

THEC Standard 1D

Comprehensive Satisfaction

Studies Report

Quality Assurance Funding Standard 1D

Presented by: Office of Institutional Assessment, Research, & Effectiveness

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I. The design and administration criterion seek to engage universities in examining the instruments and methodology of the satisfaction surveys and how information derived from the surveys contributes to a productive institutional environment.

Introduction

Tennessee Tech strives to create high-quality educational experiences that are engaging, innovative, and collaborative; create motivated lifelong learners; and matriculate a capable, responsive workforce for employers. During the 2015–2020 five-year Quality Assurance Funding (QAF) cycle, three projects evaluating the satisfaction of students, faculty, and alumni were completed. They were National Survey of Student Engagement (NSSE), Faculty Survey of Student Engagement (FSSE), and Performance Enhancement Group (PEG) Alumni Attitudes survey (AAS). Over the past years, TTU developed and implemented follow-up actions to address information garnered through these multifaceted survey results. This Comprehensive Satisfaction Study consolidates these three satisfaction studies, highlights salient data and results from these surveys, supplies evidence of actions taken based on these results, including accomplishments and modifications to our programs to improve satisfaction among students, faculty, and alumni. Data from these satisfaction surveys are also used to inform Quality Enhancement Plans (QEP), program evaluations, and strategic planning. In addition, a new *Tech Tomorrow Strategic Plan* has been created to guide and support further growth and satisfaction (see [Appendix A](#)).

National Survey of Student Engagement (NSSE)

NSSE is an electronically-delivered survey of student engagement. The survey has 20 questions, with a total of 80 variables covered. NSSE addresses four themes: Academic Challenges, Learning with Peers, Experiences with Faculty, and Campus Environment. It also assesses Engagement Indicators and High Impact Practices (HIPs). In the last 20 years, 1,650 schools have participated with approximately 6 million student responses captured and analyzed. NSSE focuses on the student experience and assesses cohorts of first-year and senior students. TTU implemented NSSE in Spring 2016 and 2019 semesters. The survey was delivered electronically, and per internal review board guidelines, the survey link was sent directly from the company to students; this happened five times over two months in the 2016 and 2019 Spring semesters. In addition to receiving communication about the survey link directly from NSSE, TTU also encouraged participation by designing and hanging flyers to advertise the chance for student to give their input, and also provides incentive to fill out the survey by entering students into a drawing for t-shirts after the completion of their survey. In 2016, first-year response rate was 17% and senior response rate was 19%. The 2019 response rates were higher: 26% of first-year students and 22% of seniors. TTU opted to participate in additional modules *Development of Transferable Skills* and *Experiences with Information Literacy*. TTU has used NSSE data in 2014, 2016, 2017, 2019, and 2020 for Quality Enhancement Programs (QEPs), strategic planning, programs reviews, and other processes that support improved student experiences.

Faculty Survey of Student Engagement (FSSE)

FSSE is also an electronically-delivered survey of instructional staff views of student engagement. It essentially assesses faculty perceptions of student engagement. Since its development in 2003, 800 higher education institutions and more than 250,000 faculty members have responded. FSSE measures faculty expectations of student engagement in higher education and are correlated with increased learning. The survey has 40 questions that comprise a total of 100+ variables assessed. TTU included two topical modules aligned with the NSSE 2016 and 2019 modules: *Development of Transferable Skills* and *Experiences with Information Literacy*. The 2017 survey was delivered electronically, and per internal review board guidelines, the survey link was sent directly from the company to faculty members; this happened four times over two months in the Spring 2017 semester. TTU administered FSSE to 418 faculty members, with a 39% response rate.

Alumni Survey

The PEG Alumni Attitudes survey (AAS) was administered in summer 2017. The AAS instrument is used nationally across multiple institutions, including more than 300 educational institutions. The AAS not only gives TTU alumni a chance to provide feedback, but also compares and benchmarks this data against a rich, dynamic database of comparable institutions. The AAS was administered electronically by PEG to 40,316 TTU alumni with 2,806 respondents (6.96% response rate). Surveys have historically low response rates, and as such PEG takes measures to ensure the most representative data possible. Most AAS respondents received their undergraduate degree from TTU (76%), 10% earned a graduate degree, and 15% earned both undergraduate and graduate degrees at TTU. The majority of respondents lived within 51–160 miles. More males (60%) than females responded, and 76% were age 31 or older.

II. The data analysis criterion seeks to engage colleges and universities in a review of survey data and assist in identifying institutional strengths and weaknesses, as well as areas for institutional improvement.

NSSE Survey

The 2016 and 2019 NSSE results provide feedback from first-year and senior level students, and contain data on numerous variables. NSSE 2016 Engagement Indicators demonstrated that TTU students, including first-year (FY) and senior students, clearly engaged in more *Collaborative Learning* practices than THEC Peer Group (FY mean [M]=34.4, $p>.05$, ES=.10; senior mean [M]=37.9, $p<.001$, effect size [ES]=.29). TTU also employed *Collaborative Learning* practices more often than other institutions in our Carnegie Class. Data on *Discussions with Diverse Others* was on par with THEC peers for first-year students, while seniors reported lower instances (2016 senior M=38.6, $p<.001$, ES=−.21). NSSE 2016 indicated students had lower instances of *Reflective & Integrative Learning* (2016 FY M=32.6, $p<.001$, ES=−.19; senior M=34.7, $p<.001$, ES=−.37) than THEC peers. As shown in NSSE 2016 data, TTU students *Quality of Interactions* at TTU were significantly above THEC peers (2016 FY M=43, $p<.001$, ES=.24; 2016 senior M=42.6, $p\geq.05$, ES=.06). Students, however, also reported need for a more supportive environment (FY M=33.9, $p<.05$, ES=−.14; seniors M=31.0, $p<.05$, ES=−.11).

NSSE 2019 Engagement Indicators displayed similar trends. *Collaborative Learning* practices remained significantly higher than peers (2019 FY M=35.2, $p<.01$, ES=.14; 2019 senior M=37, $p<.001$, ES=.20), and seniors engaged with these practices more than other institutions in our Carnegie Class. *Reflective & Integrative Learning* (2019 FY M=32.7, $p<.001$, ES=−.19; 2019 senior M=34.6, $p<.001$, ES=−.21) was experienced less often than

at THEC peer institutions. NSSE 2019 students related significantly more *Quality of Interactions* than THEC peers (2019 FY $M=44.8$, $p<.001$, $ES=.24$; 2019 senior $M=44.1$, $p<.001$, $ES=.17$). *Supportive Environment* was also noted as an area for improvement in 2019 (2019 FY $M=35.4$, $p<.01$, $ES=-.14$; 2019 senior $M=29.6$, $p<.001$, $ES=-.28$). Seniors in 2019 reported fewer *Discussions with Diverse Others* than seniors at THEC peer institutions ($M=38.1$, $p<.001$, $ES=-.17$).

When comparing NSSE 2016 to NSSE 2019 overall, there are no significant differences between administrations (2016 $p=.885$; 2019 $p=.931$). In looking at the data more closely, *Collaborative Learning* practices stayed strong across administrations and seniors reported higher scores than first-year students consistently in both surveys, indicating TTU is continuously providing these opportunities and engaging students through them—particularly important in preparing students for employment. *Quality of Interactions* were significantly above or on par with THEC peers for all students responding to NSSE 2016 and 2019. This demonstrates improvement from the 2014 administration where first-year students experienced fewer quality interactions on campus (2014 FY $M=39.4$, $p<.001$, $ES=-.16$). In both 2016 and 2019, first-year students reported *Experiences with Faculty* and *Effective Teaching Practices* were equitable with that of THEC peers. Both first-year students and seniors taking NSSE 2016 and 2019 indicated *Reflective & Integrative Learning* practices are an area for improvement. In 2016 and 2019, *Discussions with Diverse Others* was on par with THEC peers for first-year students, while seniors reported lower instances. *Discussions with Diverse* and *Supportive Environment* remain areas for improvement. TTU excels in engaging students in multiple HIPs by their senior year:

Table I. TTU High Impact Practices (* $p<.05$, ** $p<.01$, *** $p<.001$)

2016 NSSE			2019 NSSE			
Tennessee Tech	THEC Peer Group		Tennessee Tech	THEC Peer Group		
First Year	%	%	Effect Size	%	%	Effect Size
Learning Community	8	17***	-.28	7	10	-.10
Service-Learning	57	65*	-.16	58	62	.09
Research with Faculty	5	7	-.08	5	5	-.01
Participated in at least one HIP	61	70**	-.19	61	65	.08
Participated in two or more HIPs	7	16***	-.29	7	9	-.08
Senior	%	%	Effect Size	%	%	Effect Size
Learning Community	28	24	.09	22	24	-.05
Service-Learning	62	64	-.05	61	63	-.06
Research with Faculty	29	21**	.17	32	22***	.23
Internship or Field Experience	57	45***	.25	56	45***	.22
Study Abroad	10	8	.09	10	9	.05
Culminating Senior Experience	54	43***	.20	59	48***	.23
Participated in at least one HIP	91	84***	.21	91	85***	.18
Participated in two or more HIPs	71	58***	.26	68	60***	.17

Overall student satisfaction remains strong. In 2016, both first-year students (89%) and seniors (86%) evaluated their experience as good or excellent significantly more than students at THEC peer institutions ($p<.01$, $ES=.21$). NSSE 2016 first-year respondents (90%) indicated they would likely or definitely choose TTU again at significantly higher rates than students at both THEC peers ($p<.001$, $ES=.24$) and institutions in our Carnegie Class ($p<.01$, $ES=.20$), while senior responses (82%) were on par with THEC and Carnegie peers. In 2019, both first-year students (86%) and seniors (87%) continued to rate their TTU experience as good or excellent. Of those who responded 88% of first-year students and 84% of seniors responded that they would likely or definitely choose TTU again; first-year students were significantly more likely to feel this way in comparison to THEC peers ($p<.01$, $ES=.16$). In addition, 93% stated they intended to return to TTU next year, outpacing similar responses of students at THCE peer institutions ($p<.001$, $ES=.20$).

For full NSSE 2016 and 2019 data—as well as additional information on statistical analyses, values, and interpretation of results—please see [Appendix B](#).

Rationale: Analysis of NSSE 2016 and 2019 data, further supported by additional 2017 NSSE data, offers insight into TTU's strengths and limitations according to students. As with previous NSSE data, the *Supportive Environment*, *Discussions with Diverse Others*, and *Reflective & Integrative Learning* engagement indicators demonstrate TTU has room to improve and enhance the campus experiences for all students, though TTU maintains high overall student satisfaction and a high rate of first-year students indicating intent to return. *Collaborative Learning*, *Experiences with Faculty*, *Effective Teaching Practices*, and *Quality of Interactions* remained strengths across the NSSE administrations, indicating continued investments in those areas are maintain or increasing TTU students' quality of experience in those areas. *HIP* results (Table I) showed the same patterns for first-year and senior students. These variables are important to student engagement and are implemented as a focus of our revised Quality Enhancement Plan (QEP). Research shows that participation in HIPs can be life-changing, and should be provided a minimum of twice before students graduate (Kilgo et al., 2015; Kuh, 2008). While TTU is providing ≥ 2 HIPs to significantly more students prior to graduation (2016: 71%, $p<.001$, $ES=.26$; 2019: 68%, $p<.001$, $ES=.17$), we see the discrepancy noted by first-years and are increasing opportunities through mechanisms such as the Quality Enhancement Plan (QEP) opportunities.

FSSE Survey

Data discussed in this section shows the percent of faculty/students who selected *Very Much* and *Quite a Bit* or *Very Often* and *Often* (as appropriate to the posed question) combined into a single percentage; these numbers represent the higher end of performance. Faculty responses are broken down into lower (LD) and upper division (UD); this is analogous to first-year and senior NSSE respondents. While the FSSE–NSSE comparison used 2017 NSSE data, 2016 and 2019 data have been incorporated to emphasize and better understand trends in the data over time with respect to indicators where TTU is out- or underperforming THEC peer institutions (see [Appendix C](#) for details).

FSSE 2017 data showed that faculty felt that these practices were important and offered frequently (all items $\geq 50\%$ for LD & UD), aligning well with student data. TTU students regularly reported experiencing frequent *Collaborative Learning* practices and statistical analysis reveals that TTU provides these opportunities significantly more often than THEC and Carnegie Class peers (see NSSE data above). Faculty and students both reported high frequency of implementing (faculty $\geq 95\%$ on all items for LD & UD) in *Effective Teaching Practices*. FSSE data demonstrated that faculty find the majority of HIPs as important/very important; *Research with Faculty* (62%), *Internship/Field Experience* (83%), and *Senior Culminating Experience* (85%) were seen by faculty as most vital to the undergraduate experience. Seniors outperformed THEC and Carnegie Class peers in participation and frequency—which aligns with faculty perceptions of their importance.

Most students reported that TTU emphasized the elements that make up the *Supportive Environment* indicator. FSSE data aligned with this (all percentages $\geq 45\%$). In 2017, 76–77% of FSSE respondents felt it was very or critically important and 51–55% students reported TTU was very good or excellent at emphasizing a *Supportive Environment*. *Discussions with Diverse Others* (DDO) shows an area of discrepancy between faculty and student perceptions. Detailed results on FSSE questions 26a-d indicate discrepancies between faculty perceptions and student experiences concerning engagement with diversity; this has also been reflected in previous NSSE administrations and other TTU data (e.g., *Alumni Survey*, *Adult Learner Survey*, and *IDEA Course Evaluations*). Faculty shared that students had some opportunity to engage with those of a different race/ethnicity (LD: 15%, UD: 20%) and religion (LD: 15%, UD: 17%) than their own, while students felt they had these opportunities much more frequently (2016 FY all DDO items $\geq 65\%$, 2016 senior all DDO items $\geq 61\%$; 2017 FY all DDO items $\geq 62\%$, 2017 seniors all DDO items $\geq 64\%$; 2019 FY all DDO items $\geq 54\%$; 2019 senior all DDO items $\geq 56\%$).

Faculty consistently rated *Reflective & Integrative Learning* as important/very important. Faculty reported (LD: 43%, UD: 51%) including diverse perspectives in course discussion or assignments (Q23c) as important, and students reported that it happened frequently at a lower rate (2016 FY: 40%, 2016 senior: 38%; 2017 FY: 40%, 2017 seniors: 32%; 2019 FY: 43%; 2019 senior: 39%). A greater emphasis on this element from faculty is needed given TTU's commitment to inclusive, supportive educational environments.

Rationale: The discrepancies noted earlier in *Reflective and Integrative Learning*, *Discussions with Diverse Others*, and *Supportive Environment* are consistent across students and faculty. These offer an overall assessment of TTU's institutional environment and the most critical areas to develop and improve. Additionally, faculty perceptions captured by FSSE concerning *Collaborative Learning*, *Effective Teaching Practices*, and participation in HIPs mirror student perceptions and demonstrate TTU's strength in these areas.

Alumni Survey

Alumni frequently promoted TTU (~36% regularly, ~23% all the time) (Q2). The overwhelming majority rated their decision to attend TTU as a good (~23%) or great (70%) decision, with TTU outperforming comparable schools who had alumni rate their decision to attend as great by 10% (Q1). TTU was on par with comparable institutions with respect to offering a good (~40%) or excellent education (~53%) (Q3). Respondents opinion of TTU was good (~35%) or excellent (~56%) (Q5). Current or lapsed donors were more likely to rate TTU as good or excellent than those who have never given, and current donors chose an excellent rating the most frequently (~65%). Experiences as an alumnus/alumna were ranked lower, though remain comparable to peer institutions. Fifty percent indicated their alumni experience was good, while 20% rated it as excellent. Over 20% indicated the experience as fair. As would be expected, current donors were the most likely to rate their alumni experience as good or excellent, while those who have never given were most likely to choose fair. TTU's affinity index score was 80%, slightly outperforming comparable institutions (77%) and on par with all schools nationally.

TTU performed well in providing social and cultural opportunities to students. There are gaps, however, between some elements rated as important by alumni and TTU's perceived performance in those areas (Q9). These included *Academics*, *Skills/Training for Career*, *Relationship with Faculty*, *Exposure to New Things*, *Admissions Process*, *Relationships with Other Students*, *Lessons About Life*, *Orientation for New Students*, *Student Employment Opportunities*, *Relationships with Administration and Staff*, *Traditions or Values Learned on Campus*, and *Opportunity to Interact with Alumni*. Alumni respondents indicated TTU made a medium-to-significant contribution to *Problem Solving*, *Critical Thinking*, *Quantitative Reasoning*, *Creative and Innovative Thinking*, *Effective Oral Communication*, *Effective Writing*, and *Ethical Reasoning and Action* (Q7). TTU's perceived contributions to 1) local and global civic knowledge and engagement and 2) diversity and inclusion were rated as only little-to-some contribution (both M=2.9 on scale of 1–4). This emphasizes areas for improvement indicated by NSSE and FSSE data. TTU alumni responses indicated that they felt they were well-prepared for graduate education, responding to new career opportunities, attaining work, current work expectations, and contributing to their local community (Q6). TTU alumni found identifying job opportunities for graduates as a crucial element of the alumni experience, but rated TTU as between fair and good at providing this support (Q8). Alumni also noted that they can be valuable in recruiting new students, being TTU ambassadors, and mentoring students, but TTU alumni opportunities underperform in these areas. This is the trend in peer institutions and nationally. Non-donor alumni felt assistance with finding job opportunities was more important than did current and lapsed donors. They also indicated mentoring students was slightly more important than their donating counterparts (see [Appendix D](#) for details).

Rationale: While overall alumni rate their experiences as TTU alumni positively (70% good or excellent) and TTU maintains a high alumni affinity (80%), we would like to see increased ratings of an excellent alumni experience. Areas indicated for enhancement for current students based on alumni feedback include: admissions processes, new student orientation, academics, student-peer relationships, student-faculty relationships, student-administration/staff relationships, student employment, career training, and opportunities to connect with alumni. This corroborates data about *Supportive Environment* from the NSSE and FSSE administrations during this 5-year QAF cycle, and speaks to the importance of multiple types of connections for TTU students.

III. The plan of action criterion seeks to engage colleges and universities in developing a strategy for addressing the areas for institutional improvement identified through survey.

During the 2017–2018 academic year, TTU developed and implemented the Tech Tomorrow Strategic Plan (effective Fall 2018; see Appendix A). NSSE, FSSE, and PEG Alumni Survey datasets were used in creating this plan to ensure areas for improvement are addressed and strengths are further developed. The plan has 4 main goals: Strategic Goal (SG) 1—*Education for Life*, SG-2 *Innovation in All We Do*, SG-3 *Exceptional Stewardship*, and SG-4 *Engagement for Impact*. TTU Core Principles (CP) are *Academic Excellence*, *Community Engagement*, *Meaningful Innovation*, *Student Success*, *Supportive Environment*, and *Value Creation*. NSSE, FSSE, and PEG Alumni Survey findings, paired with other university data, inform the action plans below, which are fully aligned with and guided by the Strategic Plan. Connections are referenced below; Strategic Goals (SG) and Core Principles (CP) are noted as appropriate. Scores on *Reflective & Integrative Learning*, *Higher Order Learning*, *Discussions with Diverse Others*, and *Supportive Environment* aid in the formation of clear actions for improvement.

Table 2: NSSE-guided Action Plan

Please note that all comparisons below (e.g., low, high, weak, strong) indicate TTU's performance when compared to THEC peers.
 Results noted as low have small effect sizes. Please refer to Section 2 and Appendix B for details.

RESULT	AREA(S) ADDRESSED	ACTION ITEM	INTERMEDIATE TIMELINE	LONG-TERM TIMELINE	SUCCESS INDICATOR
Strong Collaborative Learning scores; lower Reflective & Integrative Learning scores	Collaborative Learning, Reflective & Integrative Learning, HIPs SG-1 & 2; CP: Academic Excellence, Student Success, Supportive Environment, Value Creation	Continue QEP: EDGE activities started in 2015–2016 (e.g., EDGE grants, course HIPs, extracurricular HIPs)	Initial implementation: 2015–2106 Annual review	Re-evaluate QEP plan & practices every 5 years; evaluate alignment with SP & student needs	Match/exceed in # of QEP courses; match/exceed # of CISE & EDGE proposals; match/exceed RCID participants; match/exceed previous NSSE scores for relevant Engagement Indicators & HIPs
Lower scores for Higher Order Learning & Reflective & Integrative Learning	Reflective & Integrative Learning, Higher Order Thinking, HIPs SG-1 & 2; CP: Academic Excellence, Student Success, Supportive Environment, Value Creation	Increase # of concentrations, minors, & certificates that infuse critical thinking, higher order thinking skills, &/or research opportunities	Continual department- & university-level review to evaluate/add	Annual review	Maintain/increase # of concentrations, minors, & certificates; # of FastTrack programs; match/exceed previous NSSE scores for relevant Engagement Indicators
Overall HIPs scores: strong scores for senior HIPs; lower scores for first-year in Learning Community & Service Learning	HIPs SG-1 & 2; CP: Academic Excellence, Meaningful Innovation, Student Success, Value Creation	Maintain/increase # of HIP courses & extracurricular HIPs	Continual department- & university-level review to assess course demands; annual QEP review to evaluate progress	Re-evaluate QEP plan & practices every 5 years; evaluate alignment with SP & student needs	Maintain/increase # courses employing HIPs & extracurricular HIPs; match or exceed previous NSSE scores for relevant Engagement Indicators & HIPs
Strong scores for Student-Faculty Interactions & senior HIPs; lower scores for Higher Order Learning	Higher Order Learning, Student-Faculty Interactions, HIPs SG-1, 2, & 4; 2CP: Academic Excellence, Meaningful Innovation, Student Success, Value Creation	Offer Creative Inquiry Summer Experience (CISE)* & Expand Student Research Day to Research & Creative Inquiry Day (RCID)	Annual submission process; Annual review	Re-evaluate QEP plan & practices every 5 years; evaluate alignment with SP & student needs	Match/exceed # of CISE proposals; match/exceed participants in RCID; match or exceed previous NSSE scores for relevant Engagement Indicators
Strong scores for Quality of Interactions; lower scores for Supportive Environment	Quality of Interactions Supportive Environment SG-1 & 2; CP: Academic Excellence, Student Success, Supportive Environment	Responsive course update in Fall 2017 for UNIV 1020 – Freshmen Connections	Initial implementation 2015–2016 review & revise December 2017; informal review each semester	Periodically (~ every 2–3 years) review & update as indicated	Match or exceed previous NSSE scores for relevant Engagement Indicators
Lower scores on Discussions with Diverse Others & Supportive Environment	Discussions with Diverse Others, Supportive Environment SG-1; CP: Academic Excellence, Student Success, Supportive Environment	Increase Multicultural Affairs & other diversity/inclusion-focused programming	Expand Multicultural Affairs planning to have broader focus 2019–2020	Continue to grow programming; annual Multicultural Affairs & Center Stage programming review	# of multicultural & diversity/inclusion-focused events offered on campus; match or exceed previous NSSE scores for relevant Engagement Indicators

Table 3: FSSE-guided Action Plan

Please note that all comparisons below (e.g., low, high, weak, strong) indicate TTU's performance when compared to THEC peers.
 Results noted as low have small effect sizes. Please refer to Section 2 and Appendix C for details.

RESULT	AREA(S) ADDRESSED	ACTION ITEM	INTERMEDIATE TIMELINE	LONG-TERM TIMELINE	SUCCESS INDICATOR
Strong scores on Collaborative Learning & HIPs; slightly lower scores for Higher Order Learning	Collaborative Learning, Higher Order Learning, HIPs SG-1 & 2; CP: Academic Excellence, Student Success, Meaningful Innovation, Value Creation	iCube projects that allow students to participate in utilizing technology to solve multi-faceted real-world problems in collaboration with faculty & staff	Complete current/ Ongoing projects	Continue to solicit, fund, & complete projects for clients, including students in the project staff	match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators
Strong scores on Collaborative Learning; lower Reflective & Integrative Learning scores	Collaborative Learning, Reflective & Integrative Learning, HIPs SG-1 & 2; CP: Academic Excellence, Student Success, Meaningful Innovation, Community Engagement, Value Creation	Enlist student & faculty participation in Rural Reimagined grand challenge addressing significant real-world problems and contributing to meaningful interdisciplinary solutions	Challenge identified 2018; Rural Reimagined begins 2019–2020	Continued grants & projects with community partners through 2025; annual review	# of Rural Reimagined projects; # of rural community partners; # of faculty & students participating; match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators

Disconnect between faculty & student perceptions of Higher Order Learning & Reflective & Integrative Learning practices	Reflective & Integrative Learning, Higher Order Learning, HIPs SG-1 & 2; CP: Academic Excellence, Student Success, Meaningful Innovation, Value Creation	Incorporate multiple experiential learning opportunities in all undergraduate programs (e.g., QEP activities, HIPs)	Initial implementation: 2015-2106 Annual review	Re-evaluate QEP plan & practices every 5 years; evaluate alignment with SP & student needs	Match/exceed in # of QEP courses; match/exceed # of CISE & EDGE proposals; match/exceed RCID participants; match/exceed previous FSSE/NSSE scores for relevant Engagement Indicators
Disconnect between faculty & student perceptions of Higher Order Learning	Reflective & Integrative Learning, Higher Order Learning SG-1 & 2; CP: Academic Excellence, Student Success, Value Creation	Convene a faculty-led committee to review & revise the core curriculum to infuse critical & higher-order thinking capabilities across disciplines in response to students, industry, & TN agency demands	Academic Council & Curriculum Committee meet 2-4 times per semester to review proposed changes	Implement changes yearly	Increase # of concentrations, minors, & certificates; match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators
Lower scores on Supportive Environment & faculty perceptions of TTU student-faculty, staff, & administrator interactions (Quality of Interactions)	Student-Faculty Interactions, Supportive Environment, Quality of Interactions SG-1, 2, & 4; CP: Academic Excellence, Student Success, Supportive Environment Student-Faculty Interactions, Discussions with Diverse Others, Supportive Environment SG-1 & 2; CP: Academic Excellence, Student Success, Supportive Environment	Highlight faculty & staff dedicated to mentorship, student engagement, & supportive environments	2015 implementation of faculty Scholar Mentor award	Yearly call for applications; periodic review of criteria to ensure alignment with SP	match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators
Lower scores & disconnect between faculty & student perceptions of on Discussions with Diverse Others & Supportive Environment	Discussions with Diverse Others, Supportive Environment SG-1 & 2; CP: Academic Excellence, Student Success, Community Engagement, Supportive Environment;	Plan to maintain & increase diverse faculty & staff	Revamped search process 2017; review after full year (end of 2017-2018)	Annual process review & revise as needed to support increased applicant & hire diversity	Increased job advertisement; maintain/increase # of diverse applicants; maintain/increase diverse faculty & staff hires; match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators
" "	P-16 Diversity Partnership Vision for the Future mentoring program (partners: College of Education with Multicultural Affairs, College of Business, TN NAME, Putnam Co Chamber of Commerce, PCSS, & IMPACT)		Initial implementation Fall 2018 one school	Year 2 review summer 2020; Increase # of schools participating	# of student mentors; # of mentees; # of participating P-16 schools; match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators

Table 4: PEG Alumni Survey-guided Action Plan

Please note that all comparisons below indicate TTU's performance when compared to comparable institutions.

Please refer to Section 2 and Appendix D for details.

RESULT	AREA(S) ADDRESSED	ACTION ITEM	INTERMEDIATE TIMELINE	LONG-TERM TIMELINE	SUCCESS INDICATOR
Strong satisfaction % for Commitment to Continuous Education & Responding to New Career Opportunities	SG-1 & 4 CP: Academic Excellence, Community Engagement, Student Success, Supportive Environment, Value Creation	Ongoing Career Development services & the implementation of Handshake Software System	Initial implementation Summer 2017	Periodic review & revision as indicated	Handshake student usage data; match or exceed previous FSSE/NSSE scores for relevant Engagement Indicators
Lower % for Skills/Training for Career	SG-1, 2, & 4; CP: Academic Excellence, Community Engagement, Student Success, Supportive Environment, Value Creation	Created Career Readiness program for undergraduates	Initial implementation Fall 2017; revised in Fall 2019	Regular career readiness certification; workshop evaluations & annual program review; revision (as indicated by eval/review results)	Match or exceed # of student participants; match or exceed previous NSSE scores for relevant Engagement Indicators
Lower % for Opportunity to Interact with Alumni	SG-1 & 4 CP: Academic Excellence, Student Success, Community Engagement, Supportive Environment	Alumni participation in advisory boards, as mentors for department projects, guests at college- & department-level events	Implementation dates vary; all initiatives are underway	All activities ongoing (no planned end-date); Annual review & revision as needed	Match or exceed alumni perceptions of student/alumni interactions; match or exceed previous NSSE scores for relevant Engagement Indicators
Lower % for New Student Orientation	SG-1 & 2 CP: Academic Excellence, Student Success, Meaningful Innovation, Supportive Environment	Provide pre-loaded 1 st semester schedules (up to 15 credit hours) for freshmen & use of College Scheduler to simplify registration prior to orientation	Pilot 2014; 2015 initial implementation; informal process review each semester	Academic Advising Council review; annual review; revision as indicated	Match or exceed previous NSSE scores for relevant Engagement Indicators for first-year students:
" "	SG-1 & 2 CP: Academic Excellence, Student Success, Meaningful Innovation, Supportive Environment	Implement Spring Week of Welcome; new transfer & adult student orientation	Week of Welcome pilot Spring 2019; transfer & adult student orientation pilot 2017-2018	Identify & develop additional workshops (via annual data review); integrate Week of Welcome in SOAR	Match or exceed participant survey scores; match or exceed orientation-to-enrollment matriculation rate

IV. The outcomes criterion seeks to engage community colleges and universities in establishing outcomes and detailing progress made in increasing overall institutional satisfaction.

All action plans and intended outcomes are well-aligned to goals in TTU's Strategic Plan (see Appendix A). As noted in Section 3, each action item and success indicator are explicitly linked to the Strategic Plan. In support of TTU's strategic mission and vision, numerous actions are taken at the university, college, and department levels. Progress on the noted action items, as evidenced by success indicators/assessments, indicates active employment, advancement, and development of TTU's strategic goals and offer further information about TTU's strengths and areas for improvement—guided and informed by data from NSSE, FSSE, and the PEG Alumni Survey.

NSSE Survey**Relationship between NSSE-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes:**

NSSE data in conjunction with TTU's Strategic Plan (see Appendix A) drove the NSSE-guided Action Plan. QEP and related efforts are tightly connected to TTU's Strategic Plan. The QEP's overarching goal is to enhance student learning by infusing creative inquiry throughout the undergraduate experience. Through continued QEP efforts, we hope to see an increase in student participation QEP activities (especially HIPs) in service of providing opportunities to foster and develop *Collaborative Learning, Higher Order Learning, Reflective & Integrative Learning, Information Literacy*, critical thinking skills, creative thinking skills, problem-solving abilities, and communication proficiency (see Table 2). Creative inquiry and research provide connections with faculty and other students while developing skills that will set graduates apart as they move into their chosen professions. HIPs are an integral part of the QEP and of TTU's larger efforts to provide meaningful, transformative educational experiences. In addition, HIPs are especially transformative for historically underrepresented groups (Finley & McNair, 2013; Kuh, 2008), which is needed as TTU works to create a more diverse and successful student body. Continually infusing these skills the courses that comprise available concentrations, minors, and certificates provide students opportunities to develop the vital proficiencies that support success academically and as TTU graduates move on to begin their careers (CP: Academic Excellence, Meaningful Innovation, Student Success, Supportive Environment, Value Creation; SG-1, SG-2, & SG-4). TTU Core Principle *Supportive Environment* signifies the commitment "to a diverse and welcoming community and provide a campus size and atmosphere that fosters personal attention and fit" (TTU Strategic Plan). This begins before students arrive and first-year students' experience can set the tone for their time at TTU. The redesigned UNIV 1020 course emphasizes meaningful academic, collaborative, social, and personal skills and growth and encourages academic and personal network creation, professional development, collaboration, and persistence. This contributes not only to *Supportive Environment* but also *Academic Excellence* and *Student Success* as well as *Strategic Goals 1 and 2*. TTU serves a large portion of students from the Upper Cumberland (~38%). The 14 counties that comprise the Upper Cumberland region: eight are *transitional*, three are *at-risk*, and three are *distressed* as defined by the Appalachian Regional Commission (Transparent Tennessee, 2019). Students from these areas may have less access and exposure to multiple, diverse perspectives. As an institution that serves through education, TTU endeavors to provide all students with experiences that represent diverse voices and perspectives—as a way to bring global perspectives to students and to ensure students see representations of themselves in multiple ways. Increasing diversity and inclusion-focused programming on campus is one way to do so, not only through the programming itself, but also through the students, faculty, staff, and larger community members who attend (see Table 2). TTU recognizes the need to increase students' opportunities to encounter diverse perspectives and experiences as part of their TTU experience (CP: Academic Excellence, Student Success, Supportive Environment; SG-1).

Rationale for Assessments: The breadth of NSSE makes it a useful assessment across a number of initiatives in multiple disciplines in addition to its information about overall student perspectives. TTU has used NSSE data for QEP development, strategic planning, program reviews, and other processes that support improved student experiences. NSSE data, when paired with other direct and indirect measures, supplies a multifaceted understanding of TTU's student experiences and growth, as well as providing students' perspectives on academic experience, campus environment, and overall engagement at TTU. This is particularly true when trends over time are analyzed.

Evidence of Accomplishments & Analysis/Use of Results: Results for all outcomes/objectives were disseminated and analyzed among administrators, committees, faculty, and other stakeholders. The action plan and related activities were directly related to results of direct and indirect measures, including review of longitudinal NSSE data.

QEP

Student enrollment in EDGE Creative Inquiry courses has risen from approximately 1,000 in Fall 2015 to more than 1,400 in Fall 2019, a gain of 40% over 4.5 academic years. Longitudinal NSSE data, paired with other direct and indirect measures is used in each QEP annual report to review progress and share this data amongst stakeholders. Changes in these data trends are regularly monitored through formal and informal means, and discussed in the annual report (which is shared with stakeholders). QEP EDGE courses have grown from 37 to 140 in the past 5 years (see [Appendix B](#) for details).

Increase # of concentrations, minors, & certificates that infuse critical thinking, higher order thinking skills, &/or research opportunities

NSSE data indicate the need for more robust opportunities to develop critical thinking, higher order thinking, and research/creative inquiry skills. Since Fall 2015, the 50 new concentrations, minors, and certificates have been approved (see [Appendix B](#) for full list). These include new offerings in the sciences, art, education, interdisciplinary studies, and business. Since Fall 2015, nine FastTrack programs have been approved (for a total of 14 programs).

Maintain/increase # of HIP courses & extracurricular HIPs

Courses using HIPs and creative inquiry practices have increased over the past 5 years due to QEP efforts in response to NSSE and other data (see [Appendix B](#) for details). Numbers have increased from 181–252 and student participation has risen from approximately 1,000 to 1,500 over the last 5 years. According to NSSE data, TTU provides ≥2 HIPs to significantly more students prior to graduation.

Offer Creative Inquiry Summer Experience (CISE) & expand Student Research Day to Research & Creative Inquiry Day (RCID)

The CISE Grant Program provides monetary assistance for paid summer internships that help students develop research and creative inquiry skills. CISE grants are part of TTU's QEP efforts. Undergraduate students who agree to work with a faculty member during the summer (between May and August) are eligible to apply. Grant proposals are on the rise. CISE grants awarded ranged from 30 to 42. RCID is an annual event designed to promote student research and creative inquiry and provide a venue for presenting that work. Creative inquiry was added in 2017. Abstracts submitted range from 189–222; accepted projects ranged from 166 to 211 (see [Appendix B](#) for details). NSSE data show that *Student-Faculty Interactions* and senior participation in HIPs continue to be a strength of TTU and are supported by experiences such as CISE and RCID. Since CISE and RCID have been emphasized, gains have been made in *Higher-Order Learning*, moving from the dip in 2017 to lower than THEC peers to on par for first-year students. Seniors moved from lower than THEC peers in 2016 and 2017 to matching THEC peer experiences in 2019.

Responsive course update in Fall 2017 for UNIV 1020 – Freshmen Connections

The Freshmen Connections (UNIV 1020) course has gone through a series of revisions to better serve incoming first-year students (see [Appendix B](#) for details). Addition of an inquiry activity, along with emphasis on critical thinking and information literacy, directly addresses

NSSE data for Engagement Indicator activities comprising *Higher-Order Learning* and *Supportive Environment*, while maintaining progress on *Quality of Interactions*. In the year since revisions were deployed, *Quality of Interactions* were significantly above or on par with THEC peers for all 2019 NSSE respondents. Gains were made in *Higher-Order Learning*, moving from lower than THEC peers to on par. *Supportive Environment* remains an area for improvement, though effect sizes remain small.

Increase Multicultural Affairs & other diversity/inclusion-focused programming

NSSE data continue to indicate that TTU students need more experiences that align with NSSE Engagement Indicators *Discussions with Diverse Others* and *Supportive Environment*. In addition to curricular and academic support initiatives, providing a number of extracurricular events that highlight diverse experiences and perspectives is another way TTU strives to improve students' experiences with diversity and a supportive campus. Center Stage programming presents a series featuring diverse cultural perspectives. Proposals are selected based on their merit in promoting better understanding of diverse ideas and world cultures. Center Stage holds between 40-50 events each year. Events usually attract from 50 participants/attendees on the lower-end to roughly 400 for larger events. Multicultural Affairs (MA) programming has been increased in 2019–2020 in frequency and breadth of included experiences/perspectives under the leadership of Charria Campbell. In 2019–2020, events addressed women in STEM, fundraising for the Diversity Scholarship Fund, MLK Silent March, Hispanic Heritage month, Native American History month, and support programming (e.g., financial aid, study sessions, family weekend) (see [Appendix B](#) for details on Center Stage and MA programming).

FSSE Survey

Relationship between FSSE-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes: FSSE data, in conjunction with TTU's Strategic Plan (see Appendix A), drove the FSSE-guided Action Plan and associated outcomes. FSSE corroborated many NSSE results, indicating alignment between faculty and student perception in these areas. This guided inclusion of additional action items and desired outcomes to support progress. Recognition of disconnects between student and faculty perceptions of certain experiences (e.g., *Higher-Order Learning*, *Discussions with Diverse Others*, *Supportive Environment*) emphasized the need for supportive action. Emphasis on inclusion of multiple experiential learning opportunities—and the resulting outcomes of increased access and opportunities for participation—speak to Core Principles Academic Excellence, Student Success, Meaningful Innovation, and Value Creation and SG-1 & SG-2. Real-world collaborative projects offer on experiential learning and HIPs, deeply engaging students as they work for change and innovation in their own communities. The breadth of projects and participants speaks to the ways this initiative supports TTU students and the larger communities (see Table 3). Recognizing leaders in scholarship, mentorship, and student support visibly demonstrates TTU's commitment to fostering student success that is more inclusive and not narrowly defined by only grades (CP: Academic Excellence, Student Success, Supportive Environment; SG-1, SG-2, & SG-4). In order for students to acquire and advance critical thinking, higher order thinking, and creative inquiry/research skills, there must be plentiful access. TTU provides students opportunities to develop these vital proficiencies that support success academically and professionally. Oversight of the courses and curriculum by a faculty-led committee makes certain the content and skills are responsive to student, industry, and TN agency demands. This intended increase in access to chances to learn and practice critical thinking, higher order thinking, and creative inquiry/research skills is both guided by and works to advance TTU's Strategic Plan (see Table 3). Diversity is at the forefront of many of TTU's strategic efforts. It is not enough to create a diverse student body; faculty and staff must also represent a wide variety of experiences and perspectives (CP: Academic Excellence, Student Success, Community Engagement, Supportive Environment; SG-1 & SG-2). The P-16 Diversity Partnership Vision for the Future mentoring program connects TTU students, faculty, staff, and at-risk middle and high-school students. It also offers the chance to improve student satisfaction in relation to FSSE Engagement Indicators *Discussions with Diverse Others* and *Supportive Environment*.

Rationale for Assessments: Faculty perceptions of student engagement are monitored with the FSSE survey. Faculty perceptions are vital to understand and give additional dimension to seeing the overall TTU experience. FSSE's direct correlation to NSSE variables make it particularly beneficial. Comparing FSSE data to analogous NSSE data gives a more robust picture of TTU performance. Furthermore, when FSSE data are paired with other direct and indirect measures, faculty perceptions of the TTU students' academic experience, campus environment, and overall engagement at TTU can be compared/contrasted in greater detail.

Evidence of Accomplishments & Analysis/Use of Results: Dissemination of the FSSE–NSSE report to faculty garnered additional input on the FSSE- & NSSE-reported perceptions. This insight assists in further evaluation and offered actions for improvement via strategic planning. TTU developed a strategic plan during the year of 2017–2018. Focus areas from FSSE–NSSE data included, but were not limited to, *Reflective and Integrative Learning*, *Discussion with Diverse Others*, *Student-Faculty Interactions*, and *Supportive Environment*.

iCube

FSSE-NSSE data indicate that students engage in *Collaborative Learning* more frequently than THEC peers, while *Higher-Order Learning* scores lag behind. TTU's iCube activities offer a chance to capitalize and further advance the areas where TTU excels, while improving student experiences in areas that need additional support. Over the past 5 years, students working on iCube projects have developed deeper higher-order learning and critical thinking skills in collaborative group settings, many of which translate into professional opportunities (see [Appendix C](#) for details).

Rural Reimagined Grand Challenge

As noted above, FSSE–NSSE data indicate that TTU students engage in *Collaborative Learning* and HIPs more frequently than THEC peers, while *Reflective & Integrative Learning* scores lag behind. The Rural Reimagined Grand Challenge initiative provides additional opportunities to engage in HIPs while strengthening *Collaborative Learning*, *Higher-Order Learning*, and *Reflective & Integrative Learning* experiences. The initiative also provides additional experiences related to *Supportive Environment*, *Discussions with Diverse Others*, and *Service Learning*—indicated as areas for improvement by FSSE–NSSE data. There have been 3,000+ interactions with the community and TTU; 50+ faculty directly involved through coursework, research, and community outreach; and 80+ projects expanding within rural partnerships in the surrounding 14 rural counties. Over 1,000 students are involved through service projects, incorporating rural needs into coursework and research, interning or receiving academic service hours in rural communities, and creating ideas or devices to solve rural problems through TTU entrepreneurship initiatives and competitions. Over 44 members have joined the Rural Reimagined club and two other student organizations have partnered with Rural

Reimagined to collaborate on service projects. Rural Reimagined has over 30 partners in rural communities and has seen 1,000+ interactions within the surrounding communities (see [Appendix C](#) for details).

Incorporate multiple experiential learning opportunities in all undergraduate programs

With respect to Reflective & Integrative Learning, FSSE–NSSE data demonstrate that faculty consistently rated the seven elements as important/very important, while students reported Reflective & Integrative Learning was experienced less often than at THEC peer institutions. Faculty reported higher instances of the Higher Order Learning skills than did students. Some part of these discrepancies may lie in students' ability to recognize these types of learning experiences; therefore, faculty need to be explicit when these practices are part of the coursework, encourage students to use them, and offer support where needed. In addition, the opportunities need to happen regularly so that students are able to practice such skills. Infusing more HIPs into coursework and extracurricular activities to support students' development in these areas. QEP efforts are a main mechanism of infusing experiential learning opportunities. EDGE grant and HIP courses and creative inquiry practices have increased over the past 5 years due to QEP efforts in response to FSSE–NSSE and other data. HIP courses ranged from 181 to 252 per year while EDGE grant courses ranged from 37 to 140 offerings (see [Appendix C](#) for full list). Outside of the classroom, CISE and RCID programs offer additional options. Students work closely with faculty in both of these and this should help better align student and faculty perceptions of various FSSE–NSSE Engagement Indicators and HIPs as the programs grow. FSSE–NSSE data show that Student-Faculty Interactions and senior participation in HIPs continue to be a strength of TTU and are supported by experiences such as CISE and RCID. Since CISE and RCID have been emphasized, gains have been made in Higher-Order Learning, moving from the dip in 2017 to significantly lower than THEC peers to on par for first-year students. Seniors moved from lower than THEC peers in 2016 and 2017 par to meeting THEC peer experiences in 2019.

Faculty-led curriculum review

As a result of the curriculum review committee, guided by TTU's Strategic Plan, several concentrations, minors, and certificates have been proposed. Since Fall 2015, 50 have been approved (see [Appendix C](#) for full list). These new curricular offerings address gaps in Higher-order Learning as well as supporting progress in other areas such as service learning HIPs for first-year students (e.g., the recently-added the SERVICE learning certificate further encourages students to engage in this type of HIP, which has seen historically lower first-year student participation) and increasing the breadth and depth of content students receive as they prepare for their professions.

Highlight faculty & staff dedicated to mentorship, student engagement, & supportive environments

One mechanism to address faculty's differing perceptions of student interactions with faculty and staff, as well as highlight various ways that a supportive campus environment is being actively created, is the new Scholar-Mentor award. TTU honors a faculty member who displays outstanding mentorship, integrating scholarship, research and teaching excellence. An interdisciplinary committee evaluates the nomination packets (see [Appendix C](#) for details).

Increase faculty & staff diversity

HR debuted a diversity resources webpage. Easy access to these resources demonstrates TTU's commitment to providing information and support. Periodic review by HR ensures resources remain accessible and up-to-date. The search process was revamped to better support hiring and retention of diverse faculty and staff (see [Appendix C](#) for details). Over the past 5 years, minority applicants have made up between 25% (2015) to 35% (2019) of applicants. Minority new hires fluctuated across the 5 years from a low of 10% to a high of 34%. TTU continues to regularly assess recruitment and hiring practices, along with factors that support retention and success in scholarship, mentorship, teaching, and service. This—along with NSSE, FSSE, and alumni data—show continued need for investment in of diversity and inclusion and supportive campus environment initiatives. TTU will continue to address these areas through the coming QAF cycle, leveraging Strategic Plan goals, Rural Reimagined, and QEP activities, as well as planning new initiatives.

P-16 Diversity Partnership Vision for the Future mentoring program

The *Vision for the Future* mentoring program not only supports at-risk students in the area, but also provides TTU students with opportunities for developing mentorship and leadership skills, service learning, collaborating with faculty and community members, creating supportive environments, and working with others from diverse backgrounds who have different experiences and perspectives than their own. In the pilot year (2018–2019), 10 TTU students registered as mentors on rotational basis with 16 at-risk high school seniors. In Year 2 (2019–2020), 3 Putnam County schools participated and 13 TTU students registered as mentors with 21 at-risk high school seniors and 3–6 at-risk middle-school students participating. Pairing with a TTU student organization—IMPACT TTU—training was offered to all mentors, including community professionals and TTU students, that addressed diversity, equity, inclusion, intersectionality, active listening, and conflict resolution. This training emerged from mentor feedback during the pilot year evaluation (see [Appendix C](#) for details).

Alumni Survey

Relationship between PEG Alumni Survey-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes: As with NSSE and FSSE, the PEG Alumni Survey-guided Action Plan arises out of TTU's strategic vision, captured by the Strategic Plan (see Appendix A). The PEG Alumni survey illuminated areas of strength and those for improvement. The survey indicated strong alumni satisfaction with their experiences as TTU students related *Commitment to Continuous Education* and *Responding to New Career Opportunities*. These are also directly related to an area of improvement: *Skills/Training for Career*. TTU is committed to educating life-long learners who are career-ready (CP: Academic Excellence, Community Engagement, Student Success, Supportive Environment, Value Creation; SG-1, SG-2, & SG-4). Building on strengths, while bolstering an area that needs development, enables TTU to best support students in both their academic and professional growth. The initiatives created by the Center for Career Development seek to help fulfill TTU's commitment to "engaged students, dedicated faculty, and career-ready graduates known for their creativity, tenacity, and analytical approach to problem solving" (Strategic Plan, 2018, p. 7). Creating a larger TTU community that fosters relationships between students and alumni emerged as an area in which to invest. Alumni and students both indicate the wish for greater interaction; this speaks to TTU Core Principles *Community Engagement* and *Supportive Environment*. Alumni involvement in department advisory boards and mentoring keeps alumni engaged in the academic and professional preparation of students (see Table 4), while other college- and department-level events offer chances for alumni and students to interact in more relaxed ways, conducive to conversation that moves beyond classroom content. Through blending a variety of opportunities for students and alumni to connect, TTU can solidify a thriving larger TTU community dedicated to life-long learning, community engagement, and professional excellence. TTU strives to create a

supportive environment starting from the moment a prospective student makes contact and continuing into the alumni experience. An important point is new student orientation. Alumni data indicate the orientation experience is an area for improvement. Multiple plans and actions have arisen to improve new student orientation. Actions taken to improve the orientation experience seek to improve it before students arrive on campus (pre-loaded 1st semester schedules) as well as added orientation services for Spring admissions, transfer students, and adult learners (CP: Academic Excellence, Student Success, Meaningful Innovation, Supportive Environment; SG-1 & SG-2). These demonstrate TTU's care and commitment to the success of all learners.

Rationale for Assessments: The Performance Enhancement Group (PEG) AAS was administered in summer 2017. The AAS not only gives TTU alumni a chance to provide feedback, but also compares and benchmarks this data against a rich, dynamic database of comparable institutions. This enhances the feedback, and goes beyond what TTU's other alumni feedback instruments can measure. The importance of this feedback comes from not only gathering data about alumni experiences as a TTU student, but also from the insight that alumni gain as they compare their experiences and expectations as a student at the time with their comprehension of how their TTU education supported them in the professional realm.

Evidence of Accomplishments & Analysis/Use of Results: PEG AAS results were shared across campus with faculty, staff, administration, and support units such as the Center for Career Development and the Crawford Alumni Center. The data supports many FSSE and NSSE findings as well as provides additional insight about strengths and areas for improvement.

Ongoing Career Development services

To maintain and increase satisfaction in alumni perceptions of support in continuing education and responding to new career opportunities, Center for Career Development has several initiatives. One is the implementation of Handshake software system in Summer 2017. Handshake TTU's gateway for part-time, co-op, internship, fellowship and full-time job opportunities for all majors. This includes job postings as well as career fairs and other recruitment events. Student account activation is at 7,738, a total of 49.20%—13.20% above peer institutions. A snapshot of Handshake use as of May 6, 2020 includes 44% Web Logins, 25% Mobile Logins, 38% Profile Completion, and 69% Campus Profiles (see [Appendix D](#) for details).

Implement Career Readiness program

Preparation for careers through training was noted by alumni as an area of improvement. In Fall 2019, the Center for Career Development split the Career Readiness Certification program into 2 sections: Gold for freshmen and sophomores and Purple for juniors and seniors (<https://www.tntech.edu/career/students/career-ready.php>). This division ensures that students gain the appropriate skills at the right time in their academic careers. Workshops and other events are offered as part of the program. Alumni are also speakers in the Career Readiness and other Career Development events. As of April 2020, over 130 students were certified career-ready for spring 2020.

Opportunities for students to interact with alumni

Each year the College of Education (CoEd) holds multiple annual events where students have the opportunity to interact with alumni. These include the Scholarship Banquet, Homecoming Celebration, Teacher Appreciation Week, and the Advisory Council for Education. The Department of Computer Science involves alumni through service as mentors for student capstone projects that address real-world problems and serve stakeholder interests. Students and alumni work closely together as the projects progress. Examples are showcased on the Computer Science website: <https://www.tntech.edu/engineering/programs/csc/capstone-projects.php>. The College of Engineering also involves alumni in mentoring for student capstone projects as well on departmental advisory boards so that alumni continue to help support and shape the experience of TTU students (see [Appendix D](#) for details on all three college-level student-alumni activities).

Provide pre-loaded 1st semester schedules (up to 15 credit hours) & use of College Scheduler to simplify registration & improve orientation

Alumni feedback about new student experiences mirrored NSSE and FSSE data, indicating progress needs to be made in creating a more supportive, responsive campus environment. As a result of in-depth analyses performed by the Institutional Assessment, Research, & Effectiveness in collaboration with Enrollment Management, campus advising centers became part of the team to improve freshmen experience satisfaction and success. The use of pre-loaded 1st semester schedules addresses TTU's effort to create a more supportive environment, including improved relationships with advisors. After a successful pilot, the majority of colleges across campus implemented pre-loaded schedules. College Scheduler software to facilitate the process was also purchased to make the registration process simpler and more intuitive. The Schedule Planner Banner module was another purchase to support first-year students' experiences of creating schedules less stressful, particularly during periods of limited course availability. The Directors of the Student Success Centers discuss pre-enrollment regularly in Academic Advising Council, and use a survey that goes out prior to pre-enrollment to make certain the process is smooth and supportive. After further review of the student and alumni feedback, current processes, and relevant literature, a decision was made to create a University Student Success Center that handles all first-year advising to further improve the initial TTU experience for first-year and transfer students (see [Appendix D](#) for details).

Implement Spring Week of Welcome & new transfer & adult student orientation

To further address lackluster alumni satisfaction with their TTU orientation experience, new student orientation events have been implemented. The Week of Welcome is a new event in spring semester to improve the transition of students newly admitted for spring term. In the next academic year, TTU will identify additional onboarding items and workshops that can be implemented for new students as an extension to the summer orientation program (SOAR) for students beginning in the fall term (traditional enrollment date). Satisfaction is rated on a scale from 1–5, with 5 indicating the most satisfied. Data indicate high levels of satisfaction, with student ratings ranging from 4.42 to 4.61 and parent/guest ratings ranging from 4.55 to 4.65. A New Transfer & Adult Student orientation was created. The program is online, but students are connected to their advisor during this process to offer guidance and support (<https://www.tntech.edu/nsfp/transfer/index.php>). Satisfaction is rated on a scale from 1–5, with 5 indicating the most satisfied. Satisfaction data for this new orientation indicate high levels of satisfaction, with a range from 4.46 to 4.66. Overall, orientation-to-enrollment matriculation data below show an average rate of 95.75%, though the yearly value fluctuates between 94% and 98.9% (see [Appendix D](#) for details). Other events such as Campus Showcase—where prospective and newly admitted students come to campus to meet faculty and other students in their intended majors as well as get a more in-depth tour of campus—also support improvement in satisfaction with the orientation and new student experience.

V. The continuous improvement criterion seeks to engage community colleges and universities in planning for the continuous use of survey data and findings to enhance the campus environment and overall satisfaction.

NSSE Survey: TTU continuously monitors progress on student engagement and satisfaction using the NSSE data in future implementations and tracks longitudinal trends. NSSE will continue to be implemented 2–4 times in the QAF next cycle in service of ongoing data collection and analysis of student satisfaction. The continuity of using the NSSE instrument helps ensure quality data. Longitudinal NSSE data, paired with other direct and indirect measures, enables TTU to understand the student experience over multiple dimensions, track progress on certain Engagement Indicators, assess alignment with Action Plan items and Strategic Plan initiatives, share data with stakeholders, and gain additional feedback in support of continuous improvement efforts. Continuous assessment and improvement of the multifaceted QEP efforts are particularly bolstered by NSSE data. Offering opportunities to engage students through experiential high impact learning practices and creative inquiry was an area for improvement demonstrated through in-depth analysis of NSSE data. NSSE data not only helped inform the development of the current QEP plan, but also enable program evaluation in these areas, and understand which are thriving and which need additional support during 2015–2020. Faculty actively engage students and incorporate experiential learning strategies into the curriculum through HIP courses and EDGE course grants. Monitoring trends in number of HIP courses, EDGE and CISE grants awarded, participation in RCID, and NSSE Engagement Indicators assist in continuous improvement efforts to ensure students have a rich academic experience that prepares them for their chosen careers. In turn, these tie into increasing the number of concentrations, minors, and certificates that emphasize critical thinking, higher order thinking skills, and/or research opportunities in order to provide breadth and depth for the diverse interests and abilities of TTU students. The redesign of Freshmen Connections UNIV 1020 course strengthen a supportive first-year experience and better equipped students with needed skills, according to student feedback and NSSE data. The redesigned UNIV 1020 course emphasizes meaningful academic, collaborative, social, and personal skills and growth. The course redesign encourages academic and personal network creation, professional development, collaboration, and persistence. The course will continue to be monitored and evaluated on a regular basis, including use of NSSE data. Experiences with diverse others remains a clear area for improvement. This is being addressed at multiple levels across departments, colleges and the university. Increasing Multicultural Affairs and other diversity/inclusion-focused programming is one part of that plan. As diverse perspectives become more represented (tracked through number of Multicultural Affairs and other diversity/inclusion-focused events), NSSE Engagement Indicators will be monitored for a rise in reported meaningful experiences with diverse others as part of the TTU student experience. Finally, NSSE data is made available to all faculty, staff, and students to encourage wide-spread understanding and use of results.

FSSE Survey: As with NSSE data, FSSE data is made available to all faculty, staff, and students to encourage wide-spread understanding and use of results. As noted in the Year 4 2017–2018 NSSE–FSSE Qualitative Analysis report, NSSE and FSSE findings, along with other direct and indirect assessments, were used to help shape and inform the creation and refinement of the TTU Strategic Plan. Additionally, FSSE–NSSE data guided the specific actions, programs, and initiatives detailed in Sections III and IV. TTU continues to invest in areas of strength, to ensure growth continues. Student involvement in iCube projects and leadership roles regularly interact with external stakeholders who give vital real-world feedback to improve not only the projects, but also the students' opportunities to further enhance *Collaborative Learning* and *HIP* experiences while developing *Higher-Order Learning* and *Reflective & Integrative Learning* skills. This built-in multiple-stakeholder feedback loop ensures continuous improvement. *Rural Reimagined's* long-term vision contributes to continuous improvement in a similar manner. Multiple-stakeholder feedback mechanisms give rich data and FSSE–NSSE data will add to this. *Rural Reimagined* shares projects, TTU and community involvement, and results through TTU media, their website, local media outlets, and community partners. As noted above, QEP efforts provide various types of data for understanding, evaluating, and improving the experience for students and faculty. Event surveys, student and faculty participation, number of courses using research/creative inquiry and HIPs, number of grants awarded, NSSE data, FSSE data, and the QEP annual report offer number ways to track trends over time and support continuous program improvement. Increases in the number of concentrations, minors, and certificates that emphasize critical thinking, higher order thinking skills, and/or research opportunities are built-in to current review and continuous improvement processes (e.g., Academic Council, Institutional Effectiveness, SACSCOC reporting). Efforts to formally recognize faculty who excel as mentors and facilitate student engagement, academic success, research and creative inquiry are reviewed on an annual basis; FSSE, NSSE, and other data will be used, along with campus surveys, to advance additional options to improve faculty and student perceptions of student interactions with faculty, staff, and administrators as well as a supportive campus environment. Hiring of diverse faculty and staff offers room for continuous improvement through a) regular assessment of hiring practices, the number of underrepresented applicants, and the number of underrepresented hires, b) professional support of underrepresented hires, and c) representation of unrepresented groups in numerous professional capacities—improving students' opportunities to hear perspectives and experiences other than their own. Finally, the P-16 Diversity Partnership *Vision for the Future* mentoring program's affiliation with TTU enables regular evaluation to occur to best serve the students and the community. Data from the first-year evaluation was used to improve Year 2.

Alumni Survey: Data from this comprehensive satisfaction project emphasizes that alumni are a great but sometimes underutilized resource. As both students (via NSSE) and alumni indicated a wish for a greater amount of interaction, current opportunities across campus can be highlight and others can be fostered. Networking, mentoring, and professional development events offer two-fold opportunity for continuous improvement in student-alumni interaction: 1) improved career readiness support (noted as a need by alumni) and 2) increased opportunities for students and alumni to interact and promote academic, professional, and personal connection and collaboration. It also builds on alumni satisfaction with *Commitment to Continuous Education* and *Responding to New Career Opportunities*. Increased efforts in this area will be monitored by the Center for Career Development, TTU Colleges and departments, NSSE data, and future alumni surveys. Improvements have been made to the new student orientation experience; these, too, will be consistently reviewed, evaluated, and revised based on multiple data sources (e.g., NSSE, alumni feedback, orientation satisfaction surveys). In addition to college level Student Success Centers, alumni and student feedback and other data from the 2015–2020 QAF cycle have already helped spur the creation of the University Student Success Center to better support first-year students' experiences. In its pilot year, the University Student Success Center will begin a phased-in approach, in response to the COVID-19 pandemic and to ensure resources are available and campus is safe. Regular formative assessment and evaluation through self-report surveys and NSSE data will assist in tracking progress.

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Appendices

Appendix A – Tennessee Tech Strategic Plan Overview

Appendix B – Detailed NSSE Data, Relationships, & Evidence

Appendix C – Detailed FSSE Data, Relationships, & Evidence

Appendix D – Detailed PEG Alumni Survey Data, Relationships, & Evidence

Appendix E – Quality Enhancement Plan 2018–2019 Annual Report Excerpts

Appendix A

Tennessee Tech Strategic Plan Overview

Mission: Tennessee's technological university creates, advances, and applies knowledge to expand opportunity and economic competitiveness. As a STEM-infused, comprehensive institution, Tennessee Tech delivers enduring education, impactful research, and collaborative service.

Vision: Tennessee Tech will achieve national prominence and impact through its engaged students, dedicated faculty, and career-ready graduates known for their creativity, tenacity, and analytical approach to problem solving.

Core Principles: Academic Excellence, Community Engagement, Meaningful Innovation, Student Success, Supportive Environment, Value Creation.

Goal I: Education for Life – Tennessee Tech provides education that unleashes the potential and passion within our students and prepares them for successful careers and culturally enriched lives. TTU also provides educational opportunities, programs, credentials, and degrees to fuel the lifelong learning necessary for enduring achievement.

Priority Actions

- A. Incorporate multiple experiential learning opportunities in all undergraduate programs.
- B. Create a Tech-unique general education curriculum to provide the foundation for technologically adept, analytically capable, career-ready graduates.
- C. Increase student diversity.
- D. Develop and expand experiences that emphasize diversity, build global awareness, and increase international travel, study abroad, and other high impact practices.
- E. Develop innovative, stackable credentials, and associated pathways responsive to stakeholder needs and entrepreneurial opportunities.

Goal 2: Innovation in All We Do – Tennessee Tech innovates in all we do, embracing and deploying our technological foundation in our education, research, service, and stewardship.

Priority Actions

- A. Every college will develop and implement technologically-infused programs.
- B. Increase research, scholarly activities, and intellectual and creative contributions aligned with university, college, and departmental strategic priorities.
- C. Implement specific strategies, structures, and resources to serve adult learners and offer online/hybrid delivery systems to increase accessibility, expand our reach, and enhance our impact and reputation.
- D. Recruit, hire, retain, and reward a diverse faculty/staff with a demonstrated commitment to collaboration, external engagement, and life-long learning.

Goal 3: Exceptional Stewardship – Tennessee Tech is committed to optimizing resources and continuously improving effectiveness, efficiency, and return on investment for students.

Priority Actions

- A. Increase the size and effectiveness of scholarship endowments.
- B. Improve efficiency and effectiveness of operational/administrative processes and procedures.
- C. Continue to develop, implement, and evaluate a dynamic long-term budget model that informs effective financial management and consistent strategic investment.

Goal 4: Engagement for Impact – Tennessee Tech fosters partnerships with government, business, and non-profit organizations to advance economic and workforce development, create and disseminate knowledge, serve the public good, and generate cultural impact.

Priority Actions

- A. Modernize, adapt, and create academic programs, continuing education certificates, and training activities responsive to expressed external needs.
- B. Create and support a network to evaluate community engagement topics and opportunities.
- C. Support economic development to serve as a hub for innovation, creativity, and employment opportunities.
- D. Develop new strategically-driven sustainable partnerships.
- E. Increase alumni and friend engagement and impact.

Appendix B

Detailed NSSE Data, Relationships, & Evidence

<https://www.tntech.edu/assessment/nsse.php>

Note on Statistical Analysis, Results, & Interpretation for NSSE & FSSE

Data were analyzed using various statistical tests in order to best understand TTU student and alumni experiences. Results were presented with indicator of statistical significance and effect size. Statistical significance describes the probability of any observed outcome happening by chance, rather than as a result of a particular course of action or intervention (Fraenkel et al., 2015; Glass & Hopkins, 1984); effect size measures the magnitude of the observed outcome (Johnson & Christensen, 2020; Mertler & Vannatta, 2010). Results here are reported at three levels of statistical significance using *p*-values. A *p*-value is a number that represents the probability of observing the outcome or value by chance. A *p*-value of .05 indicates a statistically significant result that indicates that the probability of the observed effects happening by chance is less than 5%. Similarly, a *p*-value $\leq .01$ demonstrates that the detected outcome has a lower than 1% probability of happening by chance, while a *p*-value $\leq .001$ indicates that the detected outcome has a lower than 0.1% probability of happening by chance. The lower the *p*-value, the less likely the outcome has happened by chance. Results with *p*-values less than 0.05 (using an α -level of 0.05) are statistically significant. The effect sizes for TTU data that indicates lower performance remain small. In general, effect sizes under 0.3 are considered small (Sawilosky, 2009). An outcome may be statistically significant and at the same time not be practically significant (Fraenkel et al., 2015; Glass & Hopkins, 1984; Johnson & Christensen, 2020), particularly when there is a small effect size. It is up those who know the population, the historical and current contexts, and any changes implemented to ascertain the practical significance of results. Qualitative data can often help elucidate these nuances, and was collected through open ended survey questions. Data with small effects sizes are often not included in discussion and interpretation of results; TTU elected to include data with small effect sizes for Engagement Indicators that have been historically lower in order to best track and understand longitudinal trends.

NSSE Data – detailed

The NSSE results provide feedback from first-year and senior level students, and contain data on numerous variables. For this comprehensive study, TTU focused on the following results. NSSE 2016 Engagement Indicators demonstrated that senior students engaged in significantly more *Collaborative Learning* practices (senior mean [*M*]=37.9, *p*<.001, effect size [*ES*]=.29), while first-year students were on par with the THEC Peer Group. TTU also employed *Collaborative Learning* practices more often (FY *M*=34.4, *p*<.001, *ES*=.28; senior *M*=37.9, *p*<.001, *ES*=.48) than other institutions in our Carnegie Class. NSSE 2016 students reported lower instances of *Reflective & Integrative Learning* than THEC peers (FY *M*=32.6, *p*<.001, *ES*=-.19; senior *M*=34.7, *p*<.001, *ES*=-.37). *Discussions with Diverse Others* was on par with THEC peers for first-year students, while seniors reported lower instances (2016 senior *M*=38.6, *p*<.001, *ES*=-.21).

Figure I: 2016 Learning with Peers – First-year

Learning with Peers: First-year students

Collaborating with others in mastering difficult material and developing interpersonal and social competence prepare students to deal with complex, unscripted problems they will encounter during and after college. Two Engagement Indicators make up this theme: *Collaborative Learning* and *Discussions with Diverse Others*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons	<i>Your first-year students compared with</i>						
	Tennessee Tech	Carnegie Class	Effect size	THEC Peer Group	Effect size	NSSE 2015 & 2016	Effect size
<i>Engagement Indicator</i>	<i>Mean</i>	<i>Mean</i>		<i>Mean</i>	<i>Effect size</i>	<i>Mean</i>	<i>Effect size</i>
<i>Collaborative Learning</i>	34.4	30.3 ***	.28	32.9	.10	32.3 **	.15
<i>Discussions with Diverse Others</i>	39.2	40.0	-.05	39.2	.00	40.4	-.07

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation;
Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).

Figure 2: 2016 Learning with Peers – Seniors

Learning with Peers: Seniors

Collaborating with others in mastering difficult material and developing interpersonal and social competence prepare students to deal with complex, unscripted problems they will encounter during and after college. Two Engagement Indicators make up this theme: *Collaborative Learning* and *Discussions with Diverse Others*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech	Your seniors compared with					
		Carnegie Class		THEC Peer Group		NSSE 2015 & 2016	
		Mean	Effect size	Mean	Effect size	Mean	Effect size
Collaborative Learning	37.9	30.8 ***	.48	33.6 ***	.29	32.4 ***	.37
Discussions with Diverse Others	38.6	41.8 ***	-.19	42.0 ***	-.21	41.3 ***	-.17

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and p before rounding; * $p < .05$, ** $p < .01$, *** $p < .001$ (2-tailed).

Students 2016 reported need for a more supportive environment (FY $M=33.9$, $p < .05$, $ES=-.14$; seniors $M=31.0$, $p < .05$, $ES=-.11$); however, *Quality of Interactions* were significantly above THEC peers for all students responding to NSSE 2016 and 2019 (2016 FY $M=43$, $p < .001$, $ES=.24$; 2016 senior $M=42.6$, $p \geq .05$, $ES=.06$).

Figure 3: 2016 Campus Environment – First-year

Campus Environment: First-year students

Students benefit and are more satisfied in supportive settings that cultivate positive relationships among students, faculty, and staff. Two Engagement Indicators investigate this theme: *Quality of Interactions* and *Supportive Environment*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech	Your first-year students compared with					
		Carnegie Class		THEC Peer Group		NSSE 2015 & 2016	
		Mean	Effect size	Mean	Effect size	Mean	Effect size
Quality of Interactions	43.0	41.5 *	.11	39.8 ***	.24	41.8	.10
Supportive Environment	33.9	35.6 *	-.11	35.9 *	-.14	36.8 ***	-.21

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and p before rounding; * $p < .05$, ** $p < .01$, *** $p < .001$ (2-tailed).

Figure 4: 2016 Campus Environment – Seniors

Campus Environment: Seniors

Students benefit and are more satisfied in supportive settings that cultivate positive relationships among students, faculty, and staff. Two Engagement Indicators investigate this theme: *Quality of Interactions* and *Supportive Environment*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech	Your seniors compared with					
		Carnegie Class		THEC Peer Group		NSSE 2015 & 2016	
		Mean	Effect size	Mean	Effect size	Mean	Effect size
Quality of Interactions	42.6	43.2	-.04	41.8	.06	42.6	.00
Supportive Environment	31.0	32.0	-.07	32.6 *	-.11	32.9 **	-.13

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and p before rounding; * $p < .05$, ** $p < .01$, *** $p < .001$ (2-tailed).

NSSE 2019 Engagement Indicators displayed similar trends. *Collaborative Learning* practices remained significantly higher than peers (FY $M=35.2$, $p < .01$, $ES=.14$; senior $M=37$, $p < .001$, $ES=.20$), and seniors engaged with these practices more than other institutions in our Carnegie Class (senior $M=37$, $p < .001$, $ES=.20$). *Reflective & Integrative Learning* (FY $M=32.7$, $p < .001$, $ES=-.19$; senior $M=34.6$, $p < .001$, $ES=-.21$) was experienced less often than at THEC peer institutions.

Figure 5: 2019 Learning with Peers – First-year

Learning with Peers: First-year students

Collaborating with others in mastering difficult material and developing interpersonal and social competence prepare students to deal with complex, unscripted problems they will encounter during and after college. Two Engagement Indicators make up this theme: *Collaborative Learning* and *Discussions with Diverse Others*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech		Your first-year students compared with				NSSE 2018 & 2019	
	Mean	Mean	Carnegie Class		Quality Assurance		Mean	Effect size
			Effect size	Mean	Effect size	Mean		
Collaborative Learning	35.2	34.5	.04	33.2 **	.14	32.4 ***	.19	
Discussions with Diverse Others	39.2	41.0 **	-.13	38.4	.05	39.4	-.01	

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).

Figure 6: 2019 Learning with Peers – Seniors

Learning with Peers: Seniors

Collaborating with others in mastering difficult material and developing interpersonal and social competence prepare students to deal with complex, unscripted problems they will encounter during and after college. Two Engagement Indicators make up this theme: *Collaborative Learning* and *Discussions with Diverse Others*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech		Your seniors compared with				NSSE 2018 & 2019	
	Mean	Mean	Carnegie Class		Quality Assurance		Mean	Effect size
			Effect size	Mean	Effect size	Mean		
Collaborative Learning	37.0	34.0 ***	.20	33.9 ***	.20	31.8 ***	.33	
Discussions with Diverse Others	38.1	41.4 ***	-.21	40.8 ***	-.17	40.1 **	-.12	

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).

NSSE 2019 students related significantly more quality interactions (FY *M*=44.8, *p*<.001, *ES*=.24; senior *M*=44.1, *p*<.001, *ES*=.17). *Supportive Environment* was also noted as an area for improvement in 2019 (FY *M*=35.4, *p*<.01, *ES*=-.14; seniors *M*=29.6, *p*<.001, *ES*=-.28). Seniors in 2019 reported fewer *Discussions with Diverse Others* than seniors at THEC peer institutions (*M*=38.1, *p*<.001, *ES*=-.17).

Figure 7: 2019 Campus Environments – First-year

Campus Environment: First-year students

Students benefit and are more satisfied in supportive settings that cultivate positive relationships among students, faculty, and staff. Two Engagement Indicators investigate this theme: *Quality of Interactions* and *Supportive Environment*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech		Your first-year students compared with				NSSE 2018 & 2019	
	Mean	Mean	Carnegie Class		Quality Assurance		Mean	Effect size
			Effect size	Mean	Effect size	Mean		
Quality of Interactions	44.8	42.3 ***	.22	41.9 ***	.24	42.6 ***	.18	
Supportive Environment	35.4	36.5	-.08	37.2 **	-.14	36.1	-.05	

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).

Figure 8: 2019 Campus Environments – Senior**Campus Environment: Seniors**

Students benefit and are more satisfied in supportive settings that cultivate positive relationships among students, faculty, and staff. Two Engagement Indicators investigate this theme: *Quality of Interactions* and *Supportive Environment*. Below are three views of your results alongside those of your comparison groups.

Mean Comparisons

Engagement Indicator	Tennessee Tech	Your seniors compared with					
		Carnegie Class		Quality Assurance		NSSE 2018 & 2019	
		Mean	Effect size	Mean	Effect size	Mean	Effect size
Quality of Interactions	44.1	41.4 ***	.22	41.9 ***	.17	42.8 *	.11
Supportive Environment	29.6	32.2 ***	-.19	33.6 ***	-.28	32.2 ***	-.19

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).

When comparing NSSE 2016 to NSSE 2019 overall, there are no significant differences between administrations (2016 *p*=.885; 2019 *p*=.931). In looking more closely, however, there are important data to note. *Collaborative Learning* practices stayed stable across administrations, indicating TTU is providing these opportunities and engaging students through them—particularly important in preparing students for employment. Though not statistically significant, in both administrations, first-year students reported that they reviewed their course notes more (Q9b) and reached conclusions based on their own analyses of quantitative data (Q6a) more frequently than THEC and Carnegie Class peers. Seniors in 2016 and 2019 also related that they reached conclusions based on their own analyses of quantitative data (Q6a) more frequently than THEC and Carnegie Class peers. In both 2016 and 2019, first-year students reported *Experiences with Faculty* and *Effective Teaching Practices* were equitable with that of THEC peers. *Quality of Interactions* were significantly above or on par with THEC peers for all students responding to NSSE 2016 and 2019 (2016 FY *M*=43, *p*<.001, *ES*=.24; 2016 senior *M*=42.6, *p*≥.05, *ES*=.06; 2019 FY *M*=44.8, *p*<.001, *ES*=.24; 2019 senior *M*=44.1, *p*<.001, *ES*=.17). This demonstrates improvement from the 2014 administration where first-year students experienced significantly fewer quality interactions on campus (2014 FY *M*=39.4, *p*<.001, *ES*=-.16).

High-Impact Practices (HIPs) are important to student engagement and are implemented as a focus of our revised Quality Enhancement Plan (QEP). First-year students reported lower HIP experiences than our THEC peers; TTU excels, however, in *Research with Faculty*, *Internship or Field Experience*, *Culminating Senior Experience*, and *Participation in HIPs* for students by their senior year in both administrations.

Both first-year students and seniors taking NSSE 2016 and 2019 indicated *Reflective & Integrative Learning* practices are an area for improvement. In 2016, *Discussions with Diverse Others* was on par with THEC peers for first-year students, while seniors reported lower instances (2016 senior *M*=38.6, *p*<.001, *ES*=-.21). In contrast, 2019 first-year students had fewer *Discussions with Diverse Others* than did those in our Carnegie Class (2019 senior *M*=39.2, *p*<.01, *ES*=-.13), though were equivalent to the student experiences of comparable THEC institutions. Seniors in 2019 reported fewer *Discussions with Diverse Others* than seniors at THEC peer institutions (2019 senior *M*=38.1, *p*<.001, *ES*=-.17). Seniors also noted significantly fewer *Effective Teaching Practices* used (2016 senior *M*=38.9, *p*<.01, *ES*=-.13; 2019 senior *M*=38.4, *p*<.001, *ES*=-.16). Finally, *Supportive Environment* remains an area for improvement: students in both 2016 (FY *M*=33.9, *p*<.05, *ES*=-.14; seniors *M*=31.0, *p*<.05, *ES*=-.11) and 2019 (FY *M*=35.4, *p*<.01, *ES*=-.14; seniors *M*=29.6, *p*<.001, *ES*=-.28). Though the statistical effect sizes are small, TTU takes the data seriously as we strive to create an innovative, supportive, and inclusive educational environment.

Experiences with Information Literacy results indicated improvement from the 2016 to 2019 NSSE administrations. NSSE 2016 showed that TTU students used information literacy practices such as multi-step projects, received instructor feedback, using the library's electronic collections, using scholarly sources, and applying citations less often than THEC peers. In 2019, however, these practices either had reduced differences (including a much smaller effect size) or were on par with those in our THEC Peer Group. Both administrations of the *Development of Transferable Skills* module indicated that transferable skills for written work occurred significantly less than at THEC peer institutions.

Overall student satisfaction remains strong. In 2016, both first-year students (89%) and seniors (86%) evaluated their experience as *good* or *excellent* significantly more than students at THEC peer institutions (*p*<.01, *ES*=.21). NSSE 2016 first-year respondents (90%) indicated they would likely or definitely choose TTU again at significantly higher rates than students at both THEC peers (*p*<.001, *ES*=.24) and institutions in our Carnegie Class (*p*<.01, *ES*=.20), while senior responses (82%) were on par with THEC and Carnegie peers. In 2019, both first-year students (86%) and seniors (87%) continued to rate their TTU experience as *good* or *excellent*. Of those who responded 88% of first-year students and 84% of seniors responded that they would likely or definitely choose TTU again; first-year students were significantly more likely to feel this way in comparison to THEC peers (*p*<.01, *ES*=.16). In addition, 93% stated they intended to return to TTU next year, outpacing similar responses of students at THEC peer institutions (*p*<.001, *ES*=.20).

TTU conducted an additional NSSE survey in 2017, and data analysis demonstrates consistency with NSSE 2016 and 2019 data. NSSE 2017 results showed *Student–Faculty Interactions* were equivalent to THEC peers and outperformed Carnegie Class peers ($FY\ M=21.6$, $p<.05$, $ES=.13$; senior $M=26.3$, $p<.001$, $ES=.33$). *Quality of Interactions* were seen as on par with peer institutions for seniors and significantly higher for first-year students (first year $M=42.9$, $p<.001$, $ES=.20$). Despite high ratings for *Quality of Interactions*, *Supportive Environment* was noted as an area for improvement. NSSE 2017 Seniors reported a lower experience of *Supportive Environment* (senior $M=30.4$, $p<.001$, $ES=-.18$). First-year students participated less frequently in HIPs overall (≥ 1 HIPs: 53%, $p<.001$, $ES=-.29$; ≥ 2 HIPs: 59%, $p<.001$, $ES=-.24$) and *Learning Communities* (5%, $p<.001$, $ES=-.32$) than did THEC peers. In contrast, seniors outperformed THEC and Carnegie Class peers (≥ 1 HIPs: 90%, $p<.001$, THEC $ES=.18$, CC $ES=.27$; ≥ 2 HIPs: 70%, $p<.001$, THEC $ES=.27$, CC $ES=.41$). They also experienced *Research with Faculty* (29%, $p<.001$, THEC $ES=.19$, CC $ES=.31$), *Internship or Field Experience* (56%, $p<.001$, THEC $ES=.27$, CC $ES=.31$), and *Culminating Senior Experience* (55%, $p<.001$, THEC $ES=.26$, CC $ES=.40$) more frequently.

Analysis of NSSE 2016 and 2019 data, supported by 2017 additional data, offers insight into TTU's strengths and limitations according to students. As with NSSE 2014 data, the *Supportive Environment*, *Discussions with Diverse Others*, and *Reflective & Integrative Learning* engagement indicators demonstrate TTU has room to improve and enhance the campus experiences for all students, despite high overall student satisfaction and a high rate of first-year students indicating intent to return to TTU. *Collaborative Learning*, *Experiences with Faculty*, *Effective Teaching Practices*, and *Quality of Interactions* remained strengths across all three NSSE administrations, indicating continued investments in those areas are maintain or increasing TTU students' quality of experience in those areas.

Experiences with Information Literacy data offered insight to two additional areas where TTU can enhance the breadth and depth of the student experience. In 2016, both first-year students and seniors tended to score lower on information literacy variables than did THEC peers (p -values ranging from .05 to .001, though effect sizes remained low). In particular, students performed information literacy practices with their written assignments significantly less often than at THEC peer institutions. In the NSSE 2019 survey, students demonstrated improvement in these lower areas, but TTU is committed to continuing growth. *Development of Transferable Skills* data indicated that students' frequency of exposure to and use of transferable skills remained stable, though lower than that of THEC peers.

NSSE Relationships between FSSE-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes – detailed

NSSE data in conjunction with TTU'S Strategic Plan drove the NSSE-guided Action Plan. QEP and related efforts are tightly connected to TTU's Strategic Plan. The QEP's overarching goal is to enhance student learning by infusing creative inquiry throughout the undergraduate experience, specifically through (1) establishing an undergraduate curriculum that encourages successful creative inquiry, (2) expanding co-curricular opportunities for undergraduate creative inquiry, (3) supporting and acknowledging faculty and students who engage in creative inquiry, and (4) developing the infrastructure to support undergraduate creative inquiry. Through continued QEP efforts, we hope to see an increase in student participation QEP activities (especially HIPs) in service of providing opportunities to foster and develop *Collaborative Learning*, *Higher Order Learning*, *Reflective & Integrative Learning*, *Information Literacy*, critical thinking skills, creative thinking skills, problem-solving abilities, and communication proficiency. Creative inquiry and research provide connections with faculty and other students while developing skills that will set graduates apart as they move into their chosen professions (CP: *Academic Excellence*, *Student Success*, *Supportive Environment*, *Value Creation*; SG-1 Priority Actions (PAs) A, B, D, E; SG-2 PA B).

HIPs are an integral part of the QEP and of TTU's larger efforts to provide meaningful, transformative educational experiences. Participation in HIPs offers students chances to purposefully develop vital skills and actively learn, supporting deeper engagement with content as well as process. In addition, HIPs are especially transformative for historically underrepresented groups (Finley & McNair, 2013; Kuh, 2008), which is needed as TTU works to create a more diverse and successful student body. Related to QEP's efforts, TTU seeks to continue to provide students opportunities to develop the vital proficiencies that support success academically and as TTU graduates move on to begin their careers. Another way to do so is by continually infusing these skills the courses that comprise available concentrations, minors, and certificates. Intended outcomes include a) increasing the number of concentrations, minors, and certificates that integrate and emphasize critical and higher order thinking skills and research-related skills and activities and b) improved student critical thinking, higher order thinking skills, and/or research skills/opportunities from increased exposure as evidenced by related NSSE Engagement Indicator scores (e.g., *Higher Order Learning*, *Reflective & Integrative Learning*, *HIPs*). The efforts noted above and the outcomes they support directly relate to the following areas of the Strategic Plan: *Academic Excellence*, *Meaningful Innovation*, *Student Success*, *Supportive Environment*, *Value Creation*; SG-1 PAs A, B, C, D, E; SG-2 PA B; SG-4 PA B.

TTU Core Principle *Supportive Environment* signifies the commitment "to a diverse and welcoming community and provide a campus size and atmosphere that fosters personal attention and fit" (TTU Strategic Plan, 2018, p. 8). This begins before students arrive and first-year students' experience can set the tone for their time at TTU. The redesigned UNIV 1020 course emphasizes meaningful academic, collaborative, social, and personal skills and growth. The course redesign encourages academic and personal network creation, professional development, collaboration, and persistence. This contributes not only to *Supportive Environment* but also *Academic Excellence* and *Student Success*. This effort and related outcomes also support SG-1 PAs A, B, D; SG-2 PA B & C.

TTU serves a large portion of students from the Upper Cumberland (~38%). The 14 counties that comprise the Upper Cumberland region: eight are *transitional*, three are *at-risk*, and three are *distressed* as defined by the Appalachian Regional Commission (Transparent Tennessee, 2019). Students from these areas may have less access and exposure to multiple, diverse perspectives. As an institution that serves through education, TTU endeavors to provide all students with experiences that represent diverse voices and perspectives—as a way to bring global perspectives to students and to ensure students see representations of themselves in multiple ways. Increasing diversity and inclusion-focused programming on campus is one way to do so, not only through the programming itself, but also through the students, faculty, staff, and larger community members who attend. TTU recognizes the need to increase students' opportunities to encounter diverse perspectives and experiences as part of their TTU experience. This directly relates to the following areas of the Strategic Plan: CP: Academic Excellence, Student Success, Supportive Environment; SG—I PAs A, B, & C.

NSSE Evidence & Analysis/Use of Results – detailed

QEP

Student enrollment in EDGE Creative Inquiry courses has risen from approximately 1,000 in Fall 2015 to more than 1,400 in Fall 2019, a gain of 40% over 4.5 academic years.

Longitudinal NSSE data, paired with other direct and indirect measures, is used in each QEP annual report to review progress and share this data amongst stakeholders. Changes in these data trends are regularly monitored through formal and informal means, and discussed in the annual report (which is shared with stakeholders).

QEP EDGE courses for the past 5 years:

- 2015–2016: 37 courses
- 2016–2017: 69 fall courses
- 2017–2018: 95 courses
- 2018–2019: 83 courses
- 2019–2020: 140 courses

Increase # of concentrations, minors, & certificates that infuse critical thinking, higher order thinking skills, &/or research opportunities

NSSE data indicate the need for more robust opportunities to develop critical thinking, higher order thinking, and research/creative inquiry skills. Since Fall 2015, the 50 new concentrations, minors, and certificates have been approved by the Curriculum Committee and Academic Council. These include new offerings in the sciences, art, education, interdisciplinary studies, and business.

- Agricultural Science & Management
- Botany
- Marine Biology
- Microbiology
- Zoology
- Communications Studies
- Criminal Justice – online
- Computer Science
- Computer Science Education
- Creative Writing
- Dual Studio (fine arts)
- Elementary Education
- Engineering Technology Management
- Exercise Physiology
- Food Systems Administration
- General Health Studies
- Mechatronics Engineering Technology
- Parallel, Distributed, & High-Performance Computing
- Physical Education Practitioner
- Pre-Physician's Assistant
- Teaching English to Speakers of Other Languages (TESOL)
- Vehicle Engineering – Mechanical Engineering
- Vehicle Engineering – Electrical & Computer Engineering
- Accounting (minor)
- Art History (minor)
- Astronomy (minor)
- Business Information Technology & Analytics (minor)
- Caregiving (minor)
- Event Planning, Promotion, & Management (minor)
- Family Sciences (minor)
- Honors (minor)
- International Business (minor)
- International Studies (minor)
- Leadership (minor)
- Music History (minor)
- Music Performance (minor)
- Music Technology (minor)
- Music Theory & Composition
- (minor)
- Studio Art (minor)
- Banking (certificate)
- Banking & Financial services (certificate)
- Child & Family Trauma-informed Care (certificate)
- Computer Science Education (certificate)
- Cyber Management & Analytics services (certificate)
- Environmental Informatics (certificate)
- Human Behavior Data Analytics (certificate)
- Innovation and Entrepreneurship (certificate)
- Online Teaching & Design (certificate)
- SERVICE service learning (certificate)
- uLead Leadership & Service (certificate)

In addition, FastTrack programs, which offer students the opportunities to take graduate courses that may then be applied to graduate study at TTU, offer students chances to further develop the critical thinking, higher order thinking, and/or research skills afforded by concentrations, minors, and certificates. Since Fall 2015, the following nine FastTrack programs have been approved (for a total of 14 programs): Accounting (MAcc); Business & Administration (MBA); Computer Science (MS); Curriculum & Instruction (MA); Curriculum

& Instruction/Family & Consumer Sciences (MA); English (MA); Environmental Informatics (PSM); Exercise Science, Wellness, & Physical Education (MA); Manufacturing Sustainability (PSM); and Mechanical Engineering (MS).

Maintain/increase # of HIP courses & extracurricular HIPs

Courses using HIPs and creative inquiry practices have increased over the past 5 years due to QEP efforts in response to NSSE and other data:

2016–2017: 181 HIP courses

2017–2018 193 HIP courses

2018–2019: 193 HIP courses

2019–2020: 252 HIP courses

EDGE courses (data above) also provide HIP experiences for students. Extracurricular HIPs are offered through the *Creative Inquiry Summer Experience, Research & Creative Inquiry Day*, and other campus programs (e.g., learning villages, study abroad, department- and college-level initiatives). TTU is providing two or more HIPs to significantly more students prior to graduation than THEC peer institutions (2016: 71%, $p<.001$, $ES=.26$; 2017: 70%, $p<.001$, $ES=.27$; 2019: 68%, $p<.001$, $ES=.17$).

Offer Creative Inquiry Summer Experience (CISE) & expand Student Research Day to Research & Creative Inquiry Day (RCID)

The CISE Grant Program provides monetary assistance for paid summer internships that help students develop research and creative inquiry skills. CISE grants are part of TTU's QEP efforts. Undergraduate students who agree to work with a faculty member during the summer (between May and August) are eligible to apply. Grant proposals are on the rise. CISE grants awarded ranged from 30 to 42.

2016: 33 of 90 grant proposals awarded (33 students, 33 faculty participated)

2017: 30 of 37 grant proposals awarded (30 students, 30 faculty participated)

2018: 42 of 54 grant proposals awarded (42 students, 42 faculty participated)

2019: 39 of 51 grant proposals awarded (39 students, 39 faculty participated)

2020: 40 of 40 grant proposals awarded [COVID-19 pandemic reduced number of applications]

Research and Creative Inquiry Day (RCID) is an annual event designed to promote student research and creative inquiry and provide a venue for presenting that work. Creative inquiry was added in 2017. Abstracts submitted ranged from 189–222; accepted projects ranged from 166 to 211.

2016: 217 abstracts received; 191 posters/papers presented & submitted for judging

2017: 189 abstracts received; 166 posters/papers presented & submitted for judging

2018: 221 abstracts received; 208 posters/papers presented & submitted for judging

2019: 222 abstracts received; 211 posters/papers presented & submitted for judging

2020: 222 abstracts received; 184 digital posters/papers presented & submitted for judging

proceedings: https://www.tntech.edu/research/pdf/researchday/Proceedings_2020_Final.pdf

Archived proceedings online beginning spring 2017: <https://publish.tntech.edu/index.php/PSRCI/issue/archive>

NSSE data show that *Student-Faculty Interactions* and senior participation in HIPs continue to be a strength of TTU and are supported by experiences such as CISE and RCID. Since CISE and RCID have been emphasized, gains have been made in *Higher-Order Learning*, moving from the dip in 2017 to lower than THEC peers to on par (2017 FY $M=35.6$, $p<.01$, $ES=-.15$; 2019 $M=36.6$, $p>.05$) for first-year students. Seniors moved from lower than THEC peers in 2016 and 2017 par (2016 seniors $M=37.9$, $p<.001$; $ES=-.24$; 2017 seniors $M=37.7$, $p<.001$; $ES=-.24$) to meeting THEC peer experiences in 2019.

Responsive course update in Fall 2017 for UNIV 1020 – Freshmen Connections

The Freshmen Connections (UNIV 1020) course has gone through a series of revisions to better serve incoming first-year students. Class descriptions revised to: Engages students in meaningful academic and nonacademic, in-class and out-of-class activities. Emphasizes ethical behavior and the use of critical thinking in the formation of academic and social goals and support groups, and in self-management and study skills. Includes an inquiry project/activity which students should share. The inquiry activity, along with emphasis on critical thinking and information literacy, directly addresses NSSE data for Engagement Indicator activities comprising *Higher-Order Learning* and *Supportive Environment*, while maintaining progress on *Quality of Interactions*.

In the year since revisions were deployed, *Quality of Interactions* were significantly above or on par with THEC peers for all 2019 NSSE respondents (2019 FY $M=44.8$, $p<.001$, $ES=.24$). Gains were made in *Higher-Order Learning*, moving from lower than THEC peers to on par (2017 FY $M=35.6$, $p<.01$, $ES=-.15$; 2019 $M=36.6$, $p>.05$). *Supportive Environment* remains an area for improvement, though effect sizes remain small (2019 FY $M=35.4$, $p<.01$, $ES=-.14$). This paired with other additional direct and indirect measures will guide further revisions and additional actions to increase students' experiences of a supportive TTU campus.

Increase Multicultural Affairs & other diversity/inclusion-focused programming

NSSE data continue to indicate that TTU students need more experiences that align with NSSE Engagement Indicators *Discussions with Diverse Others* and *Supportive Environment*. In addition to other curricular and academic support initiatives, providing a number of extracurricular events that highlight diverse experiences and perspectives is another way TTU strives to improve students' experiences with diversity and a supportive campus.

Center Stage programming presents two series of activities: a fine arts series and a series featuring diverse cultural perspectives. These events are funded via the General Education Fund. The series is developed a year in advance from proposals submitted by full-time employees of Tennessee Tech; proposals are due December 1. Successful proposals are selected by the Policy and Oversight Committee (POC). Proposals are selected based on their merit to the aims of Center Stage: promoting better understanding of diverse ideas and world cultures and greater appreciation of the fine arts. Center Stage holds between 40-50 events each year. Events usually attract from 50 participants/attendees on the lower-end to roughly 400 for larger events (see event list: <https://www.tntech.edu/centerstage/>).

Multicultural Affairs (MA) programming has been increased in 2019–2020 in frequency and breadth of included experiences/perspectives under the leadership of Charria Campbell. The events align with MA's mission to “personal, cultural, social, and academic growth and development of students from underrepresented ethnic populations. We provide and encourage opportunities for all the students to learn about their history, take pride in their heritage, and explore their potential.” In 2019-2020, events addressed women in STEM, fundraising for Diversity Scholarship Fund, MLK Silent March, Hispanic Heritage month, Native American History month, and support programming (e.g., financial aid, study sessions, family weekend). (see event list: <https://www.tntech.edu/multicultural-affairs/events.php>).

Appendix C

Detailed FSSE Data, Relationships, & Evidence

<https://www.tntech.edu/assessment/fsse.php>

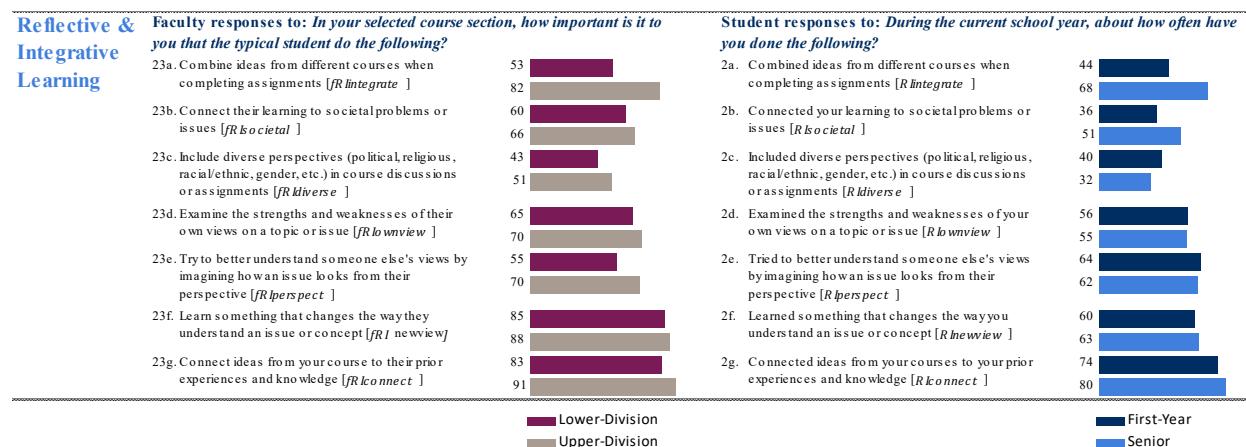
FSSE Data – detailed

Data discussed in this section shows the percent of faculty/students who selected *Very Much* and *Quite a Bit* or *Very Often* (as appropriate to the posed question) combined into a single percentage; these numbers represent the higher end of performance. Faculty responses are broken down into lower (LD) and upper division (UD); this is analogous to first-year and senior NSSE respondents. The FSSE-NSSE comparison used 2017 NSSE data, 2016 and 2019 data has been incorporated to emphasize and better understand trends in the data over time with respect to indicators where TTU performance departs from that of THEC peer institutions.

In NSSE 2017, students reported slightly lower instances *Higher Order Learning* than did THEC peers (2017 FY $M=35.6$, $p<.01$, $ES=-.15$; 2017 senior $M=37.7$, $p<.001$, $ES=-.24$). NSSE 2016 data demonstrated the same trend for seniors (2016 senior $M=37.9$, $p<.001$, $ES=-.24$; 2019 senior $M=39.1$, $p<.05$, $ES=-.11$), while 2016 and 2019 first-year student experiences were on par with THEC peers. Faculty reported higher instances of the *Higher Order Learning* skills of *Applying theories, or methods to practical problems* (Q27b LD: 85%, UD: 89%) and *Analyzing an idea, experience, or line of reasoning in depth by examining its parts* (Q27c LD: 80%, UD: 75%) than did students. These are important skills for professional success. These data show a faculty need to include more explicit discussion of these skills in class to ensure students are able to best identify them in their coursework and recognize frequency of use and their development.

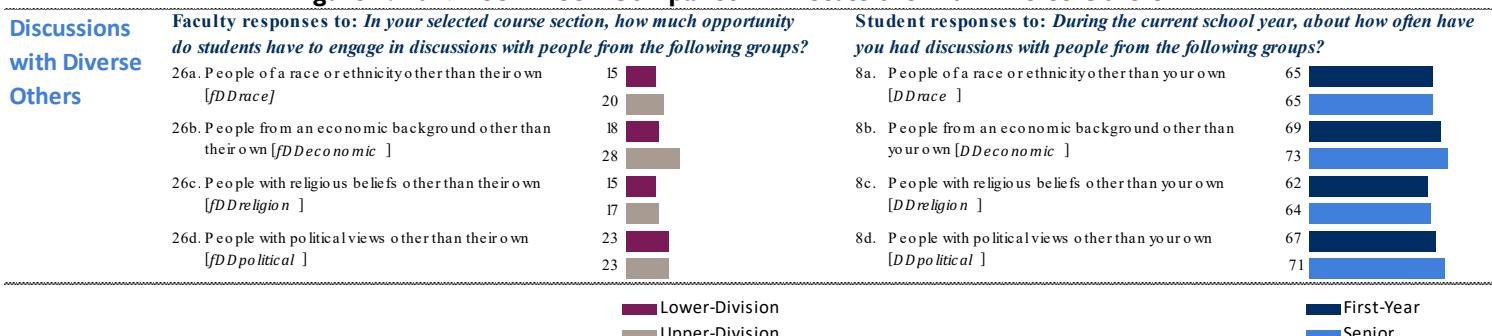
With respect to *Reflective & Integrative Learning*, faculty consistently rated the seven elements as important/very important, while students reported *Reflective & Integrative Learning* (2017 FY $M=32.1$, $p<.001$, $ES=-.23$; 2017 senior $M=34.3$, $p<.001$, $ES=-.33$) was experienced significantly less often than at THEC peer institutions. NSSE 2016 and 2019 data align with the 2017 NSSE data (2016 FY $M=32.6$, $p<.001$, $ES=-.19$; 2016 senior $M=34.7$, $p<.001$, $ES=-.37$; 2019 FY $M=32.7$, $p<.001$, $ES=-.19$; 2019 senior $M=34.6$, $p<.001$, $ES=-.21$). Faculty (LD: 85%, UD: 88%) reported that *Learning something that changes the way [students] understand an issue or concepts* (Q23f) was the most important element of *Reflective & Integrative Learning*; 60% of 2017 first-year students and 63% of 2017 seniors students reported that this happened frequently in their courses. In 2016, 61% of both first-year students and seniors felt they had frequently experienced this in their courses; in 2019, 61% of first-year students and 62% of seniors reported frequent experiences of this *Reflective & Integrative Learning* practice.

Some part of these discrepancies may lie in students' ability to recognize these types of learning experiences; therefore, faculty need to be explicit when these practices are part of the coursework, encourage students to use them, and offer support where needed. Faculty (LD: 60%, UD: 66%) perceived that *Connecting learning to societal issues* (Q23b) is an important part of teaching, yet students reported this happening less frequently than expected given the importance (2016 FY: 43%, 2016 senior: 50%; 2017 FY: 36%, 2017 seniors: 51%; 2019 FY: 39%; 2019 senior: 51%). Faculty reported (LD: 43%, UD: 51%) including *diverse perspectives in course discussion or assignments* (Q23c) as important, and students reported that it happened frequently at a lower rate (2016 FY: 40%, 2016 senior: 38%; 2017 FY: 40%, 2017 seniors: 32%; 2019 FY: 43%; 2019 senior: 39%). The senior percentages across all three years lower than expected as these students should be regularly recognizing, analyzing, and synthesizing diverse perspectives in their coursework. A greater emphasis on this element from faculty is needed given TTU's commitment to inclusive, supportive educational environments.

Figure 1: 2017 FSSE-NSSE Comparison – Reflective & Integrative Learning


TTU students regularly reported experiencing frequent *Collaborative Learning* (CL) practices (2016 FY all CL items $\geq 54\%$, 2016 senior all CL items $\geq 52\%$; 2017 FY all CL items $\geq 54\%$, 2017 seniors all CL items $\geq 54\%$; 2019 FY all CL items $\geq 55\%$; 2019 senior all CL items $\geq 51\%$); statistical analysis reveals that TTU provides these opportunities significantly more often than THEC and Carnegie Class peers (seen NSSE data above). FSSE 2017 data showed that faculty felt that these practices were important and offered frequently (all items $\geq 50\%$ for LD & UD), aligning well with student data. This indicates TTU faculty are consistently providing collaborative learning opportunities, and the students recognize and value these experiences. Similarly, faculty and students both reported high frequency of implementing (faculty $\geq 95\%$ on all items for LD & UD) in *Effective Teaching Practices*. NSSE data indicated that $\geq 51\%$ first-year students and seniors experienced *Effective Teaching Practices* frequently. Seniors in all three years reported less frequency of these practices than did THEC peers, however (2016 senior $M=38.9$, $p<.01$, $ES=-.13$; 2017 senior $M=38.9$, $p<.05$, $ES=-.12$; 2019 senior $M=38.4$, $p<.001$, $ES=-.16$). This points out an area for further investigation; while it is possible this may be due to the increased learner independence experience in upper-division courses, it is important to examine this trend.

Discussions with Diverse Others (DDO) is another area of discrepancy between faculty and student perceptions (see Figure 2 below). Detailed results on FSSE questions 26a-d indicate discrepancies between faculty perceptions and student experiences concerning engagement with diversity; this has also been reflected in previous NSSE administrations and other TTU data (e.g., *Alumni Survey*, *Adult Learner Survey*, and *IDEA Course Evaluations*). Faculty perceptions of opportunities for students to interact with diverse others was low overall. TTU is a predominantly White institution (PWI) with approximately 80% White students in 2017; this is likely a contributing factor to faculty's perception of limited opportunities for majoritarian students to interact with diverse others in courses. Faculty shared that students had some opportunity to engage with those of a different race/ethnicity (LD: 15%, UD: 20%) and religion (LD: 15%, UD: 17%) than their own, while students felt they had these opportunities much more frequently (2016 FY all DDO items $\geq 65\%$, 2016 senior all DDO items $\geq 61\%$; 2017 FY all DDO items $\geq 62\%$, 2017 seniors all DDO items $\geq 64\%$; 2019 FY all DDO items $\geq 54\%$; 2019 senior all DDO items $\geq 56\%$). Further analysis, however, reveals that seniors reported fewer *Discussions with Diverse Others* (2016 senior $M=38.6$, $p<.001$, $ES=-.21$; 2017 senior $M=38.6$, $p<.001$, $ES=-.19$; 2019 senior $M=38.1$, $p<.001$, $ES=-.17$). Though the effect sizes remain small, this is a troubling result as TTU strives to provide more opportunities as they progress. TTU remains committed to increasing student and employee (faculty, staff, administration) diversity and this continues to be a priority focus.

Figure 2: 2017 FSSE-NSSE Comparison – Discussions with Diverse Others


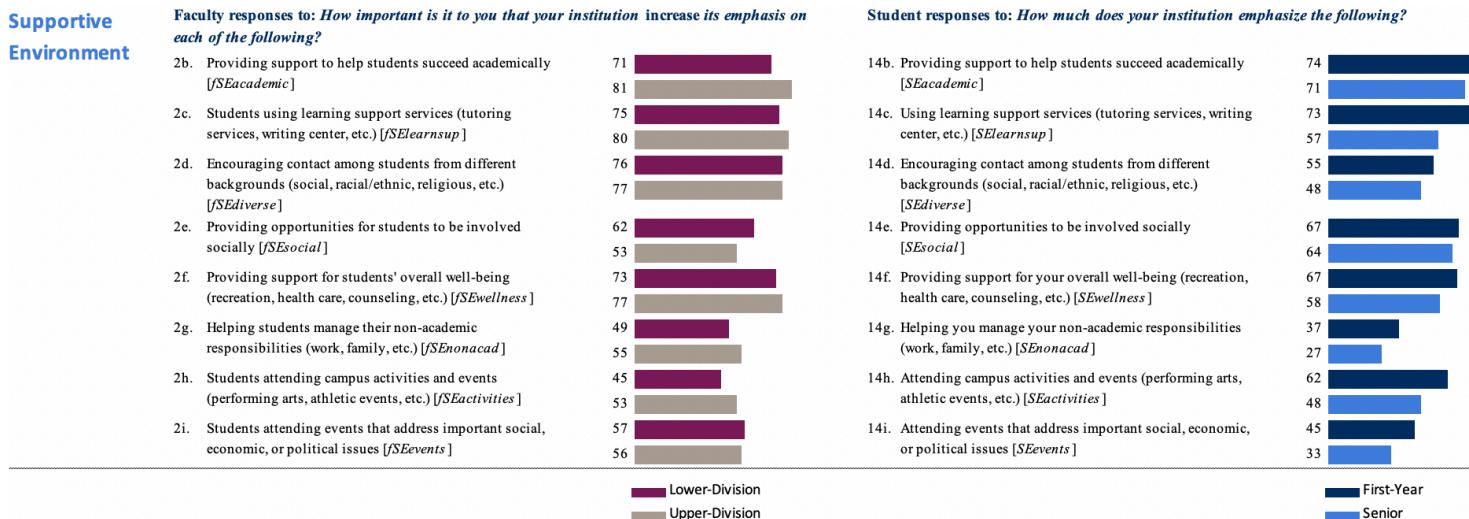
NSSE results showed *Student-Faculty Interactions* (SFI) were generally equivalent to THEC peers and outperformed Carnegie Class peers (2016 senior $M=25.6$, $p<.001$, $ES=.29$; 2017 FY $M=21.6$, $p<.05$, $ES=.13$; 2017 senior $M=26.3$, $p<.001$, $ES=.33$; 2019 senior $M=26.6$, $p<.001$, $ES=.21$). Comparison with FSSE data provides additional valuable insight, however. Despite being equitable with THEC peer institutions, a

clear gap emerged between faculty and student perceptions of their interactions. Faculty indicated they frequently ($\geq 50\%$ for all items) discussed career plans (Q8a), worked on extracurricular activities (Q8b), talked about course topics outside of class (Q8c), and academic performance (8d) with students. Students noted much less interaction, with percentages of Often + Very Often ranging from only 22% to a high of 48% across all years (2016 FY all SFI items $\geq 24\%$, 2016 senior all SFI items $\geq 31\%$; 2017 FY all SFI items $\geq 23\%$, 2017 seniors all SFI items $\geq 38\%$; 2019 FY all SFI items $\geq 22\%$; 2019 senior all SFI items $\geq 35\%$). The highest frequency was noted by seniors discussing career plans (2016 senior: 46%, 2017 senior: 48%, 2019 senior: 48%); first-year students reported the lowest, 22–23% reported frequently working with faculty outside of class across all three years. Differences between student and faculty perceptions demonstrate a need to 1) better comprehend how students understand their interactions with faculty, and 2) improve TTU student-faculty interaction.

According to NSSE data, *Quality of Interactions* were seen as on par with or significantly higher than THEC and Carnegie Class peer institutions for TTU students in all three administrations. In contrast, FSSE data indicated faculty perceived students had high- or very-high quality interactions far less frequently than TTU students reported (reported percentages across all items of 2–43%; students reported 22–75%). Given that a likely majority of faculty interact with students mainly in or concerning class, it is not surprising that they have less insight into the quality of students' interactions with various groups on campus. In particular, faculty responses indicated certain faculty do not have the experience or information to judge quality student interactions with administrative or student service staff, unless they had served as facilitators for TTU Freshmen Connections courses or as student advisors. This also speaks to the need to improve understanding of various interactions at TTU for both students and faculty.

Despite high student ratings for *Quality of Interactions* from 2016–2019, *Supportive Environment* was noted as an area for improvement. All TTU students reported a lower experience of *Supportive Environment* (2016 FY $M=33.9$, $p<.05$, $ES=-.14$; 2016 seniors $M=31.0$, $p<.05$, $ES=-.11$; 2017 FY $M=34.3$, $p<.05$, $ES=-.16$; 2017 senior $M=30.4$, $p<.001$, $ES=-.18$; 2019 FY $M=44.8$, $p<.001$, $ES=.24$; 2019 senior $M=44.1$, $p<.001$, $ES=.17$) than THEC peers. Most students ($\geq 50\%$), however, reported that TTU emphasized the elements that make up the *Supportive Environment* indicator. Seniors, though, noted less emphasis on *Encouraging contact among students from different backgrounds* (Q14d) (2016–45%, 2017–55%, 2019–46%), *Helping you manage your non-academic responsibilities* (Q14g) (2016–29%, 2017–27%, 2019–22%), and *Attending events that address important social, economic, or political issues* (Q14i) (2016–39%, 2017–33%, 2019–31%). Faculty, on the other hand, had a more positive view of the TTU campus environment, with all percentages $\geq 45\%$. Though the percentages reported tended to be higher, faculty frequencies showed dips for the elements of *Helping students manage your non-academic responsibilities* and *Students attending events that address important social, economic, or political issues*. Faculty perceptions of *Encouraging contact among students from different backgrounds* (social, racial/ethnic, religious, etc.) differed from students. In all three years, 51–55% students reported TTU was very good or excellent at emphasizing this, while 76–77% of FSSE respondents felt it was very or critically important. This mirrors data discussed earlier in *Discussions with Diverse Others*, highlighting the need for increased inclusion and diversity in multiple ways throughout TTU students' tenure.

Figure 3: 2017 FSSE-NSSE Comparison – Supportive Environment

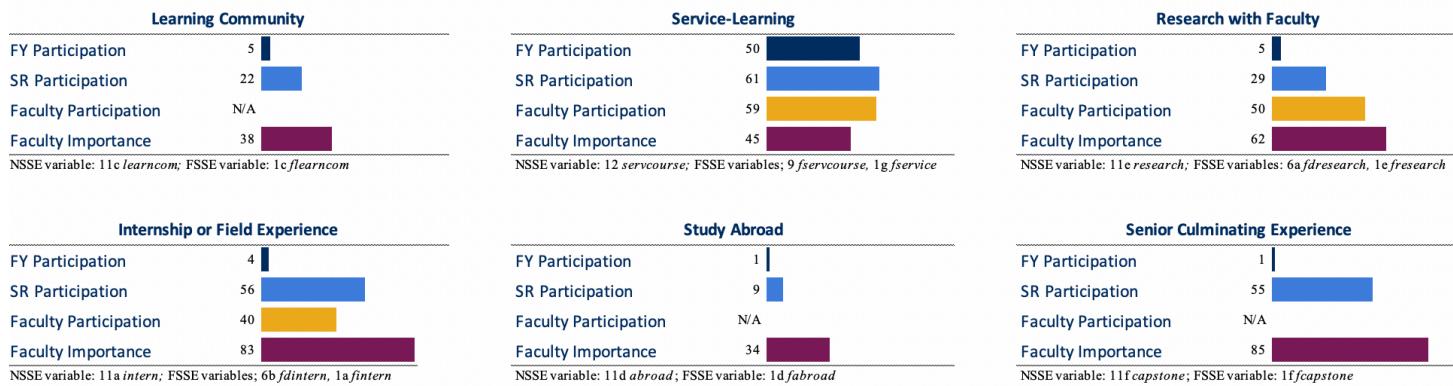


FSSE data demonstrated that faculty find the majority of HIPs as important/very important; *Research with Faculty* (62%), *Internship/Field Experience* (83%), and *Senior Culminating Experience* (85%) were seen by faculty as most vital to the undergraduate experience. In 2017, first-year students participated less frequently in HIPs overall (≥ 1 HIPs: 53%, $p<.001$, $ES=-.29$; ≥ 2 HIPs: 59%, $p<.001$, $ES=-.24$) than did THEC peers. In contrast, seniors outperformed THEC and Carnegie Class (CC) peers (≥ 1 HIPs: 90%, $p<.001$, THEC $ES=.18$, CC $ES=.27$; ≥ 2 HIPs: 70%, $p<.001$, THEC $ES=.27$, CC $ES=.41$). They also experienced *Research with Faculty* (29%, $p<.001$, THEC $ES=.19$, CC $ES=.31$), *Internship or Field Experience* (56%, $p<.001$, THEC $ES=.27$, CC $ES=.31$), and *Culminating Senior Experience* (55%, $p<.001$, THEC $ES=.26$, CC $ES=.40$) more

frequently—which aligns with faculty perceptions of their importance. The gap between reported student participation is understandable as students become more engaged and have more opportunities as they progress in their studies and develop relationships with peers and faculty. TTU, however, encourages participation in HIPs for all undergraduates.

Figure 4: 2017 FSSE-NSSE Comparison – High-Impact Practices

High-Impact Practices



Note: Faculty participation numbers indicate the percent of faculty who participate in at least three HIPs in a typical week.

Relationships between FSSE-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes – detailed

FSSE data, in conjunction with TTU's Strategic Plan, drove the FSSE-guided Action Plan and associated outcomes. FSSE corroborated many NSSE results (e.g., strong *Collaborative Learning* scores, lower *Reflective & Integrative Learning* scores), indicating alignment between faculty and student perception in these areas. This guided inclusion of additional action items and desired outcomes to support progress. Recognition of disconnects between student and faculty perceptions of certain experiences (e.g., *Higher-Order Learning*, *Discussions with Diverse Others*, *Supportive Environment*) emphasized the need for supportive action.

Student participation in iCube projects and emphasis on inclusion of multiple experiential learning opportunities speak—and the resulting outcomes of increased access and opportunities for participation—to Core Principles Academic Excellence, Student Success, Meaningful Innovation, and Value Creation as well as strategic efforts SG-1 PAs A, B, D and SG-2 PA B. Involvement in the Rural Reimagined Grand Challenge connects students, faculty, staff, and community members as they join together to address the challenges faced by those in rural communities. This real-world collaborative experience centers on experiential learning and HIPs, deeply engaging students as they work for change and innovation in their own communities. The breadth of projects and participants speaks to the ways this initiative supports TTU students and the larger communities. These efforts and outcomes are directly related to Core Principles Academic Excellence, Student Success, Meaningful Innovation, Community Engagement, Value Creation, as well as Strategic Plan SG-1 PAs A, B, D; SG-2 PA B.

Similarly, the P-16 Diversity Partnership Vision for the Future mentoring program connects TTU students, faculty, staff, and at-risk middle and high-school students in service of a) increasing K-12 academic success for at-risk students; b) developing TTU student mentoring and leadership skills; c) modeling what diverse college students can look like, do, and be; d) increasing interest in enrolling in college; and e) connecting TTU more deeply to community partners working to increase diverse talent in the region. These efforts support progress on Academic Excellence, Student Success, Community Engagement, Supportive Environment; SG-1 PAs C & D; SG-2 PA D; they also offer the chance to improve student satisfaction in relation to FSSE Engagement Indicators Discussions with Diverse Others and Supportive Environment.

TTU highlights exceptional faculty dedicated to student success through the Scholar Mentor Award; these individuals rise above as scholars and mentors, creating a supportive atmosphere and productive collaborations as they guide students through academic tasks, facilitate creative inquiry and research projects, assist as they learn how to navigate obstacles, and help them develop self-efficacy and leadership skills. Recognizing these leaders in scholarship, mentorship, and student support visibly demonstrates TTU's commitment to fostering student success that is more inclusive and not narrowly defined by only grades (Academic Excellence, Student Success, Supportive Environment; SG-1 PA D; SG-2 PA D; SG-2 PAs C & D).

In order for students to acquire and advance critical thinking, higher order thinking, and creative inquiry/research skills, there must be plentiful access. TTU provides students opportunities to develop these vital proficiencies that support success academically and professionally. Regularly infusing these skills in courses that comprise available concentrations, minors, and certificates enables students to acquire, develop, and hone them. Oversight of the courses and curriculum by a faculty-led committee makes certain the content and skills are responsive to student,

industry, and TN agency demands. This intended increase in access to chances to learn and practice critical thinking, higher order thinking, and creative inquiry/research skills is both guided by and work to advance TTU's Strategic Plan (*Academic Excellence, Meaningful Innovation, Student Success, Supportive Environment, Value Creation; SG-1 PAs A, B, D; SG-2 PA B; SG-4 PA B*). Diversity is at the forefront of many of TTU's strategic efforts. It is not enough to create a diverse student body; faculty and staff must also represent a wide variety of experiences and perspectives (*Academic Excellence, Student Success, Supportive Environment; SG-1 PAs C & D; SG-2 PA D*).

FSSE Evidence & Analysis/Use of Results – detailed

iCube

FSSE-NSSE data indicate that students engage in *Collaborative Learning* more frequently than THEC peers, while *Higher-Order Learning* scores lag behind. TTU's iCube activities offer a chance to capitalize and further advance the areas where TTU excels, while improving student experiences in areas that need additional support. The iCube "provides creative solutions to traditional problems through marketing, training, website and app development, public policy campaigns, and the application of emerging technologies, such as virtual reality" (iCube, 2020, para. 1). iCube leads the way in utilizing technology to solve multi-faceted real-world problems through critical thinking, innovative problem solving, creative long-term solutions, and the skills and talents of an interdisciplinary team of faculty, staff, and students. Over the past 5 years, students working on iCube projects have developed deeper higher-order learning and critical thinking skills in collaborative group settings, many of which translate into professional opportunities:

- An interdisciplinary partnership with the Art Department has allowed the iCube access to graphic art students and faculty who work on statewide and national campaigns, including the TN Highway Safety Office (THSO), MakerMinded campaign, TNTogether campaign, BankCareers.org, and TN Department of Health.
- Zee Vasilyev started with the iCube as a freshman and eventually became the iCube's head VR Programmer after graduation. During his 4 years as a computer science student, he was the sole programmer for a VR experience for the Tennessee Aquarium; programmed the mechanism for making the "Tweeting Eel," while working directly with the Tennessee Aquarium to set up a system for generating tweets to automatically post (@ElectricMiguel); programmed the Secret Reef app currently available through a system of kiosks at the Tennessee Aquarium; lead other student developers and joined development teams for various app and VR development for THSO, SADD, the TN Department of Health, TTU College of Business, TTU Chemistry Department; and helped troubleshoot, update, and create innovative ways to display VR in the CAVE/Viscube area.
- Waverly Hart started with iCube as an art student, learning Autodesk Maya for 3D modeling and animation as an intern. She worked on VR projects for the TTU History Department, THSO, Tennessee Aquarium, TN Department of Health, SADD, and various sample projects for proposals to other organizations. Since graduating, she has become a full-time member of the iCube team and oversees the development of all VR projects.
- Most VR work has been completed by collaborative groups of student programmers from computer science and engineering backgrounds. These students worked in collaborative teams to develop various simulations for both paid projects and strategic demonstrations, including projects for traffic safety, child passenger safety, and health visualization.
- Ryan Philips created the functionality for a turtle exhibit coloring book feature within a kiosk app recently created for the Tennessee Aquarium, while Flavia Gjishti, an art student, works to make the turtles images more realistic.
- Alyssa Meadows has been working with iCube since high school. She is now a computer science major and is the student representative for all iCube interns. She has programmed microsites for various THSO campaigns and will soon complete development of a web app created for the Office of the Inspector General (2bbetr.app).
- Sydney Bever joined the iCube her senior year with the College of Business. She is now pursuing her MBA while continuing to work as a full-time team member of iCube. She works on Ollie Otter and College of Business social media, is a key part of the College of Business website redesign currently underway, and was crucial to the creation of BankCareers.org. She will be moving forward as the leader of the BankCareers.org initiative, which includes connecting banks and universities through various social media outlets and micro-campaigns.
- Ollie Otter interns give Ollie Otter Booster Seat and Seat Belt Safety presentations at elementary schools and preschools in the state every year. They put school kits together to bring to participating schools and events, perform as one of "Ollie's Friends," and help generate social media and website content for the program.
- The entire 2020 programming team is made up of student programmers; the team is currently designing an arcade game project that will demonstrate the danger of driving under the influence as part of an iCube-generated idea for various traffic safety groups to use in the future. Two standout students are Dallas Jackson and Jamison Boyd, who lead the team.

Rural Reimagined Grand Challenge

As noted earlier, FSSE–NSSE data indicate that students engage in *Collaborative Learning* and *HIPs* more frequently than THEC peers, while *Reflective & Integrative Learning* scores lag behind. The *Rural Reimagined Grand Challenge* initiative provides additional opportunities to engage in *HIPs* while strengthening *Collaborative Learning*, *Higher-Order Learning*, and *Reflective & Integrative Learning* experiences. The initiative also provides additional experiences related to *Supportive Environment*, *Discussions with Diverse Others*, and *Service Learning*—indicated as areas for improvement by FSSE–NSSE data.

- After the implementation of *Rural Reimagined* in March 2019, there have been over 3,000 interactions with the community and TTU; over 50 faculty directly involved through coursework, research, and community outreach; and over 80 projects expanding within rural partnerships in the surrounding 14 rural counties.
- Over 1,000 students are involved through service projects, incorporating rural needs into coursework and research, interning or receiving academic service hours in rural communities, and creating ideas or devices to solve rural problems through TTU entrepreneurship initiatives and competitions. Over 44 members have joined the club and two other student organizations (iCARE and the Remote Area Medical Clinic) have partnered with *Rural Reimagined* to collaborate on service projects. The club has generated 25 videos for an Education Service Public Service Announcement to urge students to study education and return to rural communities to teach.
- *Rural Reimagined* has over 30 partners in rural communities and has seen over 1,000 interactions within the surrounding communities. Partners include rural community chambers of commerce, institutions, businesses, libraries, schools, museums, and individual members who communicate needs and discuss solutions. Through partnerships, *Rural Reimagined* provides research, student interns, student volunteers, entrepreneurial/marketing/innovation advice, etc. to serve the specific needs of each partner.
- Over 50 faculty are involved with *Rural Reimagined* through their coursework, research, or grant proposals. Many courses implement *Rural Reimagined* into their coursework, including Biology first-year experience courses, Computer Science capstone courses, online communication courses, Pre-Professional Health Sciences programs, and other university connections courses and electives. *Rural Reimagined* is implemented through urging students to research rural problems, approach real-world rural problems through projects, communicate and critically evaluate rural issues, and job-shadow professionals in rural areas.
- Multiple research grants and proposals are emerging through *Rural Reimagined*, including the NSF S-Stem program that addresses the need for high quality STEM workforce and targets academically talented students with demonstrated financial need; an emerging NSF proposal to identify and solve food+energy+water problems in rural communities through leveraging graduate student skills and research; an NSF proposal to create data science research projects involving TTU and community colleges' faculty and students to allow communities to produce better, data science-informed decisions; two TBR–SERS proposals to address STEM education disparities in rural areas; Economic Development Agency proposal to attract, build, and scale high-tech industries in the Upper Cumberland. The Water Center, partnered with *Rural Reimagined* and Oakley farm, researches improving Nitrogen removal process to improve local, rural fish hatcheries in addition to researching bait minnow aquaculture as cash crops for rural landowners. Both the Chemical Engineering capstone courses and the Biology department are also involved and partnered with the Water Center for this research.
- Rural health initiatives through community health education, undergraduate student research, and *Rural Reimagined* assistance in developing medical devices are continuing to emerge. *Rural Reimagined* partners with the Trousdale PTA, the College of Education, and the College of Health and Sciences to provide a comprehensive year-long speaker series focused on health-related issues weekly while providing student speakers practicum hours (outcome: health will improve in the county with family, students, and teachers working together to achieve and replicate in other communities). Undergraduate pre-dental students design research instruments to discover antecedents of dental care (or lack thereof) in rural communities, and *Rural Reimagined* hopes to create a dental health awareness campaign from their findings. Lastly, we have numerous medical devices that are being developed, one of which is participating in the NSF I-Corps program. Examples include: *Serious As a Heart Attack's* troponin measurement early invention to assess heart attacks in rural communities with long ambulance waiting times, a nasogastric tube stabilizer, an endotracheal tube redesign to prevent ventilator-associated pneumonia, a laryngoscope with incorporated modernized bedside table, a digital display liquid intake measurement cup, and a skin-to-skin simulator incubator for premature births.

Incorporate multiple experiential learning opportunities in all undergraduate programs

With respect to *Reflective & Integrative Learning*, FSSE–NSSE data demonstrate that faculty consistently rated the seven elements as important/very important, while students reported *Reflective & Integrative Learning* was experienced significantly less often than at THEC peer institutions. Faculty reported higher instances of the *Higher Order Learning* skills than did students. Some part of these discrepancies may lie in students' ability to recognize these types of learning experiences; therefore, faculty need to be explicit when these practices are part of the coursework, encourage students to use them, and offer support where needed. In addition, the opportunities need to happen regularly so that students are able to practice such skills. Infusing more *HIPs* into coursework and extracurricular activities to support students' development in these areas. Mechanisms such as QEP opportunities (e.g., EDGE grant courses, CISE, RCID, courses using *HIPs*

and creative inquiry practices). The successful CISE & RCID programs provide opportunities for students to further develop and display experiential learning and the associated skills. QEP efforts are a main mechanism of infusing experiential learning opportunities. CEDGE grant courses and courses using HIPs and creative inquiry practices have increased over the past 5 years due to QEP efforts in response to FSSE-NSSE and other data:

HIP courses:

2016–2017: 181 HIP courses
2017–2018 193 HIP courses
2018–2019: 193 HIP courses
2019–2020: 252 HIP courses

EDGE grant courses:

2015–2016: 37 courses
2016–2017: 69 fall courses
2017–2018: 95 courses
2018–2019: 83 courses
2019–2020: 140 courses

Outside of the classroom, *Creative Inquiry Summer Experience* (CISE) and *Research & Creative Inquiry Day* (RCID) offer additional options. Students work closely with faculty in both of these and this should help better align student and faculty perceptions of various FSSE-NSSE Engagement Indicators and HIPs as the programs grow.

CISE:

2016: 33 of 90 grant proposals awarded
2017: 30 of 37 grant proposals awarded
2018: 42 of 54 grant proposals awarded
2019: 39 of 51 grant proposals awarded
2020: 40 of 40 grant proposals awarded [COVID-19 pandemic reduced number of applications]

RCID:

2016: 217 abstracts received; 191 posters/papers presented & submitted for judging
2017: 189 abstracts received; 166 posters/papers presented & submitted for judging
2018: 221 abstracts received; 208 posters/papers presented & submitted for judging
2019: 222 abstracts received; 211 posters/papers presented & submitted for judging
2020: 222 abstracts received; 184 digital posters/papers presented & submitted for judging

proceedings: https://www.tntech.edu/research/pdf/researchday/Proceedings_2020_Final.pdf

Archived proceedings online beginning spring 2017: <https://publish.tntech.edu/index.php/PSRCI/issue/archive>

FSSE-NSSE data show that *Student-Faculty Interactions* and senior participation in HIPs continue to be a strength of TTU and are supported by experiences such as CISE and RCID. Since CISE and RCID have been emphasized, gains have been made in *Higher-Order Learning*, moving from the dip in 2017 to lower than THEC peers to on par (2016 FY M=36.6, p >.05; 2017 FY M=35.6, p<.01, ES=-.15; 2019 M=36.6, p>.05) for first-year students. Seniors moved from lower than THEC peers in 2016 and 2017 par (2016 seniors M=37.9, p<.001; ES=-.24; 2017 seniors M=37.7, p<.001; ES=-.24) to meeting THEC peer experiences in 2019.

Faculty-led curriculum review

As a result of the Curriculum Committee actions, guided by TTU's Strategic Plan, several concentrations, minors, and certificates have been proposed. Since Fall 2015, 50 have been approved:

- Agricultural Science & Management
- Botany
- Marine Biology
- Microbiology
- Zoology
- Communications Studies
- Criminal Justice – online
- Computer Science
- Computer Science Education
- Creative Writing
- Dual Studio (fine arts)
- Elementary Education
- Engineering Technology Management
- Exercise Physiology
- Food Systems Administration
- General Health Studies
- Mechatronics Engineering Technology
- Parallel, Distributed, & High-
- Performance Computing
- Physical Education Practitioner
- Pre-Physician's Assistant
- Teaching English to Speakers of Other Languages (TESOL)
- Vehicle Engineering – Mechanical Engineering
- Vehicle Engineering – Electrical & Computer Engineering
- Accounting (minor)
- Art History (minor)
- Astronomy (minor)
- Business Information Technology & Analytics (minor)
- Caregiving (minor)
- Event Planning, Promotion, & Management (minor)
- Family Sciences (minor)
- Honors (minor)
- International Business (minor)
- International Studies (minor)
- Leadership (minor)
- Music History (minor)
- Music Performance (minor)
- Music Technology (minor)
- Music Theory & Composition (minor)
- Studio Art (minor)
- Banking (certificate)
- Banking & Financial services (certificate)
- Child & Family Trauma-informed Care (certificate)
- Computer Science Education (certificate)
- Cyber Management & Analytics services (certificate)
- Environmental Informatics (certificate)
- Human Behavior Data Analytics (certificate)
- Innovation and Entrepreneurship (certificate)

- Online Teaching & Design
(certificate)
- SERVICE service learning
- (certificate)
uLead Leadership & Service
(certificate)

These new curricular offerings address gaps in *Higher-order Learning* as well as supporting progress in other areas such as service learning HIPs for first-year students (e.g., the recently-added the SERVICE learning certificate further encourages students to engage in this type of HIP, which has seen historically lower first-year student participation) and increasing the breadth and depth of content students receive as they prepare for their professions.

Highlight faculty & staff dedicated to mentorship, student engagement, & supportive environments

One mechanism to address faculty's differing perceptions of student interactions with faculty and staff, as well as highlight various ways that a supportive campus environment is being actively created, is the new Scholar-Mentor award. TTU honors a faculty member who displays outstanding mentorship, integrating scholarship, research and teaching excellence. An interdisciplinary committee evaluates the nomination packets. Nominations are made in the fall and a decision is made in the following spring. Nomination criteria include recommendations from three current or former student mentees; two recommendations from faculty members, 7-year academic profile, statement of mentoring philosophy, and documentation of success in teaching, scholarship, and mentoring. Winners from the past five years:

- 2019–2020: TBA
- 2018–2019: Dr. George Chitiyo, Department of Curriculum & Instruction, and Dr. Jesse Carrick, Department of Chemistry
- 2017–2018: Dr. Holly Stretz, Department of Chemical Engineering
- 2016–2017: Dr. Edward Lisic, Department of Chemistry
- 2015–2016: Dr. Jiahong Zhu, Department of Mechanical Engineering

The trend in recipients demonstrates strong support in the STEM disciplines.

Increase faculty & staff diversity

- Human Resources debuted a diversity resources webpage accessible to all. Easy access to these resources demonstrates TTU's commitment to providing information and support. Periodic review by HR ensures resources remain accessible and up-to-date.
- The search process was also revamped to better support hiring and retention of diverse faculty and staff:
 - All faculty search committees require one search member to be an equity representative.
 - The equity representative is the advocate for any qualified underrepresented applicants, ensures all applicants are treated fairly, and recognizes and addresses any type of bias during the search process. This representative works with the Director of Affirmative Action should any concerns arise.
 - The search chair and equity representative must attend search chair training.
 - The committee equity representative is provided current employee demographics for the department where the open position is housed; if there is a placement goal identified by the Affirmative Action Plan, the Director of Affirmative Action provides applicants' self-identification data when the committee is ready to review candidates.
 - Human Resources now places job ads in *Diverse: Issues in Higher Education* and the *PhD Program*. The departments are required to advertise in two additional resources, including diverse publications.
- Over the past 5 years, minority applicants have made up between 25% (2015) to 35% (2019) of applicants. Minority new hires fluctuated across the 5 years:

Table I: 2015–2020 Underrepresented Hires

New Hires	# Minority New Hires	% Minority New Hires	# Female New Hires	% Female New Hires
2015	50	13	25	50%
2016	29	7	14	48%
2017	30	3	12	40%
2018	32	11	16	50%
2019	36	6	13	36%

TTU continues to regularly assess recruitment and hiring practices, along with factors that support retention and success in scholarship, mentorship, teaching, and service. This—along with NSSE, FSSE, and alumni data—show continued need for investment in diversity and inclusion and supportive campus environment initiatives. TTU will continue to address these areas through the coming QAF cycle, leveraging Strategic Plan goals, Rural Reimagined, and QEP activities as well as planning new initiatives.

P-16 Diversity Partnership Vision for the Future mentoring program

IMPACT Cookeville partners with “pillar institutions in the community to impact the lives of the socially marginalized through Education, Economic Empowerment and Equity” (IMPACT Cookeville, 2020, para. 1). Partners include TTU’s College of Education, College of Business, Office of Multicultural Affairs along with Putnam County School System, TN Chapter of the National Association for Multicultural Education (NAME), and the Cookeville-Putnam Co. Chamber of Commerce. The *Vision for the Future* mentoring program, along with community workshops and events, rises out of these efforts. The program not only supports at-risk students in the area, but also provides TTU students with opportunities for service learning, collaborating with faculty and community members, creating supportive environments for others, and working with others from diverse backgrounds who have different experiences and perspectives than their own.

- In the pilot year (2018–2019)
 - Mentors were a mix of TTU students and community professionals, with a diverse demographic make-up, particularly across SES, nationality, race/ethnicity, gender, and relationship to education (e.g., first generation students, individuals with multiple degrees, individuals whose family did not emphasize education, individuals whose family placed great importance on education).
 - 7 community professionals registered as mentors; 3–4 actively participated on rotational basis
 - 10 TTU students registered as mentors; 3–4 actively participated on rotational basis
 - 16 at-risk high school seniors participated
 - Mentees reported having students and community members care and listen was incredibly important. They also asked for more information on mapping out future plans, goal setting, time management, and navigating academic concerns.
 - Mentees also shared barriers to their success in school: mental health concerns, physical health concerns, lack of adequate sleep, and social interaction concerns.
- In Year 2 (2019–2020)
 - Pairing with a TTU student organization—IMPACT TTU—training was offered to all mentors that addressed diversity, equity, inclusion, intersectionality, active listening, and conflict resolution. A multimedia platform was made available to provide resources, ways to connect with mentors, announcements (such as changes in county school schedules), and check-ins with a mentor support team. This training emerged from feedback from mentors during the pilot year evaluation.
 - 3 Putnam County schools participated
 - 9 community professionals registered as mentors; 3–5 actively participated on rotational basis
 - 13 TTU students registered as mentors; 6–8 actively participated on rotational basis
 - 21 at-risk high school seniors participated; 3–6 at-risk middle-school students participated
 - Year 2 was interrupted by an EF4 tornado on March 3, 2020 and further disrupted by the COVID-19 pandemic. Evaluation data was not collected as planned; evaluators will collect some data to help further inform Year 3.

Year 3 is planned for start in July 2020, pending school responses to the COVID-19 pandemic. Mentoring may happen virtually rather than in person.

Appendix D

Detailed PEG Alumni Survey Data, Rationale, & Evidence

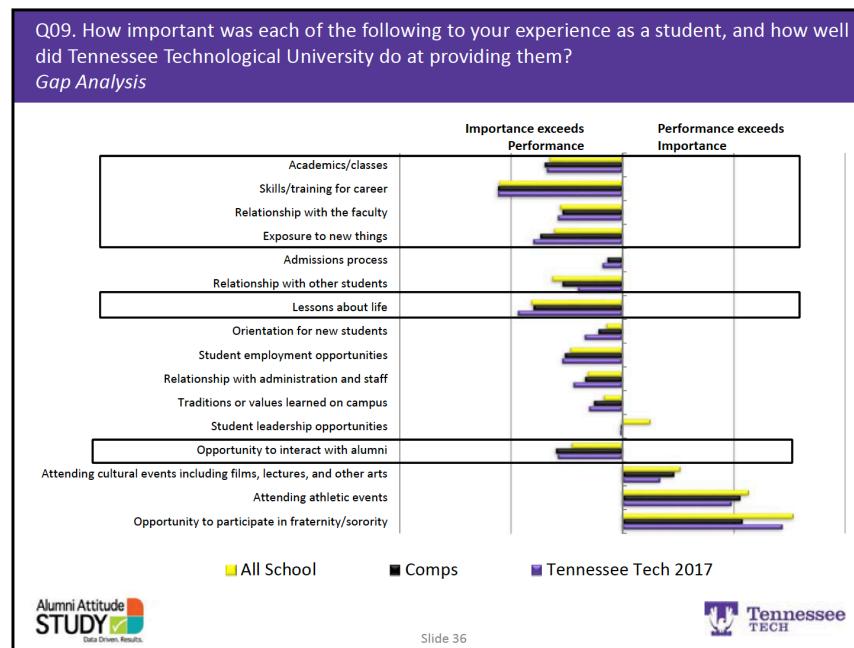
Alumni Data – detailed

Most AAS respondents received their undergraduate degree from TTU (76%), 10% earned a graduate degree, and 15% earned both undergraduate and graduate degrees at TTU. TTU respondents were more likely to have earned an undergraduate degree and earned both an undergraduate and graduate degree from TTU than comparable schools' respondents. The majority of respondents lived within 51–160 miles. More males (60%) than females responded, and 76% were age 31 or older. In terms of age and gender, Silent Generation males and Generation Y females responded most frequently. Respondents were most likely to have never participated in a giving campaign (~69%). The racial/ethnic distribution was primarily White (91%) with 2% African American, 2% Asian/Pacific Islander, 1% Hispanic, and 1% multi-ethnic.

Alumni frequently promoted TTU (~36% regularly, ~23% all the time) (Q2). The overwhelming majority rated their decision to attend TTU as a good (~23%) or great (70%) decision, with TTU outperforming comparable schools who had alumni rate their decision to attend as great by 10% (Q1). TTU was on par with comparable institutions with respect to offering a good (~40%) or excellent education (~53%) (Q3). Respondents opinion of TTU was good (~35%) or excellent (~56%) (Q5). Current or lapsed donors were more likely to rate TTU as good or excellent than those who have never given, and current donors chose an excellent rating the most frequently (~65%). Experiences as an alumnus/alumna were ranked lower, though remain comparable to peer institutions. Fifty percent indicated their alumni experience was good, while 20% rated it as excellent. Over 20% indicated the experience as fair. As would be expected, current donors were the most likely to rate their alumni experience as good or excellent, while those who have never given were most likely to choose fair. TTU's affinity index score was 80%, slightly outperforming comparable institutions (77%) and on par with all schools nationally.

Questions about key elements offered additional insight. TTU performed well in providing social and cultural opportunities to students. There are gaps, however, between some elements rated as important by alumni and TTU's perceived performance in those areas (Q9). These included Academics, Skills/Training for Career, Relationship with Faculty, Exposure to New Things, Admissions Process, Relationships with Other Students, Lessons About Life, Orientation for New Students, Student Employment Opportunities, Relationships with Administration and Staff, Traditions or Values Learned on Campus, and Opportunity to Interact with Alumni. Correlation analyses with the Affinity Index show that areas where TTU performance was rated less than the perceived importance had a negative correlation with Alumni Affinity—so as the gap between importance and performance widens, Alumni Affinity is reduced.

Figure I: PEG Alumni Survey Question #5



Alumni respondents indicated TTU made a medium-to-significant contribution to Problem Solving, Critical Thinking, Quantitative Reasoning, Creative and Innovative Thinking, Effective Oral Communication, Effective Writing, and Ethical Reasoning and Action (Q7). TTU's perceived contributions to 1) local and global civic knowledge and engagement and 2) diversity and inclusion were rated as only little-to-some contribution (both $M=2.9$ on scale of 1–4). This emphasizes areas for improvement indicated by NSSE and FSSE data.

TTU alumni responses indicated that they felt they were well-prepared for graduate education, responding to new career opportunities, attaining work, current work expectations, and contributing to their local community (Q6). They also indicated that they felt TTU supported them in continuing education and deepening their understanding and commitment to personal development. Current and lapsed donors reported higher quality experiences in these areas than did alumni who have never donated.

TTU alumni found identifying job opportunities for graduates as a crucial element of the alumni experience, but rated TTU as between fair and good at providing this support (Q8). Alumni also noted that they can be valuable in recruiting new students, being TTU ambassadors, and mentoring students, but TTU alumni opportunities underperform in these areas. This is the trend in peer institutions and nationally. Non-donor alumni felt assistance with finding job opportunities was more important than did current and lapsed donors. They also indicated mentoring students was slightly more important than their donating counterparts.

The Alumni Center's publication *Visions* was seen as somewhat-to-critically important by 88% of respondents (Q10). Current and lapsed donors most frequently viewed the publication as very important, while non-donors reported it was somewhat important more than others. Overall, alumni were not very likely to take part in listed TTU activities (Q11). Younger alumni (graduated since 2001) were most likely to reconnect with a favorite faculty member and slightly more likely to mentor a student. Non-donors indicated they were most likely to participate in mentoring, reconnecting with faculty, speaking on campus, review student resumes, host an event, and be a TTU social media ambassador. Current donors were most likely to serve on a board and create an endowment. These stratifications expected as younger alumni often do not yet have funds enough to donate, while older alumni are typically more established.

Relationships between PEG-guided Action Plan, Strategic Institutional Objectives, & Desired Outcomes – detailed

As with NSSE and FSSE, the PEG Alumni Survey-guided Action Plan arises out of TTU's strategic vision, captured by the Strategic Plan. The PEG Alumni survey illuminated areas of strength and those for improvement. The survey indicated strong alumni satisfaction with their experiences as TTU students related *Commitment to Continuous Education* and *Responding to New Career Opportunities*. These are also directly related to an area of improvement: *Skills/Training for Career*. TTU is committed to educating life-long learners who are career-ready (*Academic Excellence, Community Engagement, Student Success, Supportive Environment, Value Creation*; SG-1 PAs B, D, & E; SG-2 PA D; SG-4 PA A, B, C, & D). Building on strengths, while bolstering an area that needs development, enables TTU to best support students in both their academic and professional growth. The initiatives created by the Center for Career Development seek to help fulfill TTU's commitment to "engaged students, dedicated faculty, and career-ready graduates known for their creativity, tenacity, and analytical approach to problem solving" (TTU Strategic Plan, 2018, p. 7). Creating a larger TTU community that fosters relationships between students and alumni emerged as an area in which to invest. Alumni and students both indicate the wish for greater interaction; this speaks to TTU Core Principles *Community Engagement* and *Supportive Environment*. Alumni involvement in department advisory boards and mentoring keeps alumni engaged in the academic and professional preparation of students (*Academic Excellence, Student Success, Community Engagement, Supportive Environment, Value Creation*; SG-1 PAs B & E; SG-4 PAs A, C, D), while other college- and department-level events offer chances for alumni and students to interact in more relaxed ways, conducive to conversation that moves beyond classroom content. Through blending a variety of opportunities for students and alumni to connect, TTU can solidify a thriving larger TTU community dedicated to life-long learning, community engagement, and professional excellence. TTU strives to create a supportive environment starting from the moment a prospective student makes contact and continuing into the alumni experience. An important point is new student orientation. Alumni data indicate the orientation experience is an area for improvement. Multiple plans and actions have arisen to improve new student orientation. Actions taken to improve the orientation experience seek to improve it before students arrive on campus (pre-loaded 1st semester schedules) as well as added orientation services for Spring admissions, transfer students, and adult learners (*Academic Excellence, Student Success, Meaningful Innovation, Supportive Environment*; SG-1 PA B; SG-2 PA C). These demonstrate TTU's care and commitment to the success of all learners.

FSSE Evidence & Analysis/Use of Results – detailed

Ongoing Career Development services

To maintain and increase satisfaction in alumni perceptions of support in continuing education and responding to new career opportunities, Center for Career Development has several initiatives. One is the implementation of Handshake software system in Summer 2017. Handshake TTU's gateway for part-time, co-op, internship, fellowship and full-time job opportunities for all majors. This includes job postings as well as career fairs and other recruitment events.

Table I: Student Handshake Account Activation

Category	Activated	Unactivated	TTU Activation Rate	Peers' Activation Rate	vs. Peers
Alumni	2,988	2,863	51.10%	29.20%	21.90%
Undergraduate	4,388	4,273	50.70%	42.70%	8.00%
Graduate	362	840	30.10%	43.60%	-13.50%
total	7,738	7,976	49.20%	36.00%	13.20%

- Snapshot of Handshake use as of May 6, 2020
 - 44% Web Logins – % students (excluding alumni) who have logged into Handshake.
 - 25% Mobile Logins – % students (excluding alumni) who have logged into the Handshake mobile app
 - 38% Profile Completion – % students (excluding alumni) with a complete profile (at least one work experience, organization, and skill)
 - 69% Campus Profiles – % students (excluding alumni) that have opted to make their profile public to other students
- The Center for Career Development can now also look at trends in student job applications. Going forward this data may add more insight into the types of jobs TTU students seeks and ways to better serve them as they prepare for these opportunities.

Implement Career Readiness program

Preparation for careers through training was noted by alumni as an area of improvement. The Center for Career Development has undertaken and revised initiatives to better serve the TTU campus.

- In Fall 2019, the Center for Career Development split the Career Readiness Certification program into 2 sections: *Gold* for freshmen and sophomores and *Purple* for juniors and seniors (<https://www.tntech.edu/career/students/career-ready.php>). This division ensures that students gain the appropriate skills at the right time in their academic careers. Workshops and other events are offered as part of the program. Alumni are also speakers in the Career Readiness and other Career Development programs.
- As of April 2020, over 130 students were certified career ready for the spring 2020 semester.

Opportunities for students to interact with alumni

- Each year the College of Education (CoEd) holds a scholarship banquet. Scholarship recipients, families, and alumni are invited to attend the event. Scholarship recipients have an opportunity to meet with the alumni that funded the particular scholarship they received, providing an embodied experience of TTU alumni supporting current TTU students in their academic journeys. All who attend are encouraged to talk with one another and share experiences. Students are actively encouraged to meet their scholarship donor, take a picture together, and spend time talking with one another. Approximately ~10–15 alumni attend (exclusive of alumni who are current graduate students or faculty/staff).
- The College of Education holds annual events that actively invite alumni and encourage student-alumni interaction:
 - CoEd's Homecoming Celebration: ~60 alumni attend (exclusive of alumni who are current graduate students or faculty/staff); in the 3–5 years this even has been held, mentors, potential scholarship donors, board members, and community partners have been recruited to support the CoEd. Opportunities to connect with current students and other alumni make this event a success.
 - CoEd Teacher Appreciation Week Reception and Awards: 15 alumni attend (exclusive of alumni who are current graduate students or faculty/staff); 2020 marks the 6th year (5 years plus pilot). Students have the opportunity to meet our current partner educators, many of whom are alumni, and share experiences and learn about what our partners do and why they love education. This highlights the ways alumni are successful in their endeavors, CoEd's connections to alumni, CoEd's recognition of alumni success, and draws partner educators and alumni to campus to meet current students, faculty, and staff.
 - Advisory Council for Education (ACEd): 5–10 alumni committee members attend; the Associate Dean selects 2–10 student representatives to share a discussion and meal with the committee. This offers students a different perspective and interaction with alumni, as the members are typically further along in their careers.
- The Department of Computer Science involves alumni through service as mentors for student capstone projects that address real-world problems and serve stakeholder interests. Students and alumni work closely together as the projects progress. Examples are

showcased on the Computer Science website: <https://www.tntech.edu/engineering/programs/csc/capstone-projects.php>.

- The College of Engineering also involves alumni in mentoring for student capstone projects as well involving alumni on the departmental advisory boards so that alumni continue to help support and shape the experience of TTU students.
 - Chemical Engineering, Civil Engineering, Electrical & Computer Engineering, and Mechanical Engineering all have advisory boards that include alumni in order to provide insight and guidance that may address departmental goals and objectives, curricular development, program goals, program improvement, faculty development, scholarship and fellowship programs, graduate quality, and shifting industry needs.
 - In Chemical Engineering, capstone projects are reviewed by external evaluators. These external evaluators represent a diverse body of industry and academic experts at various points in their careers. External evaluators have included emeritus chemical engineering professor, professors from mechanical engineering, graduate students, industrial based alumni, and a technician.
 - Civil Engineering has approximately 12 alumni participate in the senior design project each semester. The alumni have been employed in the public sector (e.g., Tennessee Department of Transportation, Army Corps of Engineers, TVA) and private-sector consulting firms (e.g., SSOE; Fulghum, MacIndoe, & Associates; SSR; HMB Professional Engineers; AECOM; Barge Design Solutions; STANTEC; Barge, Cauthen, and Associates). Their expertise spans both civil engineering facility design and regulation compliance.
 - Electrical & Computer Engineering invites distinguished alumni to give seminars, covering the subjects of professional, legal, and ethical responsibility. Students also have their written capstone project reports evaluated by faculty, an external sponsor, and Industrial Advisor Board members—which heavily involves alumni.

[Provide pre-loaded 1st semester schedules \(up to 15 credit hours\) for freshmen & use of College Scheduler to simplify registration & improve orientation](#)

Alumni feedback about new student experiences mirrored NSSE and FSSE data, indicating progress needs to be made in creating a more supportive, responsive campus environment. As a result of in-depth analyses performed by the Institutional Assessment, Research, & Effectiveness in collaboration with the office of Enrollment Management, campus advising centers became part of the team responsible for adapting the freshmen experience to improve student satisfaction and success. The use of pre-loaded 1st semester schedules addresses TTU's effort to create a more supportive environment, including improved relationships with advisors—an important contact and support point for new students. After a pilot, pre-loaded schedules were deployed in 2015.

- The College of Education was the pilot program for pre-loaded 1st semester schedules before students arrive on campus for SOAR (student orientation). After a successful pilot, the majority of colleges across campus implemented pre-loaded schedules. College Scheduler software to facilitate the process was also purchased to make the registration process simpler and more intuitive. The Schedule Planner Banner module was another purchase to support first-year students' experiences of creating schedules less stressful, particularly during periods of limited course availability.
- The Directors of the Student Success Centers discuss pre-enrollment regularly in Academic Advising Council, and use a survey that goes out prior to pre-enrollment to make certain the process is smooth and supportive.
- After further review of the student and alumni feedback, current processes, and relevant literature, a decision was made to create a University Student Success Center that handles all first-year advising. This addresses inconsistent pre-enrollment prior to SOAR in some departments, inconsistent first year retention (year-to-year), uneven resource distribution across campus, need for added formal student support during major transitions, increased flexibility when responding to students' changing needs, staff management challenges due to a mix of college-funded and university-funded professionals and varied reporting structures. This program will phase in beginning Fall 2020, with full function expected by Summer 2021.

[Implement Spring Week of Welcome & new transfer & adult student orientation](#)

To further address lackluster alumni satisfaction with their TTU orientation experience as a first-year student, additional new student orientation events have been implemented. Formal evaluation via participant survey and regular review of informational sessions is conducted to make certain relevant information is covered thoroughly. These reviews take into account feedback from students as well as families.

- The Week of Welcome is a new event held in spring semester to help further the transition of students newly admitted for spring term. In the next academic year, TTU will identify additional onboarding items and workshops that can be implemented for new students as an extension to the summer orientation program (SOAR) for students beginning in the fall term (traditional enrollment date). Satisfaction is rated on a scale from 1–5, with 5 indicating the most satisfied. Data below indicate high levels of satisfaction.

Table 2: Week of Welcome Satisfaction Scores

	Average Student Rating	Total Student Responses	Average Parent/Guest Rating	Total Parent/Guest Responses
2016	4.42	1,010	4.55	657
2017	4.59	1,170	4.64	806
2018	4.57	1,554	4.65	845
2019	4.61	1,469	4.63	934

- A New Transfer & Adult Student orientation was created. The program is online, but students are connected to their advisor during this process to offer guidance and support (<https://www.tntech.edu/nsfp/transfer/index.php>). Satisfaction is rated on a scale from 1–5, with 5 indicating the most satisfied. Satisfaction data for this new orientation indicate high levels of satisfaction.

Table 2: New Transfer & Adult Student Satisfaction Scores

	Average Student Rating	Total Student Responses
2016	4.46	248
2017	4.59	348
2018	4.66	221
2019	4.59	303

- Overall, orientation-to-enrollment matriculation data below show an average rate of 95.75%, though the yearly value fluctuates between 94% and 98.9%.

Table 3: Orientation-to-enrollment Matriculation

	First-time Freshmen Enrollment	Students registered for SOAR	SOAR student attendees	SOAR attendees enrolled (fall 2020 census)
2016	1,608	1,561	1,495	1,479 (98.9%)
2017	1,761	1,760	1,722	1,666 (94.6%)
2018	1,890	1,978	1,916	1,831 (95.5%)
2019	1,705	1,835	1,758	1,652 (94%)

- Other events such as Campus Showcase—where prospective and newly admitted students come to campus to meet faculty and other students in their intended majors as well as get a more in-depth tour of campus—also support improvement in satisfaction with the orientation and new student experience.

Appendix E

Quality Enhancement Plan 2018–2019 Annual Report Excerpts



2016-2021 QUALITY ENHANCEMENT PLAN TENNESSEE TECH UNIVERSITY

Excerpt I – QEP Goals, Outcomes, & Foundational Skills

II. QEP PROGRAMS

The four goals of our QEP are to

1. establish an undergraduate curriculum that encourages student success in creative inquiry
2. expand student co-curricular opportunities for undergraduate creative inquiry
3. support and acknowledge faculty and students who engage in creative inquiry
4. develop the infrastructure to support undergraduate creative inquiry

EDGE Student Learning Outcomes are given in the table below.

Table 2.1. EDGE Student Learning Outcomes.

1.	Students will effectively use digital information search tools.
2.	Students will formulate a creative inquiry question or problem.
3.	Students will explore a creative inquiry question or problem. 3.1 Choose an appropriate discovery process to address the problem. 3.2 Collect information relevant to the problem. 3.3 Assess collected information in a discipline-appropriate manner.
4.	Students will create an original scholarly or creative project. 4.1 Applying critical thinking skills and/or 4.2 Applying creative thinking skills
5.	Students will communicate their findings/creations/art/inventions in a discipline-appropriate manner.

To evaluate the success of *EDGE*, we have established the following program outcomes, which will aid in the evaluation of the program goals listed above.

Table 2.2. EDGE Program Outcomes.

1.	Undergraduate programs offer opportunities for creative inquiry.
2.	Faculty support undergraduate students in creative inquiry activities.
3.	Students participate in creative inquiry activities.
4.	Students have opportunities to communicate/disseminate the results of their creative inquiry activities.
5.	Students who have participated in creative inquiry activities are prepared for their career goals and advanced study.

2.1 ESTABLISHING AN UNDERGRADUATE CURRICULUM THAT ENCOURAGES STUDENT SUCCESS IN CREATIVE INQUIRY

We have proposed a scaffolded, three-tiered program to encourage student success in creative inquiry in the classroom. Our plan is consistent with recommendations from the Boyer Commission Report, Reinventing Undergraduate Education (1998)¹, which recommends, in part: (1) constructing an inquiry-based freshman year, (2) building on the freshman foundation in the following years, and (3) culminating with a capstone experience that demands “the framing of a significant question or set of questions, the research or creative exploration to find answers, and the communication skills to convey the results to audiences both expert and uninitiated in the subject matter.”

2.1.1. Tier 1: Foundational Skills

At the Tier 1 level, first-year students will be introduced to creative inquiry foundational skills through FYE courses. FYE courses include AGHE 1020, BIOL 1000, CHEM 1500, GEOL 1020, HIST 1066, UNPP 1020, MSCI 1020, UBUS 1020, FOED 1822, UNMU 1020, EXPW 1021, ENGR 1020, CHE 1010, CEE 1020, ECE 1020, ESS 1020, UNIV 1020, NURS 1020, UNIV 1030, and HON 1010.

On January 19, 2017, the University Curriculum Committee approved changes to the course description, program goals, and student learning outcomes for the FYE courses. These changes became effective in fall 2017. The revision in the course content of the first year connections course is intended to provide the first tier in students’ preparation for participating in creative inquiry and thereby enhance performance in future QEP projects. The updated course description is:

- First---Year Connections. Rec. 2 Credit 1. Prerequisite: Freshman standing. Engages students in meaningful academic and nonacademic, in-class and out-of-class activities. Emphasizes ethical behavior and the use of critical thinking in the formation of academic and social goals and support groups, and in self-management and study skills. Includes a creative inquiry project/activity which students should share.

QEP relevant student learning outcomes include:

- Demonstrate proficiency in the identification and evaluation of information sources to support academic inquiry and introduce students to elements of creative inquiry/research.

¹ Boyer Commission on Educating Undergraduates in the Research University (1998). Reinventing undergraduate education: a blueprint for America's research universities. Stony Brook: State University of New York at Stony Brook

- Exercise written and oral communication skills to discover, develop, and articulate ideas and viewpoints

With the inclusion of an entry level research project/activity, each of the 20 different first year connections courses will be able to incorporate and align this component to meet the program's learning outcomes. Students in the program will share their research by creating posters, giving speeches/presentations, writing papers, creating models, performing and documenting observations, or through various other methods that support the particular project or course.

Key skills to be developed in FYE courses include learning how to locate appropriate information resources, evaluate these resources, and ethically utilize these resources. We use interactive web tutorials that we have adapted from the University of Wyoming's Tutorial for Information Power (TIP) for this purpose. In AY 2016-2017 the TIP modules were not usable due to a major change made to the Volpe Library's Eagle Search database. This change required that the modules be substantially updated, which they were in fall 2016. They have been available for use for AY 2017-2018 and beyond.

Excerpt 2 – 4-year NSSE Alignment

The QEP was designed to improve student learning in response to information taken in part from the NSSE, specifically the responses of seniors or freshmen on 19 NSSE questions. The following tables and figures present NSSE survey data gathered in the spring of 2014, prior to the implementation of EDGE (baseline data for our program) and in spring 2016, 2017, and 2019. The measurable objective for each of these measures is that scores will match or exceed scores from the previous implementation. In the figures below (Fig. 5.2 to Fig. 5.8), this criterion is met for 20 out of 23 items. The corresponding table number from the QEP document is given in each figure title.

Fig. 5.2. NSSE responses of Tennessee Tech first-year students. (Table 3.2 in QEP document; 4 point Likert scale: 1=Never/Very little...4=Very often/Very much)

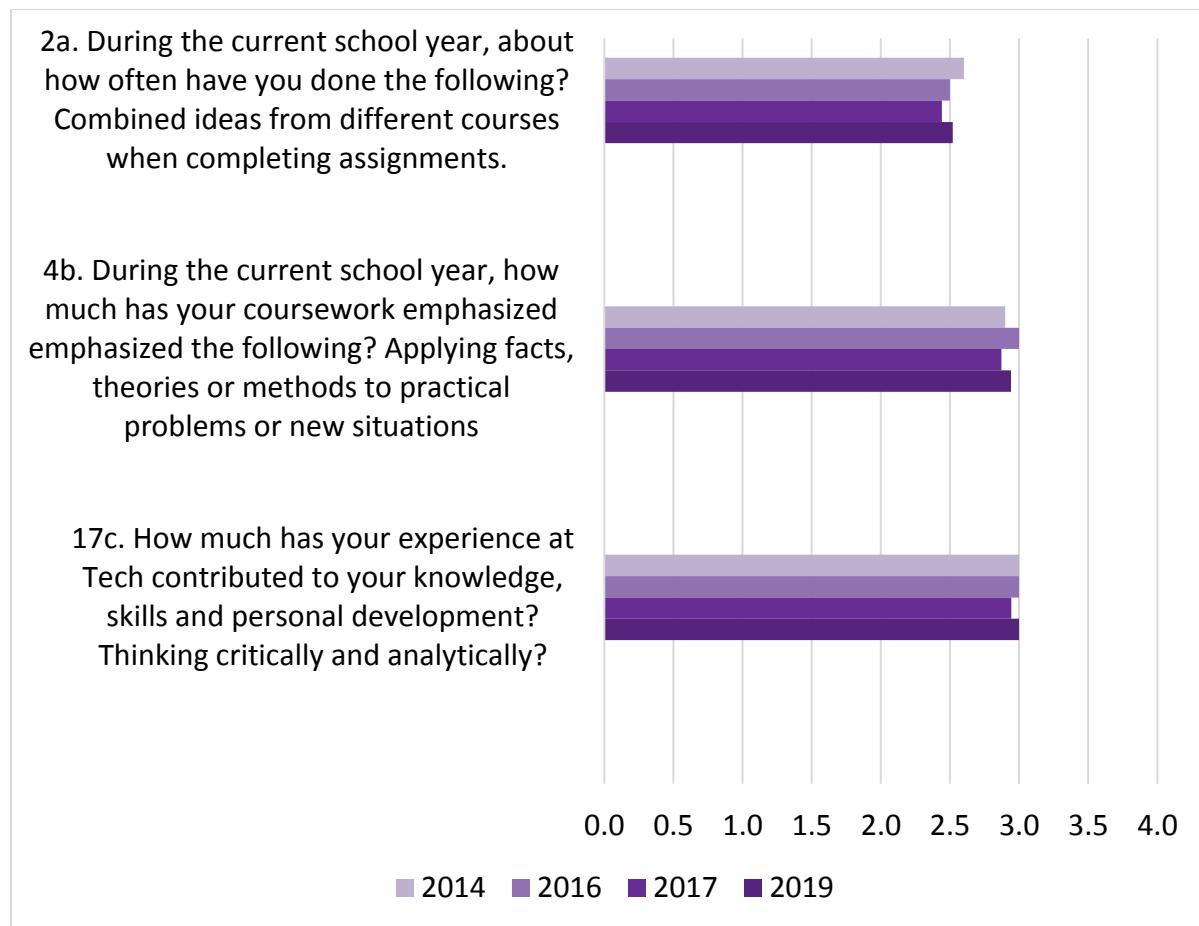


Fig. 5.3. NSSE responses of Tennessee Tech seniors. (Table 3.2 in QEP document; 4 point Likert scale: 1=Never/Very little...4=Very often/Very much)

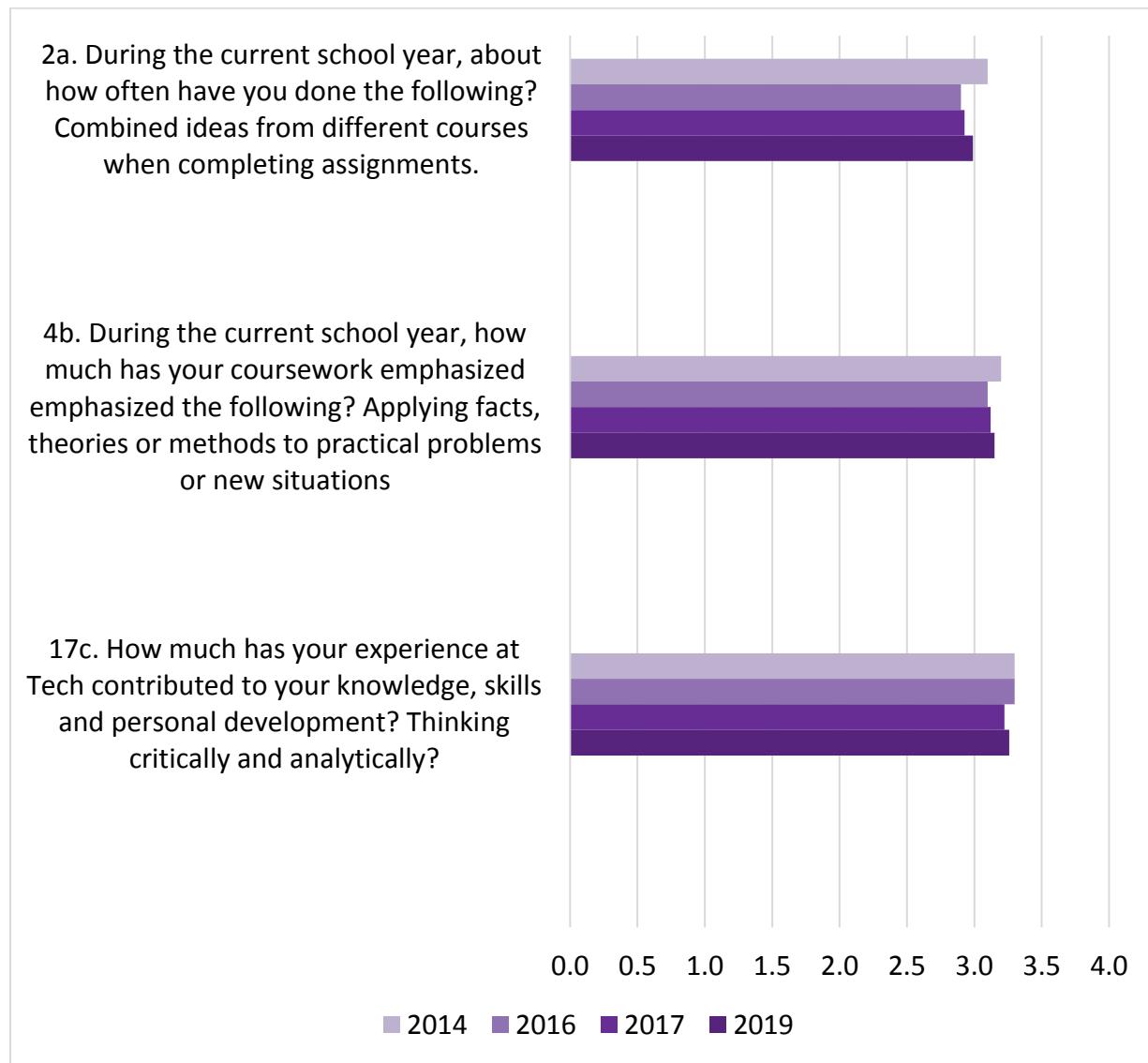


Fig. 5.4. NSSE responses of Tennessee Tech seniors. (Table 3.3 in QEP document; 4 point Likert scale: 1=Never/Very little...4=Very often/Very much)

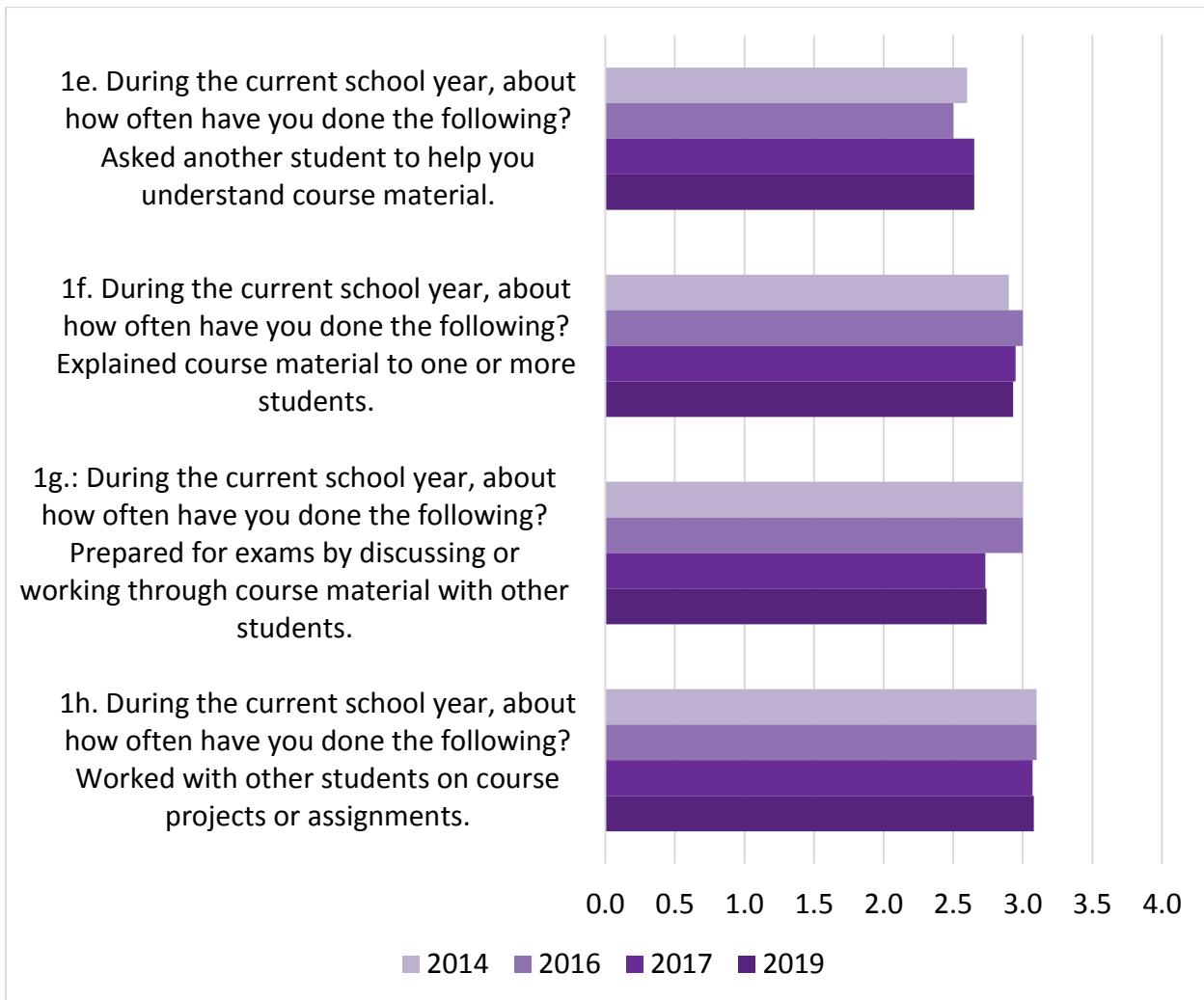


Fig. 5.5. NSSE responses of Tennessee Tech seniors. (Table 3.5 in QEP document; 4 point Likert scale: 1=Never/Very little...4=Very often/Very much.)

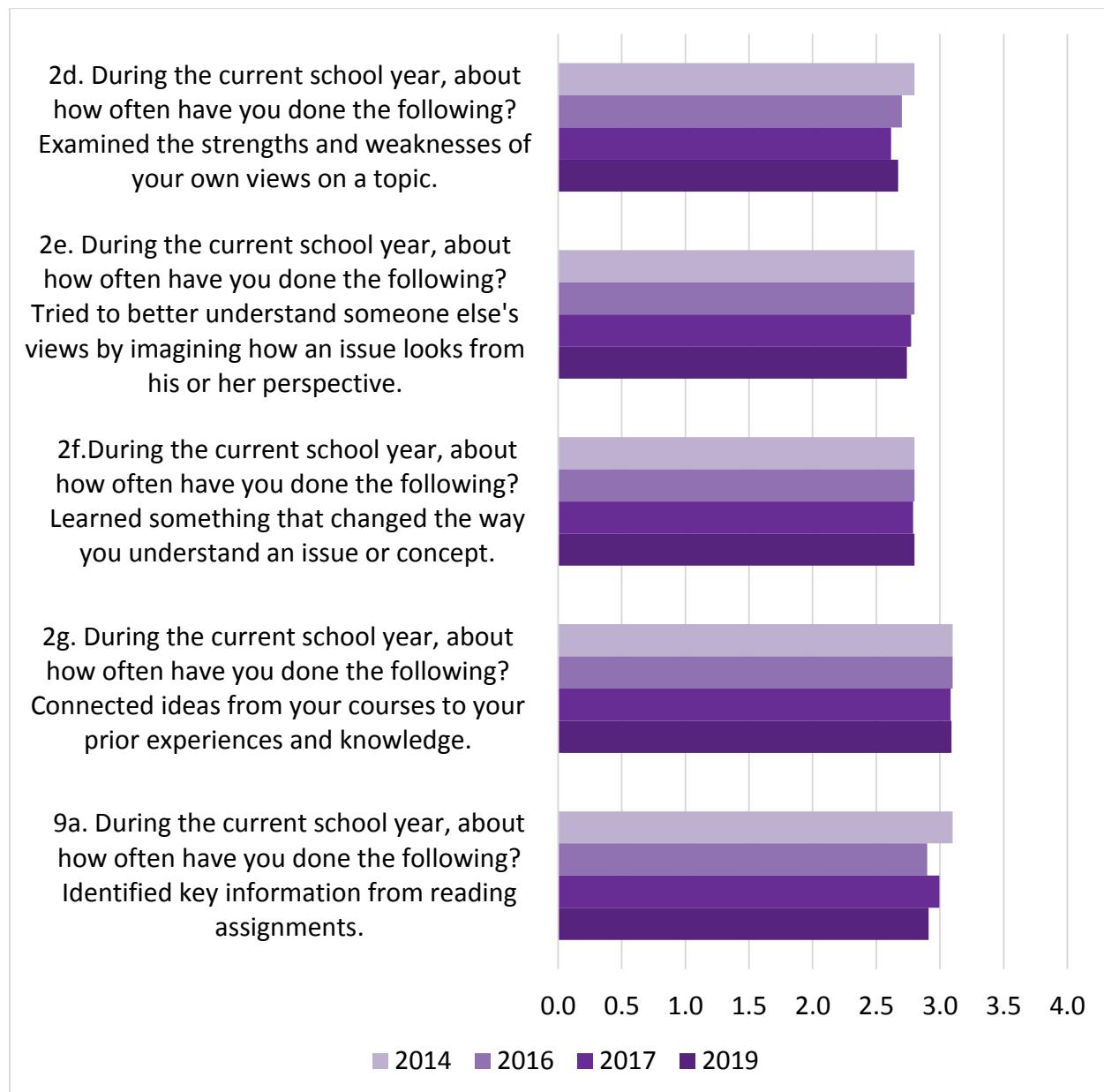


Fig. 5.6. NSSE responses of Tennessee Tech seniors. (Table 3.6 in QEP document; 4 point Likert scale: 1=Never/Very little...4=Very often/Very much.)

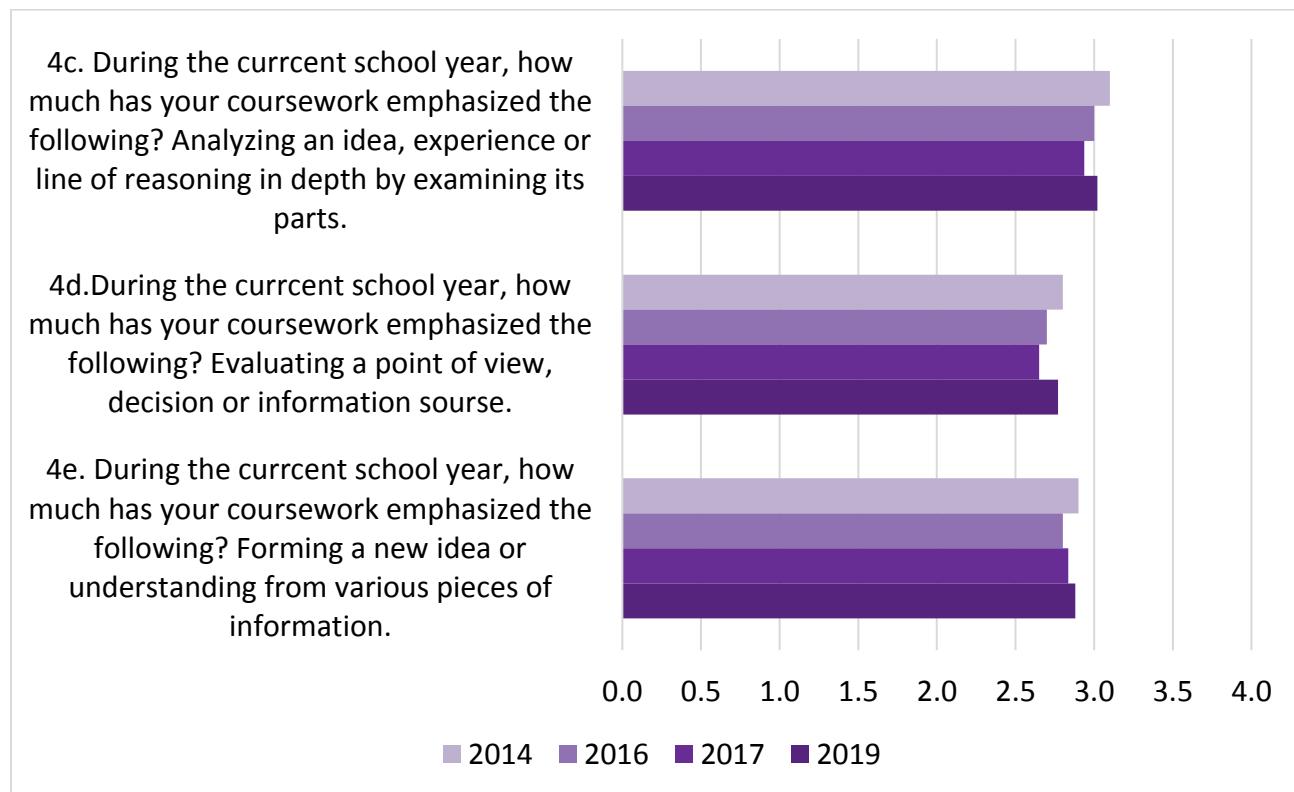


Fig. 5.7. NSSE responses of Tennessee Tech seniors. (Table 3.7 in QEP document)

