# Evaluating the Quality of Career/Technical Programs

*Technology Centers That Work*

The attached document, **Career/Technical Education — Tool for Evaluating the Quality of a CT Program,** can be used to assess the quality of a specific CT program of study at comprehensive high schools, shared-timed CT centers or full-time CT centers, including *Technology Centers That Work* (*TCTW*) sites. This self-assessment tool was designed to bring consistency and objectivity to the evaluation of a CT program of study.

The 18 quality indicators in this tool each include descriptions for progressive levels of implementation. CT teachers and school leaders can use the tool to pinpoint strengths and gaps in their CT programs and to conduct a self-assessment prior to a Technical Assistance Visit (TAV). TAV teams can use the tool to focus on strengths and challenges the school faces in creating high-quality programs of study. School improvement consultants can use it as they work with schools to improve program quality.

Use the indicator descriptions in the following pages to evaluate the quality of the CT program, based on the four levels of implementation, and record the level below. After recording the levels of implementation, identify the challenges to reaching full implementation and develop actions to overcome those challenges.

| Quality Indicator | CT Program Level of Implementation | | | | Challenges to Implementation | Actions to Overcome Challenges |
|---|---|---|---|---|---|---|
| 1. Program of Study | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 2. CT Syllabus | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 3. Work-Based Learning | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 4. CT Student Organizations (CTSOs) | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 5. Embedded Literacy | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 6. Embedded Numeracy | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 7. Use of Technology | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 8. Professional Development | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 9. Guidance and Advisement | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 10. Parental Involvement | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 11. Articulation and Dual Enrollment Agreements | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 12. Advisory Committee | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 13. Marketing, Public Relations and Community Outreach | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 14. Enrollment | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 15. Retention and Completion | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 16. Post Program Positive Placement | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 17. State Assessment, *HSTW* Assessment and College Readiness | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |
| 18. Industry Credentialing and Technical Assessments | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | | |

# Career/Technical Education — Tool for Evaluating the Quality of a CT Program

| Quality Indicators | Level 1<br>Little or No Development and Implementation | Level 2<br>Limited Development or Partial Implementation | Level 3<br>Operational Level of Development and Implementation | Level 4<br>Exemplary Level of Development and Implementation |
|---|---|---|---|---|
| **1. Program of Study**<br><br>A career-focused program of study includes a sequence of college-preparatory academic courses **and** a sequence of at least four career/technical (CT) courses students would take to prepare for both further study and careers in the broad career field.<br><br>It can be career theme-based or occupational-specific.<br><br>The sequence of CT courses is aligned with academic standards required for high school graduation, college- and career-readiness standards required for successful transition to postsecondary education and technical standards essential to the career field. | The program of study is not aligned with state academic standards required for high school graduation.<br><br>The program of study is not aligned with college- and career-readiness standards.<br><br>The program of study is not aligned with current technical content standards.<br><br>The program of study does not include a sequence of at least four courses to meet CT completer requirements. | The program of study is aligned to state academic standards for reading required for high school graduation.<br><br>At least 40 percent of the program of study is aligned with college- and career-readiness standards for reading and mathematics.<br><br>Students can have a single occupational focus without having to complete any part of the *HSTW*-recommended academic core to meet graduation requirements.<br><br>At least 40 percent of the program of study is aligned with current technical content standards.<br><br>There is no evidence the program of study addresses the soft skills that employers desire of employees.<br><br>The program of study includes a sequence of no more than four courses. | The program of study is aligned to state academic standards for reading and mathematics required for high school graduation.<br><br>At least 75 percent of the program of study is aligned with college- and career-readiness standards for reading and mathematics.<br><br>At least 75 percent of the program of study is aligned with current technical content standards.<br><br>The program of study addresses soft skills that employers desire of employees.<br><br>The program of study requires CT students to take advanced academic or CT courses that supplement their career focus and complete at least two parts of the *HSTW*-recommended academic core. | The program of study is fully aligned with state academic standards for reading, mathematics and science required for high school graduation.<br><br>The program of study is aligned with college- and career-readiness standards, and CT students complete the *HSTW*-recommended academic core for English, mathematics and science.<br><br>The program of study is fully aligned with current technical content standards, and students complete at least four sequenced CT courses.<br><br>Career courses are articulated to build depth of knowledge and skills without redundancy and they integrate opportunities for students to gain firsthand experience in the career field.<br><br>The program of study creates a career pathway to prepare students for the transition to postsecondary education. The pathway includes a formal apprenticeship program, certificate program, a two-year degree program or a four-year degree program and is consistent with the student's career goals. |

This evaluation tool, based on a program audit rubric model from Trumbull Career & Technical Center, Warren, Ohio, was developed with input from the *TCTW* Advisory Committee and *HSTW* Board.

[1] Some states define a CT completer based on a sequence of three CT courses, completion of a specified number of hours, etc. For this indicator, use the appropriate prescribed state measure for determining a CT completer.

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| Quality Indicators | Level 1 | Level 2 | Level 3 | Level 4 |
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| **2. CT Syllabus**<br><br>Each course in the sequence of CT courses has a syllabus that meets guidelines and includes sample exemplary assignments and projects relevant to the career field and formative and summative assessments.<br><br>The examples cover the spectrum of standards: academic standards for high school graduation, college- and career-readiness standards, and industry standards. | Course syllabi do not exist for all CT courses.<br><br>Existing CT course syllabi do not meet course syllabus guidelines or include necessary elements, such as:<br><br>■ course description<br>■ instructional philosophy<br>■ course goals<br>■ major course projects<br>■ project outlines<br>■ instructional delivery plan<br>■ assessment plan | At least 50 percent of the courses have a syllabus meeting the guidelines.<br><br>All syllabi are designed to the level of learning needed to meet state academic standards for high school graduation. | All CT courses have a course syllabus that meets the guidelines.<br><br>All syllabi are designed to the level of learning needed to meet state academic standards and technical standards.<br><br>CT course descriptions indicate where courses fall within the program of study.<br><br>CT syllabi contain descriptions of anchor assignments and projects for each course in the sequence.<br><br>Examples of assignments, projects and assessments are designed to help students meet academic standards for high school graduation and technical standards of the career field. | All CT courses meet all requirements of Level 3, and each syllabus is aligned to the essential college- and career-readiness standards.<br><br>The syllabus includes details on assessment and grading; rework policies (i.e., redoing substandard work); and standards-based assignments and project outlines using real-world problems.<br><br>Examples of assignments, projects and assessments are designed to help students meet college- and career-readiness standards and technical standards for the career field.<br><br>Each syllabus contains an example of an authentic project to be assessed by a panel of judges. |

[2] An anchor assignment is a major activity, problem or project that is authentic, will take several days to complete and engages students as they apply literacy and numeracy skills. The anchor assignment assesses for an understanding of these skills.

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| **3. Work-Based Learning**<br><br>Work-based learning is a formal, structured program linked to the CT program of study and approved by the school. Options include youth apprenticeships, cooperative learning, internships, job shadowing and community service. | No work-based learning opportunity is established. | Work-based learning opportunities are limited to field trips and job shadowing. There is at least one planned field trip, as well as formal job-shadowing opportunities that rotate students through a variety of work settings.<br><br>The CT program does not actively solicit local businesses in the career area to provide work-based learning opportunities.<br><br>Students may or may not have to report on or evaluate the experience.<br><br>There is no evidence of a link between classroom assignments and work-based learning experiences. | Work-based learning opportunities include field trips, job shadowing, internships and cooperative work experiences.<br><br>There is a formal training plan for internships.<br><br>The school's work-based learning coordinator actively solicits local businesses to provide work-based learning opportunities for CT students to gain firsthand experience in the broad career area.<br><br>No formal follow-up on work-based experience is done with employers or students.<br><br>Students may or may not have to report on or evaluate the experience. | Work-based learning opportunities include field trips, job shadowing, internships, cooperative work experiences, mentorships and apprenticeships.<br><br>There is a formal training plan, and the work-based learning opportunities are linked directly to school studies.<br><br>There is ongoing formal communication between the school and the business providing the work-based learning to ensure quality experiences for students and employers.<br><br>Students are expected to complete school assignments related to the work-site activities (e.g., maintaining daily logs of work-site activities, preparing weekly summaries, and developing a portfolio).<br><br>CT leadership takes actions to resolve issues identified during follow-up. |

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| **4. CT Student Organizations (CTSOs)**<br>CTSOs provide students opportunities for leadership development, competitive events, professional development and community service. | There is no participation in the CTSO and no plan for increasing participation. | The CTSO is organized in name only.<br>Students have few opportunities to enhance their occupational, employability and leadership skills or participate in service learning through the CTSO.<br>Plans are made to increase participation. | The CTSO is an integral part of the instructional program and provides opportunities for service learning and occupational, employability and leadership development.<br>All students participate in the CTSO or related activity.<br>All students participate in at least one local competitive event specific to the program. | The CTSO meets all requirements of Level 3 and is highly visible and successful, as evidenced by the number of students receiving awards and recognition in local, regional, state and national competitive events.<br>Program participants take part in regional, state and national competitive events and earn at least two awards annually if such competitive events exist for the program. |
| **5. Embedded Literacy**<br>Each course in the CT program integrates reading and writing academic standards and strategies into all aspects of learning in the CT classroom. Assignments frequently require students to read, write and make presentations related to the CT field of study. | No evidence exists in course syllabi of anchor assignments that require reading and writing about technical content relevant to the career field.<br>There is no evidence of literacy strategies being used in the CT classroom. | The course syllabus has one example of an anchor assignment embedded with reading and writing.<br>Technical reading and writing are evident. | Two to three examples of anchor assignments embedded with reading and writing are found in each course syllabus.<br>Academic and CT teachers collaborate to embed academics.<br>CT teachers are using instructional strategies that improve students' literacy skills. | A major anchor assignment is found in every course during each grading period.<br>Teachers embed reading readiness standards by having students summarize, paraphrase, categorize, infer, predict, use vocabulary, research and write about the technical field.<br>Classroom assessments are administered by CT teachers to validate students' mastery of reading standards in context of career fields. |

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| **6. Embedded Numeracy**<br><br>Mathematics academic standards and numeracy strategies are incorporated into CT assignments and all aspects of learning in the CT classroom, with frequent assignments that require students to apply mathematics skills to authentic problems found in the CT field of study. | No evidence exists in course syllabi of anchor assignments that require mathematics to solve problems relevant to the career field.<br><br>There is no evidence of numeracy strategies being used in the CT classroom. | The course syllabus has one example of an anchor assignment that requires mathematics skills.<br><br>Teachers are using mathematics vocabulary for mathematics related to the CT course. | Two to three examples of anchor assignments embedded with mathematics are found in each course syllabus.<br><br>Academic and CT teachers collaborate to embed mathematics into the CT course.<br><br>CT teachers are using instructional strategies that improve students' numeracy skills. | A major anchor assignment is found in every course during each grading period.<br><br>Teachers are following the eight steps for embedding and teaching mathematics. (See Appendix A.)<br><br>Classroom assessments are administered by CT teachers to validate students' mastery of mathematics standards in the context of career fields. |
| **7. Use of Technology**<br><br>Technology used in instructional programs includes computers, software and technology specific to the broad career area. | Information technology and career-related software are not available to students or not used.<br><br>Hardware is not available to students or not used. | Information technology and career-related software are used in a limited way.<br><br>Career-related software and hardware are outdated.<br><br>Evidence exists of instructors using technology for instruction, but there is little or no evidence of students using it. | The instructional program uses information technology and career-related software, but not in every class, even when it is appropriate.<br><br>Career-related software and hardware are adequate, but not up to date based on industry standards.<br><br>Not all students are required to use technology to master career skills.<br><br>Observational data show evidence of students using spreadsheets, presentation software and career-related software. | The instructional program uses information technology and career-related software in every class when appropriate.<br><br>Career-related software and hardware are high-tech and up to date based on industry standards.<br><br>All students are required to use technology to master career skills.<br><br>Students' informational and technological skills are assessed both in terms of their ability to use the software and their ability to make judgments about information, organize it, synthesize it and paraphrase it in the context of the occupation field. |

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| **8. Professional Development**<br><br>CT teachers must be prepared to develop and deliver curriculum and instruction reflecting the needs of the modern workplace and leading to academic and CT success for all students.<br><br>Professional development helps teachers gain new skills and update old skills in:<br>■ academic and technical content.<br>■ classroom management.<br>■ pedagogy.<br>■ classroom assessment.<br>■ project-based learning.<br>■ embedding academics into CT content. | There is little or no evidence of professional development to strengthen CT teachers' content knowledge and pedagogical skills.<br><br>Professional development provided has no connection to key practices proven to engage students and improve academic achievement.<br><br>Professional development provided has no connection to the identified needs of the program. | Professional development is planned with little, if any, input from CT leaders and teachers.<br><br>CT teachers in this program have received professional development on key practices to engage students:<br>■ Adapt teaching to different learning styles.<br>■ Teach through cooperative learning strategies.<br>■ Use student-centered instruction to motivate and deepen student learning.<br>■ Help students make connections between the classroom and the real world.<br><br>There is no evidence that CT teachers in this program collaborate with academic teachers in the school or district.<br><br>There is no evidence that new CT teachers have completed an initial induction program, work with master teachers or a mentor.<br><br>CT teachers in this program have had little, if any, opportunity to update their content knowledge and skills.<br><br>There is evidence that teachers are using these key practices to engage students. | CT leaders and teachers use data to identify gaps and target professional development to eliminate gaps.<br><br>CT teachers have received professional development on key practices listed in Level 2 and on further practices:<br>■ Embed literacy skills into technical content.<br>■ Embed high-level mathematics into technical content.<br>■ Use project-based learning to deepen understanding.<br>■ Align classroom assessments to challenging academic and technical standards.<br><br>There is evidence that CT teachers work with academic teachers to embed literacy and numeracy into the technical content.<br><br>New CT teachers entering program via an alternative route have completed an initial induction program but do not work with a master teacher or mentor.<br><br>CT teachers are provided opportunities to update their technical knowledge and skills through workshops, formal classes, externships, etc. | Professional development is focused on both school and CT program needs, and evidence suggests a positive impact on student learning.<br><br>CT teachers receive continuing professional development with coaching to become proficient in key practices identified in Levels 2 and 3.<br><br>There is evidence that CT teachers participate in a larger professional learning community.<br><br>All new CT teachers in the program complete an initial induction program and a formal mentoring program.<br><br>All CT teachers in the program complete some type of training at least every two years to update their content knowledge and skills.<br><br>There is evidence that nearly all of the key practices in Levels 2 and 3 are incorporated into unit planning and daily lessons. |

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| **9. Guidance and Advisement**<br><br>Guidance and advisement systems provide CT students with opportunities to explore career and educational options, including preparing a plan of study, being connected with a caring adult and attending extra-help sessions. The systems provide opportunities for parental involvement. | There is no evidence of students having opportunities to explore career and educational options.<br><br>Students do not complete a career-interest inventory.<br><br>Students do not prepare a plan of study upon entering grade nine. | Students prepare a four-year plan of study with assistance from advisers but with no parental input.<br><br>The plan of study is focused only on the high school years and does not link to postsecondary education options.<br><br>Students are not made aware of dual credit opportunities to expand their CT studies. | Students complete a career-interest inventory no later than grade nine.<br><br>Students set career goals and prepare a six-year plan of study linked to postsecondary education options to achieve those goals.<br><br>Students are made aware of dual credit opportunities by the 11th or 12th grade.<br><br>Students are aware of the requirements for various career options and the effort needed to meet those requirements.<br><br>Students and parents meet with the adviser at least annually to review progress made toward completing the plan and, if needed, adjust the plan to reflect changes in career goals. | An effective teacher-adviser system is in place, and CT teachers serve as teacher-advisers.<br><br>Students are assigned to an adult mentor who works with them through all four years of high school to help them stay of track.<br><br>Students are encouraged to enroll in dual credit courses relevant to the CT program.<br><br>At-risk students are identified upon entering grade nine and provided intervention and support to meet grade-level standards.<br><br>The school provides information and assistance to parents on topics such as college entrance requirements and financial aid.<br><br>The high school collaborates with feeder middle grades schools to make students and parents aware of career and educational options. |

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| **10. Parental Involvement**<br><br>Parental involvement includes being a part of the decision-making process in helping students choose a CT program of study and supporting students in ways that help them succeed in the program. | Parents have little or no involvement in the CT program and were not involved in their student choosing the program. | Parents are involved in a limited way through student/parent/teacher meetings and annual open houses in the CT lab each year to look at student work. | Parents meet with the student, a CT teacher and a guidance counselor prior to student enrollment in the program to understand the program's expectations.<br><br>Parents and their students meet at least annually with the CT teacher and guidance counselor to map out a plan, review progress made and revise the plan if needed.<br><br>A parent satisfaction survey is conducted but not used for program improvement. | Parents are highly involved in the CT program. They participate in planning their student's complete program of study and approve the sequences of academic and CT courses that prepare the student for the transition to postsecondary education. They endorse their student's program of study and goals and monitor progress made toward completing the program and reaching goals.<br><br>Parents communicate frequently with the school, actively support learning at home, volunteer and collaborate with community groups in support of the program.<br><br>CT leaders use parent satisfaction survey data to improve the program. |

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| **11. Articulation and Dual Enrollment Agreements between Secondary and Postsecondary Institutions**<br><br>Articulation matches course work between secondary and postsecondary education to reduce redundancy, and dual enrollment adds depth to the CT program.<br><br>The agreement creates local, regional or statewide partnerships between the school district/high school and a technical college, two-year college or four-year college.<br><br>The agreement establishes policies and procedures for academic and technical content alignment, student eligibility for dual credit courses, criteria for awarding postsecondary credit for dual credit courses, criteria for dual-credit instructors, etc. | No articulation agreement exists for this CT program.<br><br>No dual enrollment policy is in effect for this CT program. | This CT program is supported by an articulation/agency agreement with the nearby technical or two-year college.<br><br>Eligibility criteria for enrollment in dual credit CT courses address the required technical skills but not college placement standards for reading, writing and mathematics.<br><br>No criteria are established for awarding postsecondary credit.<br><br>There is no evidence that articulation/dual enrollment agreements establish the same requirements for faculty, course syllabi and end-of-course exams, whether taught to high school or college students.<br><br>There is no evidence that articulation/dual enrollment agreements are reviewed at least every three to four years. | This CT program is supported by articulation/agency agreements with postsecondary institutions within the region.<br><br>Eligibility criteria for enrollment in dual credit CT courses address the required technical skills and college placement standards in reading, writing and mathematics required for this CT program, but they may differ from the college-placement standards for academic dual credit courses.<br><br>Criteria are established for awarding postsecondary credit, but credit earned is placed in escrow, rather than being immediately added to the high school and postsecondary transcripts.<br><br>Articulation/dual enrollment agreements have established the same requirements for faculty teaching dual credit courses, whether to high school or college students. There is no evidence of common course syllabi and end-of-course exams for dual credit courses, whether taught at the high school or college.<br><br>Articulation/dual enrollment agreements are reviewed at least every two to three years. | This CT program is supported by articulation/agency agreements with multiple postsecondary institutions statewide. Agreements are viewed as essential in creating maximum educational opportunities.<br><br>Eligibility criteria for enrollment in dual credit CT courses address the required technical skills and set the same college placement standards in reading, writing and mathematics for CT and academic dual credit courses.<br><br>Criteria are established for awarding postsecondary credit and credit earned is immediately added to the high school and postsecondary transcripts.<br><br>Articulation/dual enrollment agreements have established the same requirements for faculty, course syllabi and end-of-course exams whether taught to high school or college students.<br><br>Articulation/dual enrollment agreements are reviewed annually. |

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| **12. Advisory Committee**<br>An advisory committee represents all stakeholders in the CT program and provides input for the program's continuous improvement. | No advisory committee is established, or the committee exists only on paper. | An advisory committee is established representing a limited number of stakeholders and employers.<br>The committee meets at least once a year, but has minimal influence on issues affecting the program of study.<br>The committee hears reports and gives limited input, but does not make recommendations for future actions. | The advisory committee meets at least twice a year and represents most stakeholders, including business/industry, secondary and postsecondary leaders, teachers, parents and students.<br>Meetings have an established agenda, attendance is taken and minutes are recorded.<br>The committee hears progress reports and makes recommendations. | The advisory committee — balanced with a variety of stakeholders and persons who can influence policy decisions — meets at least quarterly to consider actions requiring input from stakeholders and employers.<br>The committee hears progress reports, makes recommendations and receives feedback on actions taken.<br>The advisory committee takes ownership of the program; works with school and district leadership to ensure program quality; and raises funds to support the program. |
| **13. Marketing, Public Relations and Community Outreach**<br>School and CT leaders market the program to students and the school community to ensure all stakeholders are familiar with the program and its curriculum and understand how it links to further study and workforce needs. | There is little evidence of program marketing. | Passive, limited marketing activities reflect the value of the program.<br>The program is described in the school's printed literature and on its Web site.<br>Counselors/teachers have limited knowledge of the program or opportunities for students who complete the program. | The value of the program is reflected in active marketing efforts that reach students, parents and the community.<br>Students and parents participate in career nights and informational events to showcase program and build interest in it.<br>Program information is distributed to students as early as the eighth grade.<br>Teachers/counselors know about the program, its course requirements, the level of academic and technical knowledge needed and career options. | The program is aggressively marketed to all students, parents and community stakeholders.<br>The marketing effort reflects the program's value and alignment to workplace standards and labor market needs.<br>Teachers and counselors are knowledgeable about the program, its course requirements, the level of academic and technical knowledge needed and career options. They encourage students to consider the program.<br>The program encourages local media to cover program events. |

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| **14. Enrollment**<br><br>Enrollment in program is a function of students' interests, advisers' direction, and local labor market needs. | Enrollment is less than 60% of program capacity as defined by the school for a three-year period.<br><br>There is no plan for growing enrollment to program capacity.<br><br>At least three-fourths of the students enrolled in the program were placed in the program rather than choosing the program due to their career interests. | Enrollment is 60-74% of program capacity as defined by the school for a three-year period.<br><br>There is a plan for growing enrollment to program capacity.<br><br>More than half of the students enrolled in the program were placed in the program rather than choosing it due to their career interests. | Enrollment is 75-94% of program capacity as defined by the school for a three-year period.<br><br>There is a plan for growing enrollment to program capacity.<br><br>More than half of the students enrolled in the program chose it due to their career interests and planning. | Enrollment is 95-100% of program capacity as defined by the school for a three-year period.<br><br>There is a plan for how to reach program capacity, and current enrollment has met or exceeded the plan.<br><br>At least three-fourths of the students enrolled in the program chose it due to their career interests and planning. |
| **15. Retention and Completion**<br><br>Retention measures the staying power of a program in attracting and keeping students.<br><br>Completion indicates the percentage of students successfully complete all requirements prescribed for the program. | Retention: Less than 60% of students entering this CT program continue past the foundation course for the three-year period.<br><br>Completion: The percentage of program completers as defined by the school is less than 60% for a three-year period. | Retention: 60-74% of students entering program continue past the foundation course for the three-year period.<br><br>Completion: The percentage of program completers as defined by school is 60-74% for a three-year period. | 75-94% of students entering program continue past the foundation course for the three-year period.<br><br>The percentage of program completers as defined by the school is 75-94% for a three-year period. | 95-100% of students entering program continue past the foundation course for the three-year period.<br><br>The percentage of program completers as defined by the school is 95-100% for a three-year period. |
| **16. Post Program Positive Placement**<br><br>Program completers who take a job in the program area or who continue postsecondary training in the program area have positive placement. | Less than 50% of graduates from the program are working in the career field or related field, operating entrepreneurial businesses, completing a formal apprenticeship in the career field, enrolled in postsecondary education in the career field, or serving in the military one year after graduation. | 50-69% of graduates from the program are working in the career field or related field, operating entrepreneurial businesses, completing a formal apprenticeship in the career field, enrolled in postsecondary education in the career field, or serving in the military one year after graduation. | 70-89% of graduates from the program are working in the career field or related field, operating entrepreneurial businesses, completing a formal apprenticeship in the career field, enrolled in postsecondary education in the career field, or serving in the military one year after graduation. | 90% of graduates from the program are working in the career field or related field, operating entrepreneurial businesses, completing a formal apprenticeship in the career field, enrolled in postsecondary education in the career field, or serving in the military one year after graduation. |

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| **17. State Assessment, *HSTW* Assessment and College-Readiness Assessment**<br>Students in the CT program meet benchmarks denoting mastery of standards English/language arts and mathematics. | Less than 25% of students enrolled in the program meet state standards by the end of the three-year period.<br>Less than 25% meet *HSTW/TCTW* college-readiness standards at the end of the three-year period.<br>Less than 25% meet placement standards in English/language arts and mathematics for postsecondary studies. | 25-49% of students enrolled in the program meet state standards by the end of the three-year period.<br>25-49% meet *HSTW/TCTW* college-readiness standards at the end of the three-year period.<br>25-49% meet placement standards in English/language arts and mathematics for postsecondary studies. | 50-74% of students enrolled in the program meet state standards by the end of the three-year period.<br>50-74% meet *HSTW/TCTW* college-readiness standards at the end of the three-year period.<br>50-74% meet placement standards in English/language arts and mathematics for postsecondary studies. | 75-100% of students enrolled in the program meet state standards by the end of the three-year period.<br>75-100% meet *HSTW/TCTW* college-readiness standards at the end of the three-year period.<br>75-100% meet placement standards in English/language arts and mathematics for postsecondary studies. |
| **18. Industry Credentialing and Technical Assessments**<br>The CT program leads to industry certification that has value in the workplace. A certification exam can serve as an end-of-program exam and provides students the opportunity to earn an industry credential in addition to their high school diploma. | The program does not pursue available industry credentialing.<br>Less than 25% of students in the program take a certification exam.<br>Pass rates on certification exams are below 60%. | The program offers one industry credential and encourages students to take the certification exam.<br>25 to 49% of students in program take a certification exam.<br>Pass rates on certification exams are 60-74%. | Students are required to take an industry certification exam.<br>Pass rates on certification exams are 75-89%. | The district and/or high school provides funding for certification exam fees, and all students are required to take the exam.<br>Technical assessment is nationally benchmarked and includes a knowledge-based written component.<br>Passing the technical assessment leads to state licensure or certification.<br>Pass rates on certification exams exceed 90%. |

## Appendix A: Eight-Step Design Template for Authentic Anchor Project Units

The eight-step process to be used by the interdisciplinary teams is adapted from the framework used in the recently completed study described in *Building Academic Skills in Context: Testing the Value of Enhanced Math Learning in CTE.*[3]

The criteria for developing the prototype design template for **Authentic Anchor Project Units** at a minimum will include the following eight-step process.

1. Identify and describe a major project that is rich with embedded mathematics content that career/technical faculty will have students complete during each 12 weeks of school.
2. Identify the embedded mathematics and technical standard(s) and use of technology tools that can be taught through the authentic integrated project units. This will involve taking the mathematics standards and being deliberate about identifying the specific knowledge and skills students are expected to apply and understand.
3. Identify the literacy study skills and habits of success that students will be expected to apply in advancing their mastery of academic and technical content and skills. This will involve the identification of materials to be read, records to be kept, reports to be written, quality of work expected, behavior expectations for individual and for teamwork, and specifications of other key habits of success important to the 21st-century workplace.
4. Develop a summative assessment that incorporates mathematics and technical content questions and the use of technology questions at the end of the unit. Describe re-teaching strategies for those students who fail to demonstrate mastery and indicate the benchmark level that would be acceptable for demonstrating mastery at the proficient level.
5. Determine how students will be will pre-assessed for current level of knowledge and skills in each of these four domains – mathematics, technical content, the use of technology, and other skills and habits essential to success. Identify the methods and techniques for assessing students' understandings and skills in these areas, including questioning, observations, worksheets, group learning activity, vocabulary, etc.
6. Determine how career/technical faculty will engage students with mathematics and technical content and the use of technology and tools embedded in the authentic anchor project unit. Identify: 1) a series of teacher-directed instructional activities; 2) student assignments aimed at helping students understand the mathematics and technical content; and 3) ways technology will be used to enhance learning. Part of this planning will involve bridging the gap between the language of the pathway field as it relates to the language of mathematics. Help students understand how the language of the workplace and the formal mathematics language are connected without abandoning either. Identify a series of activities that introduce students to these mathematics and technical concepts and to the technology tools and materials involved in completing this project.
7. Decide how mathematics faculty will engage students with mathematics and technical content and the use of technology and tools embedded in the authentic anchor project unit. Develop related contextual mathematics assignments using the embedded mathematics concept in the unit. This will involve having students work through mathematic problems and assignments that are similar to those embedded in the career/technical project. It also will involve using examples with varying levels of difficulty, increasing from basic, to proficient, to advanced. This work will continue to bridge the academic language and the language of the career/technical pathway. Describe how teachers will check for understanding and determine which concepts can be team-taught by the mathematics and career/technical teachers.
8. Describe how students will demonstrate their understanding of mathematics and technical knowledge and skills by completing the project and assignments that provide additional practice.

[2] Stone, James, C. Alfeld, D. Pearson, M.V. Lewis, and S. Jensen. *Building Academic Skills in Context: Testing the Value of Enhanced Math Learning in CTE.* National Research Center for Career and Technical Education, July 2006.