast High School
Wakulla High School
West Port High School
Ridge Career Center - Polk County School Board

Assessment Centers: Post- Secondary Education

6 LRS/LGRD
Broward College
Broward College- North Campus
Broward College North Campus- Industry & Secondary
Broward County Community College
CareerSource Research Coast- Port St Lucie
CareerSource Research Coast- Stuart
Central Florida Community College

College of Central Florida
Daytona State College
Eastern Florida State College
East Lake
Florida Community College - Jacksonville Campus
Florikan
Gulf Coast State College
George Stone Technical Center
Harris Corporation- GCSD
Hillsborough Community College- Brandon Test Center
Hillsborough Community College- South Shore Campus
Hillsborough Community College - Riverview
Indian River State College
Indian River State College -Chastain Campus
Jacksonville Job Corps
Lake City Community College
Lake Sumter State College
Lockheed Martin
Locklin Technical Center
Machining Solutions
Macdonald Training Center
Manatee Technical Institute
Miami Dade College- Hialeah Campus
Miami Dade College- Homestead Campus
Miami Dade College- Kendall Campus
Miami Dade College- North Campus
Mid-Florida Tech
North Florida Community College
Northwest Florida State College
OIC of South Florida
Okaloosa Aerospace Academy
Okeechobee Correctional Institution
Palm Beach State College - Belle Glade Campus
Palm Beach State College – Gardens
Palm Beach State College at Lake Worth
Pasco-Hernando State College
Pasco Hernando Workforce Board, Inc.
Pensacola State College
PGT Industries
Pinellas Technical College
Pinellas Technical College- St. Petersburg
Polk State College
Pride Enterprises
Red Bird Resources, Inc.
Santa Fe College
Science & Tech Education Innovation Center
Seminole State College of Florida
South Florida State College
Special Ops Logistics Readiness Squadron
St. Johns River State College
St. Petersburg College - FL Trade Consortium
Suncoast Technical Education Center
State College of Florida
State College of Florida Venice
STI Electronics
Tallahassee Community College
Taylor Technical Institute
Technology Based Learning Project
Valencia College
Withlacoochee Technical Institute



**2013-2018 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 2017-18 FLDOE report year.

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- I a. Engineering Technology AS Degree Program Student Enrollment - 5 Year Trend
- I b. Related Technology AS Degree Program Student Enrollment (excludes ET) - 5 Year Trend
- I c. Selected Demographic Profile for ET and Related AS Technology Program Student Enrollment
- I d. Engineering Technology and Related AS Degree Student Enrollment by Program
- I e. Engineering Technology and Related BS Degree Student Enrollment by Program
- I f. Selected Demographic Profile for ET and Related BS Degree Student Enrollment

Section II: Florida Engineering Technology (ET) and Related Degree Program Student Completion **Page 2**

- II a. Engineering Technology AS Degree Program Completion - 5 Year Trend
- II b. Related Technology AS Degree Program Completion (excludes ET) - 5 Year Trend
- II c. Selected Demographic Profile for ET and Related AS Technology Program Student Completion
- II d. Engineering Technology and Related AS Degree Student Completion by Program
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Section VI: Post-Secondary Adult Vocational (PSAV) Enrollments, OCP, and Completions **Page 8**

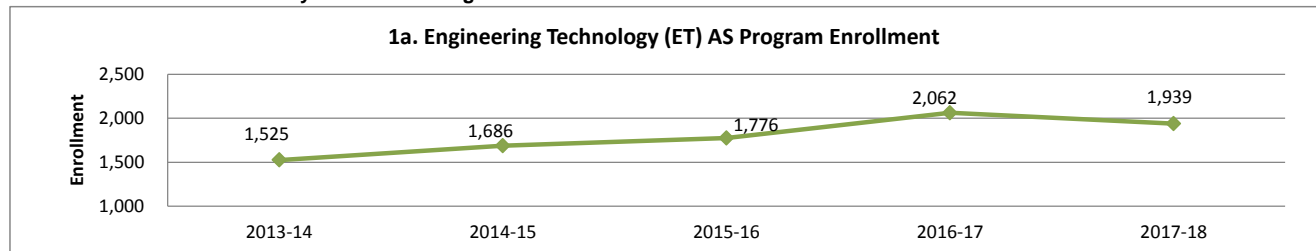
Appendix **Page 9**

- 1. Total ET & Related Technology Enrollment by College
- 2. 5-Year Enrollment Breakout for Colleges Adopting the Engineering Technology (ET) Degree Program & Related AS Degree
- 3. Cumulative 2005-2018 MSSC FL Assessment Delivery & Certification Attainment
- 4. Manufacturing apprenticeships-Total Enrollment in Florida

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

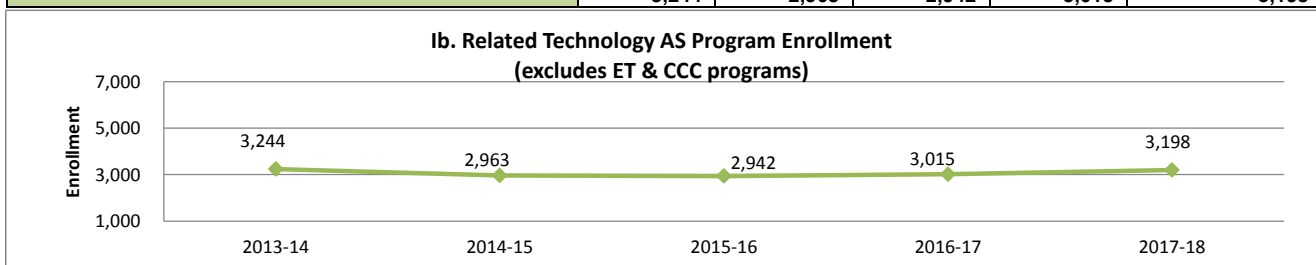
I a. ET AS Degree Program Student Enrollment Excluding CCC	2013-14	2014-15	2015-16	2016-17	2017-18
ET AS Student Enrollment	1,525	1,686	1,776	2,062	1,939
Number of Colleges Adopting the ET Program*	15	19	19	19	21

*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. © Copyright 2019 FLATE

I b. Related Technology AS Degree Program Student Enrollment Excluding ET Degree and CCC Programs	2013-14	2014-15	2015-16	2016-17	2017-18
	3,244	2,963	2,942	3,015	3,198



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).

In 2017-18 ET AS Degree program represented 38% of total Florida technology AS degree program enrollment (N=5,137).

I c. Selected Demographic Profile for ET & Related Technology AS Degree Program Enrolled Students	2013-14	2014-15	2015-16	2016-17	2017-18
ET Technology Program % Female Enrollment	10%	10%	12%	11%	12% (238)
Related Technology Program % Female Enrollment	16%	20%	24%	27%	30% (959)
ET Technology Program % Minority Enrollment	55%	47%	46%	47%	49% (944)
Related Technology Program % Minority Enrollment	50%	52%	49%	48%	50% (1,588)

I d. Engineering Technology and Related Technology Enrollment by Program (does not include certificates)

() Indicates number of colleges offering the program for the 2017-18 Academic Year.

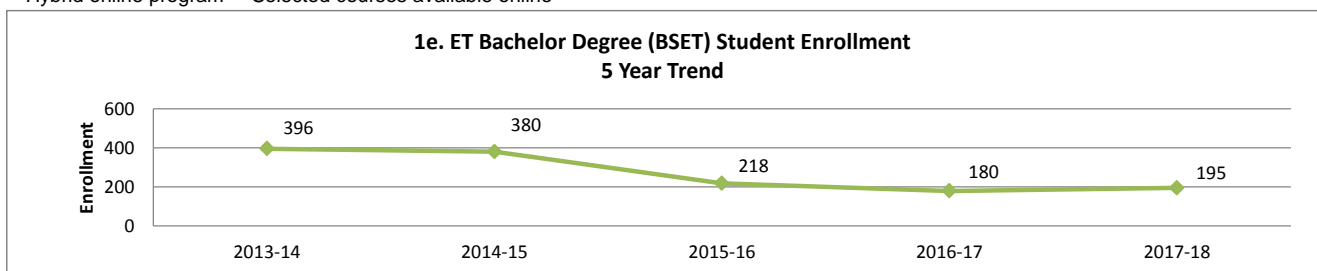
ATC: Advanced Technology Credit for POST AA/AS degree students.

AS Degree Programs	2013-14	2014-15	2015-16	2016-17	2017-18
(20) Engineering Technology (ET) Degree Enrollment	1,525	1,686	1,776	2,062	1,800
Note - FLDOE does not provide ET enrollment by specialization.					
(1) Aerospace Technology	89	103	112	126	149
(2) Applied Welding Technologies (added)	2				28
(1) Automation and Production Technology (added)					0
(4) Biomedical Engineering Technology	242	201	183	209	147
(1) Biomedical Engineering Technology ATC (added)				29	0
(4) Chemical Technology	267	382	645	804	1,077
(11) Drafting & Design Technology	609	530	506	500	484
(1) Electrical Distribution Technology	35	31	27	30	nr
(3) Electrical Power Technology	319	230	184	173	165
(1) Electronic Technology					0
(8) Electronics Engineering Technology	1187	1071	965	870	813

I d. Engineering Technology and Related Technology Enrollment by Program (does not include certificates) (Cont.)					
(15) Industrial Management Technology	459	399	294	238	241
(2) Machining (added)					29
(1) Manufacturing Technology (added)	10	0	10	*	0
(1) Sheet Metal Fabrication (added)	40				40
(1) Simulation and Robotics Technology	19	16	16	13	13
(2) Supply Chain Management (added)					12
(1) Supply Chain Management ATC (added)					0
(1) Telecommunications Engineering (added)				*	0
Total Degree Enrollment / ET and Related	4,803	4,649	4,718	5,054	3,198

I e. ET Bachelor Degree (BSET) Student Enrollment with # Offering Colleges Shown in ()	2013-14	2014-15	2015-16	2016-17	2017-18
Total BSET Enrollment Offering College & Program Name with Enrollment	675 (4)	567 (4)	538 (4)	486 (3)	497 (3)
Daytona State College* - Engineering Technology	396	380	218	180	195
State College of Florida** - Energy Technology Management	23	27	nr	nr	nr
Miami Dade College - Electronics Engineering Technology	95	125	143	118	115
Valencia College - Electronics Engineering Technology	96	143	177	188	187

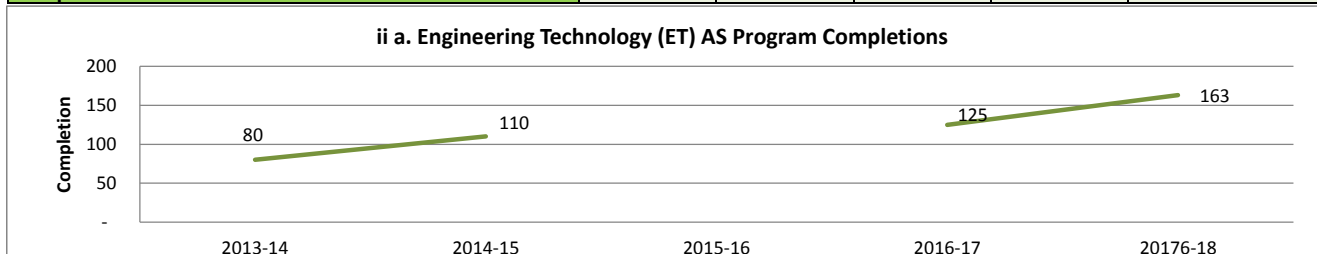
* Hybrid online program **Selected courses available online



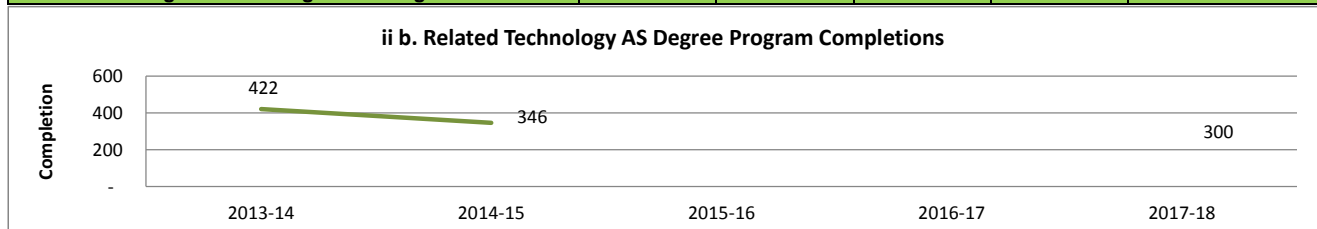
I f. BSET Enrollment Demographic Profile	2013-14	2014-15	2015-16	2016-17	2017-18
% Female BSET Enrollment	17%	16%	14%	12%	14% (27)
% Minority BSET Enrollment	54%	51%	28%	33%	38% (74)

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

II a. Engineering Technology (ET) AS Degree Program Completion	2013-14	2014-15	2015-16	2016-17	2017-18
	80	110	na	125	163



II b. Related Technology AS Degree Completion	2013-14	2014-15	2015-16	2016-17	2017-18
Excludes ET Degree and College CCC Programs	422	346	na	na	300



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

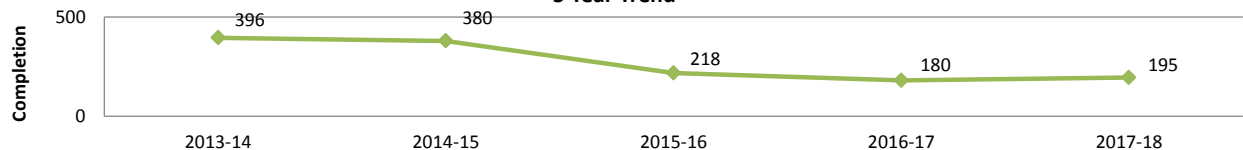
In 2017-18 the ET AS Degree program represented 38 % of total Florida technology AS degree program completions (N=463).

II c. Selected Demographic Profile for ET and Related Technology AS Degree Program Completion					
	2013-14	2014-15	2015-16	2016-17	2017-18
ET Technology Program % Female Completion	17%	7%	na	nr	14% (23)
Related Technology Program % Female Completion	17%	16%	na	nr	21% (62)
ET Technology Program % Minority Completion	34%	36%	na	nr	38% (62)
Related Technology Program % Minority Completion	39%	51%	na	nr	37% (110)

II d. Engineering Technology and Related Technology College Degree Completion by Program					
Does not include college credit certificates-CCC					
AS Degree Completion	2013-14	2014-15	2015-16	2016-17	2017-18
Aerospace Technology	13	18	na	nr	30
Applied Welding Technologies					0
Automation and Production Technology					0
Biomedical Engineering Technology	38	27	na	nr	8
Biomedical Engineering Technology ATC (added)					0
Biomedical Equipment Technician (added)			na	nr	nr
Chemical Technology	23	21	na	nr	51
Computer Integrated Manufacturing	2	0	na	nr	nr
Drafting & Design Technology	79	60	na	nr	70
Electrical Distribution Technology	2	2	na	nr	nr
Electrical Power Technology	49	29	na	nr	49
Electronic Technology (added)					0
Electronics Engineering Technology	116	123	na	nr	70
Engineering Technology	80	110	nr	nr	163
Industrial Management Technology	141	98	na	nr	17
Machining (added)					0
Manufacturing Technology (added)	3	0	na	nr	0
Robotics & Simulation Technology	2	2	na	nr	nr
Sheet Metal Fabrication Technology - APPR (added)					0
Simulation Technology (added)					3
Supply Chain Management (added)					2
Supply Chain Management ATC (added)					0
Telecommunications Engineering Technology (added)			na	nr	0
Total College Completion	548	490			463

II e. ET Bachelor Degree (BSET) Completion	2014-15	2015-16	2016-17	2017-18	2018-19
Total BSET Completion	65	73	57	57	24

ii e. ET Bachelor Degree (BSET) Student Enrollment
5 Year Trend

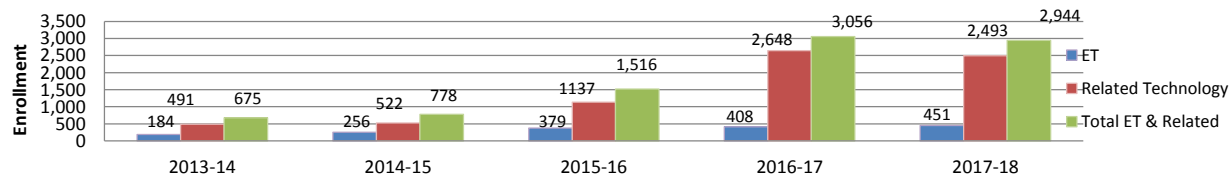


II f. BSET Demographic Profile	2013-14	2014-15	2015-16	2016-17	2017-18
BSET % Female Completion	17%	20%	*19%	na	*4% (1)
BSET % Minority Completion	36%	46%	42%	48%	33% (8)
* Small numbers such as n=1 or n=2 skew percentage			*n=2	*n=1	*n=1

Section III: Florida ET and Related College Credit Certificate (CCC) Student Enrollment by Program					
ET Program College Credit Certificate Enrollment (CCC)	2013-14	2014-15	2015-16	2016-17	2017-18
(3) CCC - Alternative Energy Systems Specialist	12	0	nr	nr	0
(1) CCC - Applied Technology Specialist	6	0	nr	nr	0
(7) CCC - Automation	9	10	17	32	59
(1) CCC - CNC Composite Fabricator/Programmer	4	0	nr	nr	0
(2) CCC - CNC Machinist Operator/Programmer			nr	nr	20
(5) CCC - CNC Machinist/Fabricator	32	18	66	45	59
(1) CCC - Composite Fabrication and Testing CCC (added)					0

ET Program College Credit Certificate Enrollment (CCC) (Cont.)					
(3) CCC - Computer- Aided Design & Drafting	21	19	31	36	33
(1) CCC Digital Manufacturing Specialist (added)					0
(4) CCC - Electronics Aide	3	0	nr	13	16
(17) CCC - Engineering Technology Support Specialist	33	105	129	133	146
(2) CCC - Lean Manufacturing	2	0	nr	nr	0
(2) CCC - Lean Six Sigma Green Belt	16	29	16	24	10
(1) CCC - Mechanical Designer and Programmer (added)			nr	nr	0
(5) CCC - Mechatronics			43	51	29
(1) CCC - Medical Quality Systems	16	14	10	nr	0
(8) CCC - Pneumatics, Hydraulics & Motors for Manufacturing	21	48	40	47	54
(6) CCC - Rapid Prototyping Specialist (added)			27	27	25
(1) CCC - Six Sigma Black Belt	9	13	nr	nr	0
Total ET Program CCC Enrollment	184	256	379	408	451
Related Technology College Credit Certificate Enrollment by Program					
(2) CCC - Alternative Energy Engineering Technology	13	5	0	13	12
(13) CCC - AutoCAD foundations (added)				226	219
(3) CCC - Basic Electronics Technician	89	83	68	63	45
(2) CCC - Chemical Laboratory Specialist	52	58	65	54	164
(1) CCC - Computer Automation Technology (added)				nr	nr
(1) CCC - Computerized Woodworking	1	0	0	0	nr
(1) CCC - Digital Manufacturing Specialist (added)				nr	nr
(1) CCC - Electrical Distribution, Advanced Certificate	4	3	0	nr	0
(1) CCC - Electrical Utility Lineworker Basic (name changed)	26	29	34	21	27
(5) CCC - Electronics Technician	22	16	41	96	66
(3) CCC - Laser and Photonics Technician	15	17	34	25	36
(10) CCC - Logistics & Transportation Specialist (added)	248	152	92	553	506
(4) CCC - Robotics and Simulation Technology (added)	0	0	0	27	32
(5) CCC - Scientific Workplace Prep	21	159	803	1558	1386
(1) CCC - Solar Energy Technician (added)				12	0
Related Technology CCC Enrollment	491	522	1137	2,648	2,493
Combined ET & Related Technology CCC Enrollment	675	778	1516	3,056	2,944

**III. Engineering Technology and Related College Credit Certificate Enrollment (CCC)
5 Year Trend**



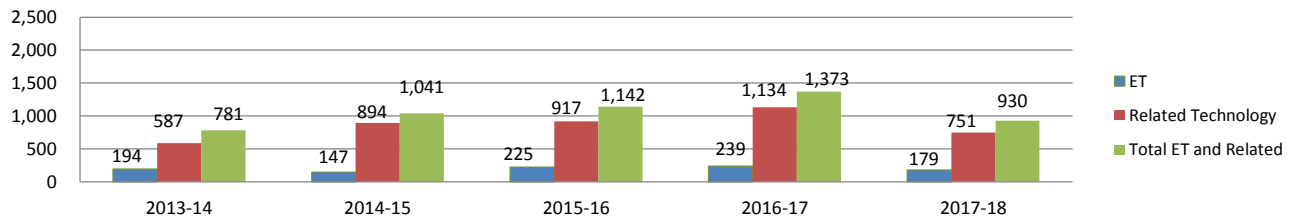
III. ET & Related College Credit Certificate (CCC) Enrollment Demographic Profile	2013-14	2014-15	2015-16	2016-17	2017-18
% ET & Related CCC Female Enrollment	33%	52%	55%	55%	52% (1,518)
% ET & Related CCC Minority Enrollment	44%	47%	50%	53%	52% (1,543)

Growth to 52 in % female enrollment in 2017-18 is primarily attributed to 1,095 females enrolled in Scientific Workplace & 161 in Logistics and Transportation Specialist at FL State College at Jacksonville (similar to 2016-17). The largest number of ET CCC female enrollment correspond to 17 females enrolled in ET Support Specialist CCC.

Section IV: Florida ET and Related College Credit Certificate (CCC) Student Completion by Program					
ET Certificate Student Completion by Program	2013-14	2014-15	2015-16	2016-17	2017-18
(3) CCC - Alternative Energy Systems Specialist	9	0	nr	nr	0
(1) CCC - Applied Technology Specialist	8	0	0	nr	0
(7) CCC - Automation	8	2	0	10	7
(1) CCC - CNC Composite Fabrication & Testing	5	0	0	4	0
(2) CCC - CNC Machinist Operator/Programmer (added)			nr	nr	5
(5) CCC - CNC Machinist/Fabricator	33	8	29	18	23
(3) CCC - Computer Aided Design & Drafting	8	5	10	15	18
(4) CCC - Electronics Aide	15	0	4	12	14
(17) CCC - Engineering Technology Support Specialist	61	93	72	96	69

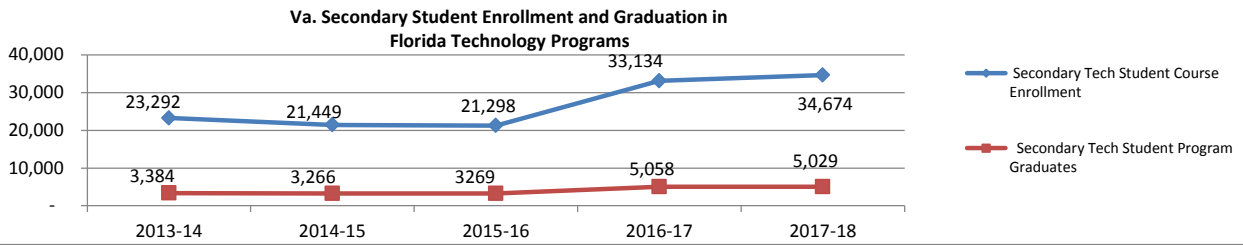
ET Certificate Student Completion by Program (Cont.)	2013-14	2014-15	2015-16	2016-17	2017-18
(2) CCC - Lean Manufacturing	4	0	3	nr	0
(2) CCC - Lean Six Sigma Green Belt	4	0	27	24	7
ET Certificate Student Completion by Program (Cont.)					
(1) CCC - Mechanical Designer and Programmer <i>(added)</i>			0	nr	0
(5) CCC - Mechatronics <i>(added)</i>	27	23	20	18	5
(1) CCC - Medical Quality Systems	27	23	8	nr	0
(8) CCC - Pneumatics, Hydraulics & Motors for Manufacturing	22	25	21	19	10
(6) CCC - Rapid Prototyping Specialist <i>(added)</i>			28	23	21
(1) CCC - Six Sigma Black Belt	10	16	0	nr	0
Total ET Certificate Completion by Program	231	179	222	239	179
Related Technology Program Certificate Completion	2013-14	2014-15	2015-16	2016-17	2017-18
(2) CCC - Alternative Energy Engineering Technology	4	0	3	3	2
(13) CCC - AutoCAD foundations <i>(added)</i>	211	183	137	130	128
(3) CCC - Basic Electronics Technician	102	57	61	51	42
(2) CCC - Chemical Laboratory Specialist	32	31	24	13	12
(1) CCC - Automation and Production Technology <i>(added)</i>			nr	nr	0
(1) CCC - Computerized Woodworking	2	0	8	5	nr
(1) CCC - Digital Manufacturing Specialist <i>(added)</i>			nr	nr	nr
(1) CCC - Electrical Distribution, Advanced	1	0	5	nr	0
(1) CCC - Electrical Utility Lineworker Basic	2	12	3	5	8
(5) CCC - Electronics Technician	25	15	33	55	26
(3) CCC - Laser and Photonics Technician	20	31	17	24	34
(10) CCC - Logistics & Transportation Specialist <i>(added)</i>	126	39	47	90	57
(3) CCC - Robotics and Simulation Technology <i>(added)</i>	0	0	7	20	27
(5) CCC - Scientific Workplace Prep	37	491	575	727	415
(1) CCC - Solar Energy Technician <i>(added)</i>				11	0
Related Technology Program Certificate (CCC) Completion	386	859	917	1,134	751
Total Certificate Completion ET & Related CCC	529	953	781	1,373	930

IV. FL Engineering Technology and Related College Credit Certificate (CCC) Completions
5 Year Trend



ET & Related College Credit Certificate Completion Demographic Profile	2013-14	2014-15	2015-16	2016-17	2017-18
% ET & Related CCC Female Completion	25%	49%	52%	53%	49% (457)
% ET & Related CCC Minority Completion	50%	42%	46%	99%	48% (450)

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	2013-14	2014-15	2015-16	2016-17	2017-18
Number of Secondary Technology Programs Offered	647	613	587	832	797
Total Secondary Technology Student Course Enrollment	23,292	21,449	21,298	33,134	34,674
Total Secondary Technology Student Program Graduates	3,384	3,266	3,269	5,058	5,029



V b. Secondary Student Enrollment by Technology Program

Program Title	2013-14	2014-15	2015-16	2016-17	2017-18
Applied Engineering Technology (added)				6079	6786
Applied Robotics (added)				3533	4101
Applied Welding Technologies	1,495	1,488	808	368	340
Automation & Production Technology (FLDOE adopted 2010)	336	494	686	1,178	524
Drafting/Illustrative Design Technology (added)				574	432
Program Title (Cont.)	2013-14	2014-15	2015-16	2016-17	2017-18
Electronics Technology	301	244	431	80	247
Energy Directed Study (added-new)					0
Energy Generation Technician (added-new)					63
Energy Technician (added)				340	340
Engineering Assisting	113	73	64	147	160
Engineering Pathways	10,682	11,648	13,421	15,640	16,982
Engineering Technology (Secondary)	6,050	3,831	1,793	669	333
Industrial Biotechnology	508	694	1,036	1,356	1,523
Machining	172	280	214	114	101
Materials and Processes Technology	1,694	1,466	1,583	1,576	1,605
Power and Energy Technology (added)				327	286
Production Technology	1,373	877	1,008	818	607
Solar Energy Technology (FLDOE adopted 2011)	118	68	122	38	49
Technology Systems	211	28	132	297	132
Transportation Technology ((added-new)					63
Total Secondary Student Course Enrollment	21,558	19,703	20,490	33,134	34,611

V c. Secondary Level Technology Demographics Profile

Program Title	2013-14	2014-15	2015-16	2016-17	2017-18
Applied Engineering Technology (added)				606	768
Applied Robotics (added)				460	486
Applied Welding Technologies	254	266	212	96	106
Automation & Production Technology	49	63	64	168	87
Drafting/Illustrative Design Technology (added)				146	53
Electronics Technology	49	36	62	13	39
Energy Directed Study (added-new)					0
Energy Generation Technician (added-new)					0
Energy Technician (added)				67	42
Engineering Assisting	26	18	14	35	37
Engineering Pathways	1,500	1,665	1,788	2,333	2,434
Engineering Technology (Secondary)	652	505	295	182	81
Industrial Biotechnology	78	88	123	239	271
Machining	11	38	38	22	16
Materials and Processes Technology	347	261	374	326	298
Power and Energy Technology (added)				43	30
Production Technology	304	247	279	313	274
Solar Energy Technology	31	14	20	2	1
Technology Systems					0
Transportation Technology	15	0 nr		7	6
Total Secondary Student Technology Program Graduates	3,062	2,935	3,057	5,058	5,029

V d. Selected Demographic Profile for Secondary Technology Programs including Internships

% Female Students of Total Secondary Enrollment	15%	18%	19%	20%	21% (7,162)
% Minority Students of Total Secondary Enrollment	48%	48%	51%	52%	53% (18,517)
% Minority Students of Total Secondary Graduates	48%	49%	52%	80%	54% (2,691)
Total Number of Internships*	0	8	20	34	nr
Number of Females Placed in Internships	0	2	4	8	nr
Number of Males Placed in Internships	0	6	16	26	nr
% Females for Total Placed in Internships	0%	25%	20%	24%	nr
% Minorities Placed in Internships	0%	75% (n=6)	35% (n=7)	62%	nr

VI. Post-Secondary Adult Vocational (PSAV) Enrollments, OCP, and Completions					
PSAV FLDOE Categories	2013-14	2014-15	2015-16	2016-17	2017-18
Total Student Enrollment	1,639	1,773	2,358	1,401	1,472
Total Student Enrollment Disabled (new added)					12
Total Student Enrollment Veterans (new added)					0
Occupational Completion Point (OCP) Earners	2,617	2,953	2,470	1,090	522
Full Program Completer	596	457	352	106	28
Number of Programs Offered	8	5	14	18	20
Number of Participating Institutions	33	35	32	30	56
Total Industry Certification - MCCA Taken (added)				11	43
Total Industry Certification - MCCA Passed (added)				11	nr
Enrollment by Program					
Program Title	2013-14	2014-15	2015-16	2016-17	2017-18
Applied Welding Technologies	1,335	1,492	842	191	28
Automation & Production Technology	2	0	11	12	0
Career and Technical Related Basic Skills					0
CWE - Engineering and Technology (added)				nr	0
CWE-Manufacturing (added)			20	nr	19
CWE-Transportation, Distribution & Logistics (added)			691	547	720
Electrical & Instrumentation Technology 1 & 2	34	0	29	31	22
Electronic Technology 1 & 2	2	0	331	200	177
Energy Technician			40	27	13
Industrial Machinery Maintenance & Repair	39	38	10	18	21
Industrial Technology	9	14	13	nr	0
Machining					29
Machining - APR	212	229	163	134	167
Manufacturing Cooperative Education-OJT (added)				12	nr
Sheet Metal Fabrication Technology - APR (added)			151	141	192
Solar Photovoltaic Syst Desing, Inst, Maint-Entry Level	6	0	28	63	59
Solar Thermal Design, Installation, & Maintenance*	5		nr	nr	0
Turbine Generator Maintenance, Inspection & Repair (added)			29	25	25

Appendix 1: Total ET & Related Technology Enrollment by College 5-Year Engineering Technology and Related Technology Program Enrollment Includes Total Student Enrollment by College for ET and Related Technology AS Degrees and ET and Related College Credit Certificates					
<i>Source: FLDOE College Credit Student Data Base</i>					
Highlight indicates adoption of ET Degree	2013-14	2014-15	2015-16	2016-17	2017-18
(10) Broward College	361	417	429	608	509
(9) College of Central Florida	65	44	52	94	138
(3) Chipola College (added 2015 adoption)	0	0	23	29	22
(9) Daytona State College	147	155	248	125	200
(11) Eastern Florida State College	835	921	1,132	1,165	1,130
(13) Florida State College at Jacksonville	581	1,276	1,959	2,256	2,219
(4) Florida SouthWestern Florida State College (Formerly Edison)	63	23	nr	nr	261
(6) Florida Gateway College	30	19	37	59	12
(1) Florida Keys (added 2018 adoption)					12
(6) Gulf Coast State College	114	123	113	85	83
(13) Hillsborough Community College	319	325	546	435	436
(9) Indian River State College	281	282	204	282	245
(4) Lake Sumter State College (added 2015 adoption)	58	65	64	111	126
(10) Miami Dade College	408	364	624	258	230
(1) North Florida Community College (added 2018 adoption)					0
(7) Northwest Florida State College	172	146	247	179	87
(7) Palm Beach State College (added 2015 adoption)	158	156	182	246	321
(7) Pasco-Hernando State College (added 2015 adoption)	64	63	105	137	150
(15) Pensacola State College	259	170	141	151	133
(4) Polk State College	187	165	224	213	198
(3) Santa Fe College	78	80	93	112	38
(4) State College of Florida Manatee-Sarasota- Venice	154	122	98	89	92
(7) Seminole State College	56	78	74	214	286
(5) South Florida State College (added 2018 adoption)	15	0	31	17	12
(4) St. Johns River State College	26	15	68	11	0
(12) St. Petersburg College	362	434	461	507	368
(7) Tallahassee Community College	102	73	71	87	75
(9) Valencia Community College	763	730	795	663	698
Total Enrollment for all Institutions*	5,658	6,246	8,021	8,133	8,081

*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).

Note: na: not available; nr: not reported

Appendix 2: 5-Year Enrollment Breakout for Colleges Adopting the Engineering Technology (ET) Degree Program & Related AS Degree					
College Name and Enrollment Type	2013-14	2014-15	2015-16	2016-17	2017-18
Broward College (BC) - Adopted ET 2012					
ET AS Degree Enrollment	271	327	259	334	228
ET AS Degree Female Enrollment					27
ET AS Degree Minority Enrollment					190
ET Certificate Enrollment	0	30	20	36	55
Related AS Degree Enrollment	75	41	123	24	29
Related Certificate Enrollment	15	19	27	214	197
College of Central Florida (CCF) Adopted ET 2008					
ET AS Degree Enrollment	48	44	52	94	118
ET AS Degree Female Enrollment					15
ET AS Degree Minority Enrollment					36
ET Certificate Enrollment	3	0	na	na	0
Related AS Degree Enrollment	14	0	na	na	0
Related Certificate Enrollment	0	0	na	na	20
Chipola College (CC) - Adopted ET 2016					
ET AS Degree Enrollment			23	29	22
ET AS Degree Female Enrollment					4
ET AS Degree Minority Enrollment					3
ET Certificate Enrollment			na	na	0
Related AS Degree Enrollment			na	na	0
Related Certificate Enrollment			na	na	none
Daytona State College (DSC) - Adopted ET 2012					
ET AS Degree Enrollment		na			43
ET AS Degree Female Enrollment					3
ET AS Degree Minority Enrollment					20
ET Certificate Enrollment				na	0
Related AS Degree Enrollment	147	134	141	236	141
Related Certificate Enrollment	5	13	14	12	16
Eastern Florida State College (EFSC) - Adopted ET 2008					
ET AS Degree Enrollment	174	198	172	157	139
ET AS Degree Female Enrollment					17
ET AS Degree Minority Enrollment					55
ET Certificate Enrollment	32	30	10	19	12
Related AS Degree Enrollment	750	443	568	825	893
Related Certificate Enrollment	47	164	171	131	86
Florida State College at Jax (FSCJ) - Adopted ET 2009					
ET AS Degree Enrollment	84	136	141	150	166
ET AS Degree Female Enrollment					11
ET AS Degree Minority Enrollment					92
ET Certificate Enrollment	15	166	121	152	262
Related AS Degree Enrollment	196	208	203	300	90
Related Certificate Enrollment	279	71	811	1,357	
Florida SouthWestern (added)					
FL Southwestern College (FSWC) - Adopted ET 2017					
ET AS Degree Enrollment					nr
ET AS Degree Female Enrollment					nr
ET AS Degree Minority Enrollment					nr
ET Certificate Enrollment					0
Related AS Degree Enrollment					nr
Related Certificate Enrollment					nr

Florida Gateway College (FGC) - Adopted ET 2009					
ET AS Degree Enrollment	8	20	19	18	0
ET AS Degree Female Enrollment					0
ET AS Degree Minority Enrollment					0
ET Certificate Enrollment	5	2	0	*	0
Related AS Degree Enrollment	1	0	0	19	12
Related Certificate Enrollment	6	8	0	*	0
Florida Keys College (FKC) - Adopted ET 2017					
ET AS Degree Enrollment					12
ET AS Degree Female Enrollment					2
ET AS Degree Minority Enrollment					2
ET Certificate Enrollment					na
Related AS Degree Enrollment					0
Related Certificate Enrollment					na
Gulf Coast State College (GCSC) - Adopted ET 2012					
ET AS Degree Enrollment		51	104	113	83
ET AS Degree Female Enrollment					5
ET AS Degree Minority Enrollment					21
ET Certificate Enrollment	2	1	0	*	0
Related AS Degree Enrollment	101	57	19	*	0
Related Certificate Enrollment	5	5	0	*	0
Hillsborough Community College (HCC) - Adopted ET 2008					
ET AS Degree Female Enrollment					126
ET AS Degree Minority Enrollment					12
ET AS Degree Enrollment	73	105	130	155	84
ET Certificate Enrollment	11	11	0	nr	11
Related AS Degree Enrollment	201	168	130	294	213
Related Certificate Enrollment	39	35	65	97	86
Indian River					
ET AS Degree Enrollment					na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment					na
Related AS Degree Enrollment					na
Related Certificate Enrollment					29
Lake Sumter State College (LSSC) - Adopted ET 2015					
ET AS Degree Enrollment					89
ET AS Degree Female Enrollment					9
ET AS Degree Minority Enrollment					29
ET Certificate Enrollment					10
Related AS Degree Enrollment			31	27	0
Related Certificate Enrollment			34	37	27
Miami Dade					
ET AS Degree Enrollment					na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment					na
Related AS Degree Enrollment					na
Related Certificate Enrollment					na
North Florida Community College (NFCC) - Adopted ET 2018					
ET AS Degree Enrollment					na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment					na
Related AS Degree Enrollment					na
Related Certificate Enrollment					na

NorthWest Florida State College (NWFSC) - Adopted ET 2012					
ET AS Degree Enrollment	72	135	135	141	71
ET AS Degree Female Enrollment					11
ET AS Degree Minority Enrollment					27
ET Certificate Enrollment	0	29	29	na	0
Related AS Degree Enrollment	74	83	83	38	16
Related Certificate Enrollment	0	*	*	na	0
Palm Beach State College (PBSC) - Adopted ET 2015					
ET AS Degree Enrollment			33	113	180
ET AS Degree Female Enrollment					22
ET AS Degree Minority Enrollment					119
ET Certificate Enrollment			nr	na	0
Related AS Degree Enrollment		156	149	120	129
Related Certificate Enrollment			nr	13	12
Pasco-Hernando State College (PHSC) - Adopted ET 2015					
ET AS Degree Enrollment			44	74	93
ET AS Degree Female Enrollment					19
ET AS Degree Minority Enrollment					31
ET Certificate Enrollment			*	na	0
Related AS Degree Enrollment		63	61	63	57
Related Certificate Enrollment			*	na	0
Pensacola State College (PSC) - Adopted ET 2008					
ET AS Degree Enrollment	77	78	69	72	65
ET AS Degree Female Enrollment					5
ET AS Degree Minority Enrollment					25
ET Certificate Enrollment	12	0	0	na	0
Related AS Degree Enrollment	164	92	72	79	68
Related Certificate Enrollment	6	0	0	0	0
Polk State College (PSC) - Adopted ET 2009					
ET AS Degree Enrollment	168	165	140	143	140
ET AS Degree Female Enrollment					10
ET AS Degree Minority Enrollment					61
ET Certificate Enrollment	0	0	*	17	12
Related AS Degree Enrollment	19	0	84	na	0
Related Certificate Enrollment	0	0	*	53	46
Santa Fe					
ET AS Degree Enrollment	146	145	122	89	92
ET AS Degree Female Enrollment					16
ET AS Degree Minority Enrollment					31
ET Certificate Enrollment	1	2	0	na	0
Related AS Degree Enrollment	6	3		na	0
Related Certificate Enrollment		4	0	*	0
Seminole State College (SSC) - Adopted ET 2014					
ET AS Degree Enrollment				24	22
ET AS Degree Female Enrollment					4
ET AS Degree Minority Enrollment					13
ET Certificate Enrollment				na	0
Related AS Degree Enrollment		37	28	154	194
Related Certificate Enrollment		19	50	36	70

South Florida State College (SFSC) - Adopted ET 2017					
ET AS Degree Enrollment				na	na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment				na	na
Related AS Degree Enrollment				na	na
Related Certificate Enrollment				17	12
ST. Johnss River State College (added)					
ET AS Degree Enrollment					na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment					na
Related AS Degree Enrollment					na
Related Certificate Enrollment					na
St. Petersburg College (SPC) - Adopted ET 2008					
ET AS Degree Enrollment	183	221	265	258	189
ET AS Degree Female Enrollment					32
ET AS Degree Minority Enrollment					68
ET Certificate Enrollment	46	66	95	98	77
Related AS Degree Enrollment	84	75	74	151	102
Related Certificate Enrollment		0	0	na	0
Tallahassee Community College (TCC) - Adopted ET 2011					
ET AS Degree Enrollment		18	47	55	61
ET AS Degree Female Enrollment					14
ET AS Degree Minority Enrollment					37
ET Certificate Enrollment	1	5	0	na	0
Related AS Degree Enrollment	128	74	26	19	14
Related Certificate Enrollment	8	5	0	13	0
Valencia - ET coming soon Fall 2019					
ET AS Degree Enrollment				na	na
ET AS Degree Female Enrollment					na
ET AS Degree Minority Enrollment					na
ET Certificate Enrollment				10	na
Related AS Degree Enrollment				489	na
Related Certificate Enrollment				164	180

Appendix 3: Cumulative 2005-2018 MSSC FL Assessment Delivery & Certification Attainment			
	Assessments	Certificates	Pass Rate
CPT	27,270	19,397	71%
CLT	1,847	1,306	71%
Total	29,117	20,693	71%
Florida (2018)			
CPT	3,882	2,751	71%
CLT	763	585	77%
Total	4,645	3,336	72%

Appendix 4: Manufacturing apprenticeships-Total Enrollment in Florida			
Name of institution/College	Name of Manufacturing Apprenticeship	Total Enrollment	Location
Advanced Manufacturing Apprenticeship Program	Machinist	8	Longwood
AmSkills Apprenticeship Program	Maintenance Repairer – Industrial	3	New Port Richey
	Tool-and-Die Maker		New Port Richey
	Electronics Technician		New Port Richey
	Mechatronics		New Port Richey
Arthrex Manufacturing Apprenticeship Program	Numerical Control Machine Operator	6	Ave Maria
Baker-Hughes, a GE Company	CNC Operator – Milling and Turning	5	Jacksonville
CareerSource Suncoast Apprenticeship Program	Tool-and-Die Maker	1	East Bradenton
City of St. Petersburg	Maintenance Mechanic	4	St. Petersburg
Hudson Technologies Apprenticeship Program	Tool-and-Die Maker	3	Ormond Beach
JEA	Maintenance Mechanic	59	Jacksonville
M. A. Ford Manufacturing	Machinist	0	Vero Beach
Miami-Dade College Apprenticeship Program	Aircraft Structure, Surfaces, Rigging, and Systems	0	Miami
Nestle' Waters North America, Inc.	Maintenance Mechanic	1	Lee
Piper Aircraft Apprenticeship Program	Aircraft Structure, Surfaces, Rigging, and Systems	0	Vero Beach
Rayonier Advanced Materials	Instrument Mechanic	0	Fernandina Beach
South Florida Manufacturing Association	CNC Set-up Programmer – Milling and Turning	23	Ft. Lauderdale
	Precision Machinist		Ft. Lauderdale
	Machinist		Ft. Lauderdale
Space Coast Machinist Apprenticeship Program	Machinist	45	Melbourne
Tampa Bay Machining Apprenticeship	CNC Operator – Milling and Turning	18	Clearwater
	CNC Operator – Turning		Clearwater
	CNC Set-up Programmer – Milling		Clearwater
	CNC Set-up Programmer – Milling and Turning		Clearwater
	Mold Maker, Die-Cast & Plastic Molding		Clearwater
	Numerical Control Machine Operator		Clearwater
	CNC Operator – Milling		Clearwater
	CNC Set-up Programmer – Turning		Clearwater
	Machinist		Clearwater
	Tool-and-Die Maker		Clearwater
The People of Manufacturing	Machinist – Competency Based	1	St. Petersburg
Treasure Coast Manufacturers Association	Industrial Manufacturing Technician	21	Port St. Lucie

Using FETPIP Data to Track Employment of ET Grads

FLATE uses the Florida Education and Training Placement Information Program (FETPIP) data to track employment of engineering technology (ET) grads and to learn about their employment and earnings outcomes.

The FETPIP Program is a data collection and consumer reporting system established by Florida Statutes Section 1008.39 to provide follow-up data on former students and program participants who have graduated, exited or completed a public education or training program within the State of Florida. The statute requires all elements of Florida's workforce development system to use information provided through FETPIP, for any project they may conduct requiring automated matching of administrative records for follow-up purposes. FETPIP's method of data collection replaces conventional survey-type techniques, and provides information in an accurate and cost effective manner. The follow-up studies are conducted annually by matching records of the student graduates, completers or exiters from the numerous public and independent organizations with information resources available to FETPIP. Follow-up on a quarterly basis is also done for some groups.

Limitations:

- FETPIP does not report matched numbers (headcount) of 5 or less for any industry title FETPIP makes the “match” decision at the state level based on industry title, not occupation
- FETPIP data only matches a three month span of college data – Oct., Nov., Dec. of a given year; FETPIP does not match and provide data reflecting an entire year
- FETPIP data runs two years behind for students enrolled and graduated, and will not accurately reflect local follow up data such as instructor blogs, social media, and other personal contacts

Participants are universities, community colleges, school districts, selected private vocational schools, colleges and universities, welfare transition services, workforce investment act (WIA), corrections system, farm worker jobs and education programs, and specialized and longitudinal studies

2016-17 AS Degree completers statewide, FETPIP Follow-up outcomes:

According to the 2016-17 FETPIP data provided by FLDOE a total of 144 individuals reported information for follow-up after completing the E.T. A.S. Degree program, of these 112 (78%) were found employed. Similar percentages were found in 2014-15, 2015-16 with 77% (up 1%). The average annual earnings for 2016-17 was \$51,384 (average quarterly earnings were \$12,846), which is an increase of more than 12% when compared with previous year's report (2015-16).

2012-17 (5 Years) FETPIP Trend

Table 1 contains 5-Year data collected from year 2012 to 2017 which includes information regarding student graduates, completers or exiters from the Florida colleges offering ET AS degree with information resources available to FETPIP.

Table 1. 2011-17 Engineering Technology-ET (Program 1615000001) AS Degree Completers FETPIP follow-up outcomes.

Year	Total # of ET sample reported to FETPIP	# ET graduates reporting that were employed	Average Annual Earning per year \$
2012-13	66	48 (73%)	\$38,940
2013-14	71	56 (79%)	\$44,904
2014-15	96	74 (77%)	\$43,616
2015-16	121	93 (77%)	\$45,540
2016-17	144	112 (78%)	\$51,384

ET graduates found employed = The number of individuals with wages during the 4th quarter (October to December) of 2017.

The data has shown a consistent increase in the number of A.S. degree completers (figure 1) and E.T. graduates (figure 2) that were employed. It is important to note the significant increase of the number of E.T. graduates who were found employed from 2012-13 (48 graduates) to 2016-17 (112), which is an increase of more than 100% during this period (figure 3). This trend can be related to the increase of Florida colleges that have implemented the E.T. A.S. degree program and manufacturing related programs. During 2012 there were 13 colleges with the E.T. A.S. degree program and by the end of 2017, there were 23 colleges in Florida offering the E.T. A.S. degree program (New programs do not report graduates within the first 2 years).

Average annual earnings, shown in figure 4, also continued to increase over the past five years from \$38,940 to \$51,384. This increase in wages indicates that E.T. and related manufacturing careers are growing strong in Florida, providing more value to high performance manufacturing and production industries, whose work is vitally important to the nation's prosperity and security.

This information is part of the performance accountability process for all parts of the K-20 system and serves as an indicator of student achievement and program needs in Florida. It helps educators and parents better prepare and counsel students for success in their future education and career choices. For more information about the Florida Education & training Placement Information Program (FETPIP) visit FDOE-FETPIP.

Figure 1. # in ET Sample Reported to FETPIP

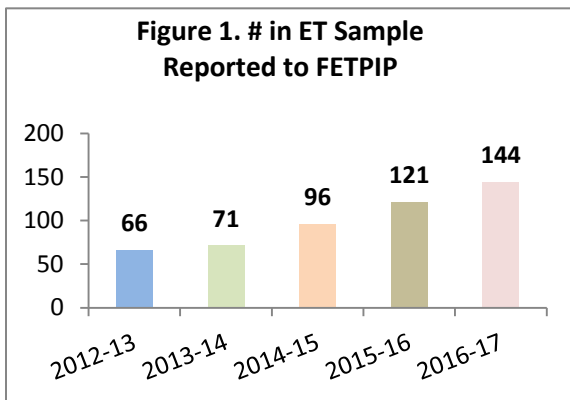


Figure 2. # ET Graduates Found Employed- (4th Qtr. Only)

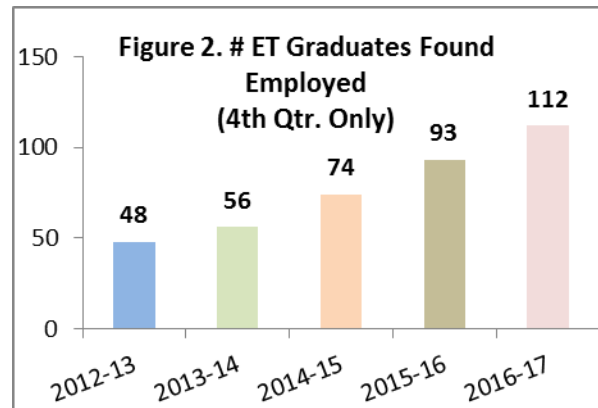


Figure 3. (%) ET Graduates Found Employed

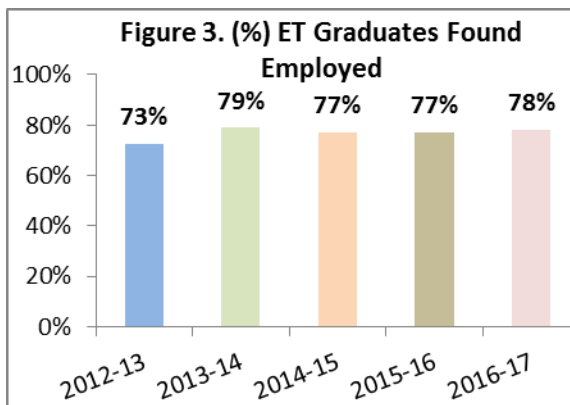


Figure 4. Average Annual Earnings

