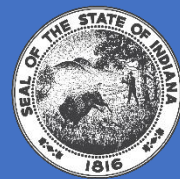# Indiana CTE Performance Data Lab

2023-2024 WORKBOOK

Career & Technical Education
INDIANA COMMISSION FOR HIGHER EDUCATION

INDIANA COMMISSION *for* HIGHER EDUCATION

QUESTIONS?

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Data Disclosures

• Under Perkins V, a CTE concentrator is a student who earns a C average in at least two non-duplicative advanced courses (courses beyond an introductory course) within a particular program or program of study.

• Any population with less than 10 students will be masked in the data visualization.

• Special populations disaggregated in these tools are defined in Perkins V as: individuals enrolled in a nontraditional field, individuals with disabilities, individuals who are economically-disadvantaged, single parents (including single pregnant women), English learners, individuals who are in or have aged out of foster care, individuals with at least one parent on active military duty, and individuals who are experiencing homelessness.

• Subgroups disaggregated in these tools are gender and race.

Putting the Pieces Together: An Overview

CLNA 2022		CLNA 2024	
2019-2020	2020-2021	2021-2022	2022-2023
Local Application – 2 Yr		**Local Application – 2 Yr**	
2022-2023	2023-2024	2024-2025	2025-2026
		Goals – Negotiated Targets '25	

The above chart outlines the pertinent data for each current and upcoming cycle of the Comprehensive Local Needs Assessment (CLNA) and Local Application. The 2022 CLNA (completed by districts in the spring of 2022) utilized data from the 2019-2020 and 2020-2021 school years. The Local Application set goals for the 2022-2023 and 2023-2024 cohorts.

Similarly, the CLNA that districts will submit in 2024 should utilize data from the 2021-2022 and 2022-2023 school years. The Local Application that will then be submitted should set goals for the 2024-2025 and 2025-2026 cohorts.

Special Populations

Individuals:

- enrolled in a nontraditional field
- with disabilities
- who are economically-disadvantaged
- who are single parents (including single pregnant women)
- who are English learners
- who are in or have aged out of foster care
- with at least one parent on active military duty
- who are experiencing homelessness

Subgroups — A population of individuals with a common identity, often used when disaggregating and analyzing data. CTE data is often disaggregated by the following racial, ethnic and gender subgroups: Black learners, Native American learners, Asian learners, Pacific Islander learners, Hispanic/Latino learners, white learners, male learners, and female learners.

Data in the Opportunity Gap Analysis (OGA) Tool and the Achieving Inclusive CTE (AIC) Tool that were provided to area districts at the Performance Data Labs were disaggregated by subgroup in addition to special populations groups.

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Key Terms and Definitions

The following terms and definitions are based on definitions provided by Advance CTE and will be used throughout the workbook. Refer to this glossary to understand what they mean and how they are used in the context of the workbook and performance data labs.

Access — The ways in which educational institutions and policies ensure that learners have equal opportunities to participate in and take full advantage of their education. Access depends on factors such as geography, resources, academic preparation, and awareness. Access is *not* just every student having the opportunity to apply to/enroll in CTE courses. Access means that enrollment policies recognize barriers (transportation, cost, significant absences, lower GPA) that special populations or subgroups might face that may keep them from applying to or being accepted to CTE courses and take measures to remove those barriers.

Equity — Fairness in outcomes; creating just outcomes; providing the right supports for everyone to be successful. Acknowledging everyone's unique situation and addressing historical and current-day systemic barriers. Equity means that each enrolled student has the supports (accommodations/modifications, etc.) needed to be successful in CTE courses.

Advance CTE: Using Data to Identify and Address CTE Opportunity Gaps

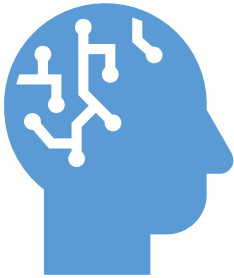© 2017 Robert Wood Johnson Foundation. May be reproduced with attribution.

Robert Wood Johnson Foundation

Equity-Minded Leaders

Characteristics of Equity-Minded leaders:

- Questions patterns of educational outcomes that reveal opportunity gaps.
- Being willing to actively work to change systems that lead to performance gaps.
- Growth Mindset – Focuses on Strengths

Strength Based
- Focuses on the strengths or "assets" students bring to schools and workplaces
- Recognizes students as competent, smart, with unique strengths and passions

Deficit Based
- Focuses on perceived weakness or what is believed to be "lacking" in students
- Often assumes students are incompetent and/or unintelligent

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Comprehensive Local Needs Assessment

The Strengthening Career and Technical Education for the 21st Century Act (Perkins V) requires meaningful progress toward implementation of equal access to high-quality career and technical education courses and programs of study for all students. As discussed in the Performance Data Labs, the tools provided during the labs can be used to complete portions of the questions for the CLNA.

The Comprehensive Local Needs Assessment Guidebook offers instructions and guidance for planning and implementation teams to follow as they conduct the Comprehensive Local Needs Assessment. Additionally, the guidebook provides guidance for the required components of the law and articulates expectations for how the information will be collected, provided, and used within a local recipient district.
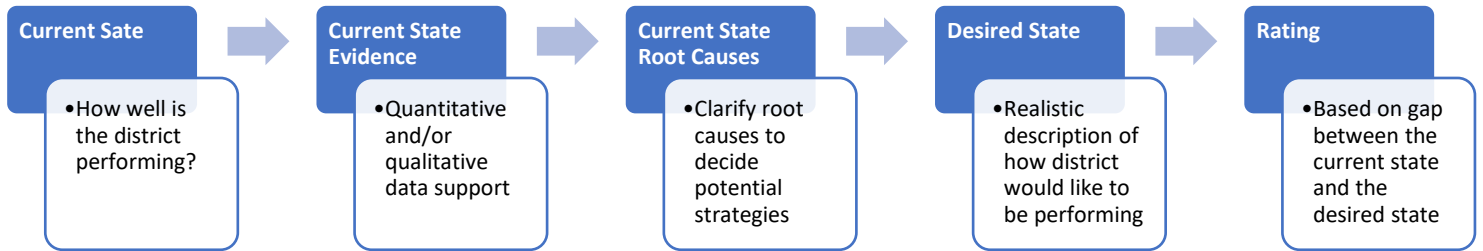
Opportunity Gap Analysis CTE Tool

Achieving Inclusive CTE Tool

Question	Data Needed	Tips
To what degree are student groups taking part in CTE at disproportionate levels in comparison to overall student population?	Enrollment demographics compared to total student population.	Recipients must provide disaggregated total enrollment data.
Do any discrepancies exist between the demographics of students enrolled in high value, moderate value, and less than moderate value programs of study?	Enrollment demographics by pathways or by high, moderate, and less than moderate pathways.	
To what degree are learners earning concentrator status at disproportionate levels based on demographics or special population standing?	Enrollments compared to Concentrators.	
To what degree are learners earning dual credit at disproportionate levels based on demographics or special population standing?	Dual credit by demographic/special population.	May want to look closely at the students earning dual credit and those earning 9+ dual credit. ==Does not apply to postsecondary==
To what degree are learners earning postsecondary credentials at disproportionate levels based on demographics or special population standing?	Credentials by demographic/special population.	
To what degree are learners participating in work-based learning experiences at disproportionate levels based on demographics or special population standing?	WBL by demographic/special population.	
To what degree are learners being placed after program completion at disproportionate levels based on demographics or special population standing?		

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Reminder: Each Focus Question response requires five (5) parts be addressed.

Current Sate	Current State Evidence	Current State Root Causes	Desired State	Rating
• How well is the district performing?	• Quantitative and/or qualitative data support	• Clarify root causes to decide potential strategies	• Realistic description of how district would like to be performing	• Based on gap between the current state and the desired state

[Click here](#) to view the Comprehensive Local Needs Assessment Guidebook for more details on completing the Focus Questions.

The following materials may assist in the completion of the Comprehensive Local Needs Assessment and Application:

- Program promotional materials
- Recruitment activities for each special population
- Career guidance activities for each special population
- Processes for communicating and providing accommodations, modifications, and supportive services for special populations
- Available services to support all students, including special populations
- Procedures for work-based learning for special population students

- Information on dual credit and credentials available for special populations
- Data on career-technical education participation and performance by each pathway and each special population
- Data on participation in career-technical student organizations in terms of special populations
- Findings from surveys/focus groups with students, parents, and/or community representatives of special populations
- State and Local Labor Market Information (LMI) current and projected employment

Equity Audit

An equity audit is a study of the fairness of an institution's policies, programs, and practices. Such audits represent a significant investment in resources, both human and material. Thus, it is worthwhile to anticipate potential challenges and develop a plan for addressing them. The goal is that the process will move as smoothly as possible, and that the results will help inform the next steps.

This tool helps to critically examine policies, programs, and practices that directly or indirectly impact students or staff relative to their special population status or membership in another subgroup.

School Policy	Yes	No	Needs Improvement
1. Does the school/school system have a specific policy regarding educational equity?			
2. Has the school adopted a grievance procedure for resolving complaints of discrimination, including a process for fact finding, and appeals?			
3. Does the school have a clear mission statement regarding educational equity?			
4. Are the policies and mission statement publicized regularly, and readily accessible to staff, students, and parents (e.g., available on the school's website)?			
5. Is the policy monitored for consistent and complete implementation, as well as any necessary modification?			
6. Has the school developed an equity plan of action based on the policy, mission statement, and analysis of its current equity needs?			
7. Did all component groups (staff, parents, students, and community) participate in the development of the mission statement and equity plan?			
8. Is there an equitable distribution of highly qualified teachers?			
9. Are there policies and procedures to assure that no student is denied participation in Career and Technical Education Pathways and CTSOs because of race, ethnicity, language, gender or gender identity, socioeconomics, disability status, or transportation limitations?			
10. Does the school publish an annual notice of nondiscrimination prior to the beginning of each school year?			
11. Is a notice of nondiscrimination included in all official school communications, documents, and publications?			
12. Does the school have a designated compliance coordinator(s) for Title IX and Section 504?			
13. Is compliance coordinator contact information included in notices, handbooks, and the school website?			

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School Organization/Administration	Yes	No	Needs Improvement
1. Are school administrator(s) able to identify equity issues, and trained to provide leadership in developing alternative strategies to achieve excellence and equity among staff and students?			
2. Is there a team or advisory committee that coordinates school improvement and assures equity compliance in all phases of school management?			
3. Have interpreters been identified for the varied languages present in the school community?			
4. Are enrollments monitored in special education, gifted education, and advanced courses for disproportionate representation of one racial or ethnic group, language or by gender identity?			
5. Is data regularly collected, disaggregated, and analyzed in the following areas and by different ethnic groups? (Check all which apply)			
___ Course level enrollment			
___ Grade point average /achievement scores			
___ Standardized test scores			
___ Student discipline, suspensions, and expulsions			
___ Bullying or harassment			
___ Participation in school activities and honors			
___ CTE Enrollment			
___ Dual Credit Attainment			
___ Industry Recognized Certification attainment			
6. Have policies or programs been implemented to respond to this data?			
7. Have curriculum and/or instructional strategies been modified because of data analysis combined with anecdotal and other information?			
8. Are the parents, community members, and businesspeople involved in school planning, support, and governance, representative of the school community?			
9. Are values of equity, fairness, and inclusion modeled by all school staff?			

School Climate Environment	Yes	No	Needs Improvement
1. Do bulletin boards, displays, promotional/recruitment materials, hall decorations, classrooms, and offices show diverse students of varied racial, ethnic, language, gender or gender identity groups, and people with disabilities in a variety of roles?			
2. Does the interaction of school staff with each other, students, and parents, convey a respect of people regardless of race, ethnicity, language, gender or gender identity, disability, age, religion, or socioeconomic status?			

	Yes	No	Needs Improvement
3. Is the code of student conduct applied fairly and equitably to all students?			
4. Do school assemblies, special programs, recruitment events, and speakers reflect the diverse nature of the school and larger community?			
5. Are the people involved in planning school events and programs representative of the school community by race, ethnicity, language, gender or gender identity, disability, and socioeconomic status?			
6. Are school emblems, mascots, team names, and other symbols free from racial, ethnic, language, gender or gender identity, or disability bias?			
7. Does the library/media center have recent visual, print, and non-print materials that accurately provide information about diverse student groups in traditional and non-traditional roles?			
8. Are materials, notices, handbooks, and other school communications and publications available in multiple languages, Braille, or audio versions as required?			
Staff	**Yes**	**No**	**Needs Improvement**
1. Are all students talked to in the same manner and held to consistent standards of behavior?			
2. Are discipline infractions and praise distributed equitably in the classroom?			
3. Are students given access to resources, facilities, and academic placement dependent on individual talent, skill, and interest?			
4. Are acceptable standards for students' behavior, language, and dress nondiscriminatory?			
5. Is the composition of the school staff representative of the racial/ethnic/gender/disability composition of the student body and larger school community?			
6. Are all staff members familiar with the varied demographic groups and neighborhoods in the school?			
7. Do staff members communicate well and on a regular basis with staff members from other ethnic, racial, language, gender, or disability groups?			
8. Have all staff members received in-service training to recognize strategies for countering bias?			
9. Are members of the instructional staff able to utilize personalized instructional methods to meet diverse student needs and learning preferences?			
10. When staff members are assessed, are competencies in educational equity an integral part of their performance?			
11. Are people at different job levels (paid or volunteer) treated with comparable respect?			
12. Are employment practices (e.g., recruitment, hiring, salary scales/policies, pre-employment questions, etc.) non-discriminatory?			

13. Are reasonable accommodations made to the known physical or mental limitations of an otherwise qualified applicant or employee except where it imposes an undue hardship?			

Assessment/Placement	Yes	No	Needs Improvement
1. Are multiple instruments used for student assessment, including performance measures?			
2. Is all assessment data analyzed according to individual student progress as well as disaggregated patterns and outcomes by race, gender, ethnicity, disability, socioeconomic status, and geographic location?			
3. Are assessment procedures available which accommodate English Learners and students with disabilities?			
4. Are all levels of classes, including special education, CTE, gifted education programs, and advanced courses, comprised of students who proportionately reflect the diversity within the overall student population?			
5. Is guidance and counseling provided to encourage all students to take CTE courses for both exploration and pathway completion?			
6. Are counselors able to effectively communicate with English learners and students who are hearing impaired?			
7. Are all students given the opportunity to participate in CTE courses for Dual Credit?			
8. Are all students given the opportunity to test for specific pathway related certifications (utilizing all available testing accommodations when needed)?			
9. Are admission policies and practices, including admissions applications and interviews, nondiscriminatory?			
10. Are counseling practices free from guiding students toward enrollment in programs disproportionately based on their race/ethnicity, gender, sexual orientation, ethnicity, socioeconomic status, or disability?			
11. Are work-study, cooperative education, job placement, and apprenticeship training opportunities (and information pertaining to these opportunities) available to all students without regard to race, gender, ethnicity, disability, sexual orientation, or socioeconomic status?			
12. Do apprenticeship, work-study, job-shadowing, and cooperative education agreements with businesses, labor unions, and other employers, contain written assurances of non-discrimination?			
13. Are policies in place to ensure that students participating in apprenticeship, work-study, job-shadowing, and cooperative education opportunities are not discriminated against by employers or prospective employers (e.g., in recruitment, hiring, placement, assignment to work tasks, hours of employment, levels of responsibility, rates of pay, etc.)?			

	Yes	No	Needs Improvement
14. Is information pertaining to financial aid or assistance disseminated and available in multiple languages, Braille, or audio versions as required?			

Professional Learning	Yes	No	Needs Improvement
1. In order to ensure flexible, heterogeneous, and integrated grouping within classes, are teachers exposed to a variety of instructional approaches to meet differing learning preferences and foster both competitive and cooperative skills?			
2. Are relevant equity issues infused throughout all professional learning activities?			
3. Are opportunities provided for staff at all levels and in all job descriptions to obtain in -service training regarding educational equity issues and concerns relevant to specific populations?			
4. Are staff members trained to identify equity needs and to utilize instructional methods to meet the learning preferences of diverse students and groups?			
5. Are in-service opportunities offered to provide dialogues between policymakers, administrators, teachers, support staff parents, as well as business and community leaders, to develop comprehensive strategies for addressing equity issues?			
6. Are translators or sign language interpreters available for participants in staff development who are from particular language minority or disability groups?			
7. Is content training offered to provide staff with curricular information and knowledge of multicultural print, non-print, and human resources available to enhance educational equity?			
8. Do staff members receive training in culturally responsive communication and group processes to increase their effectiveness in working with diverse populations?			
9. Are critical educational issues addressed in ways that do not stereotype or stigmatize particular groups?			
10. Are presenters and facilitators of in -service programs representative of the gender, racial, ethnic, and disability composition of the school system?			
11. Is professional learning delivered in ways which model techniques and authentic perspectives which are relevant to the diverse groups in the school community?			

Standards and Curriculum Development	Yes	No	Needs Improvement
1. Are all students held to the same standards?			
2. Are the policy and instructional modifications put in place when students are unable to meet the standards?			
3. Does the curriculum utilize print and non-print materials that represent diverse groups?			

4. Do recommended textbooks and other instructional materials reflect, as much as possible, the experiences and perspectives of diversity among racial, ethnic, language, religious and gender groups?			
5. Are the teachers' classroom activities and examples culturally responsive according to race, ethnicity, language, gender or gender identity, religion, and disability?			
6. Do the curricula infuse culturally responsive information into instructional approaches and prepare students for a diverse society and workplace?			
7. Are people with disabilities shown in the curriculum actively interacting with both people with and without disabilities?			
8. Is language used which does not stereotype people or groups?			
9. Are teachers encouraged to use and provide examples of materials produced by women, people of color, and people with disabilities as part of the curriculum when applicable?			
10. Are lists and descriptions of resources (e.g., community organizations, parent volunteers, events, historical sites, etc.) provided to reinforce curriculum relevant to the experiences and contributions of diverse cultural groups?			

Mid-Atlantic Equity Consortium. "Criteria for an Equitable School – Equity Audit"

Data Analysis and Identifying Performance Gaps

Indiana's students are a diverse group of children, who look to their families, communities, and educators to recognize their strengths, correctly identify their needs, set high expectations, and meet them where they are with supports that will help them grow. All of us play a role in recognizing that each child is important and deserving of the education opportunities, experiences, and supports needed to achieve success.

This workbook provides tools and resources to help local recipients identify information for use in data-driven decision-making. The following protocol should be completed with stakeholders for using both the OGA and AIC tools.

The Notice & Wonder Protocol

The Notice & Wonder Protocol is a tool used to view and analyze data. Here is how it works:

1. On your own, record three to five factual observations ("notices") about the data.*

2. Record "wonders" regarding the previous observations: wonder why, wonder if, wonder how.

3. Share "notices" and "wonders" among the group.

4. Follow-up questions:

   • Are there data points mentioned multiple times?
   • Are there emerging trends in the "notices" and "wonders"?
   • What statements could lead to the most impactful change?

**Groups are instructed to begin this activity in silence to ensure all individuals have an opportunity to participate and no one person commandeers the conversation or activity.

Step 1: "Notice" – Record Facts and Observations

Look at the data visualizations (heatmap) contained within the district data tool. As a team, choose three categories to utilize for the following Notice & Wonder activity.

List one NOTICE and two WONDERS about the data:

Notice

_____

Wonder

_____

Wonder

_____

List one NOTICE and two WONDERS about the data:

Notice

_____

Wonder

_____

Wonder

_____

List one NOTICE and two WONDERS about the data:

Notice

_____

Wonder

_____

Wonder

_____

Step 2: Collaborate with Teammates

As a team, discuss your individual "notice" statements. Are there data points mentioned several times? If so, what are they?

_____

_____

_____

Can the notices be categorized? If so, what are the categories?

_____

_____

_____

Which notice statements have the greatest significance or potential for impacting equity across access, enrollment, and student outcomes?

_____

_____

_____

What is something you have learned by doing this activity?

_____

_____

_____

Identifying Opportunity Gaps

AN OPPORTUNITY GAP occurs when **specific subgroups or special populations of learners have disproportionate access** (or lack of access) to high-quality learning opportunities or **when the environmental conditions are insufficient for specific subgroups of learners or special populations to be successful**. These gaps result from systemic, structural, and social barriers such as admissions policies, stereotyping, or insufficient funding. The first sign of an opportunity gap in CTE is when learners are disproportionately enrolled in CTE by their subgroup or special population status.

*Using the data in your district tool (OGA/AIC), identify **five opportunity gaps**** for further examination. Consider the following questions:*

- **Who is most affected?**
- **What is the direction and degree of the opportunity gap?**
- **Where does the opportunity gap occur?**
- **When does the opportunity gap occur?**

OPPORTUNITY GAP EXAMPLE

Who: Latinx learners

What: Under-represented by 27 percentage points

Where: In the Pre-Nursing/CNA pathway

When: In the 2022-23 school year

** Do not focus on causes of the opportunity gap — simply use the data to make statements.

To prioritize your opportunity gaps, consider focusing your data analysis on:

- **Programs with the most sizable gaps**
- **The most popular programs**
- **Programs that do not have a compromising n-size.**
- **Programs with gaps affecting multiple learner groups**
- **Gaps that are unexpected and/or not currently being addressed**

Identify Opportunity Gaps

Opportunity Gap #1:

Opportunity Gap #2:

Opportunity Gap #3:

Opportunity Gap #4:

Opportunity Gap #5:

Brainstorming Root Causes

Conducting a Root Cause Analysis

A **root cause analysis** is a method of problem solving designed to uncover the deepest root(s) and most foundational reasons for the identified concerns. It is an effective tool to investigate and uncover the cause(s) of a problem rather than merely treat symptoms of the problem. Following the identification of root causes, strategies can be deployed to change policies or shift investments and resources to move to solutions that can have transformative impacts. A root cause analysis induces discussion and reflection with conversations grounded in data. The process includes open and honest deliberations in a brave, collaborative environment to foster examination of data and brainstorm potential causes of the identified opportunity gap.

A systems approach is critical to identify root causes. Systems are composed of an organized array of interdependent and interacting components. While you may start with identifying specific individual parts, as this analysis unfolds individuals will often note how these different parts are interacting. One way to organize this systems approach is the root cause analysis for the opportunity gaps you identified is listed on page 22. Some root causes may cross categories and may not seem to fit discretely into a specific category. These categories are merely an organizational tool to help you consider all possible causes through various lenses.

The following page contains a visual of root cause themes for opportunity gaps in CTE. This visual can aid in identifying individual parts of a system that may be contributing to performance gaps but can also help to visualize and break down how these parts can overlap and interact. Below the visual are definitions for each component that may assist in conversations to identify and address root causes.

Root Cause Themes in CTE
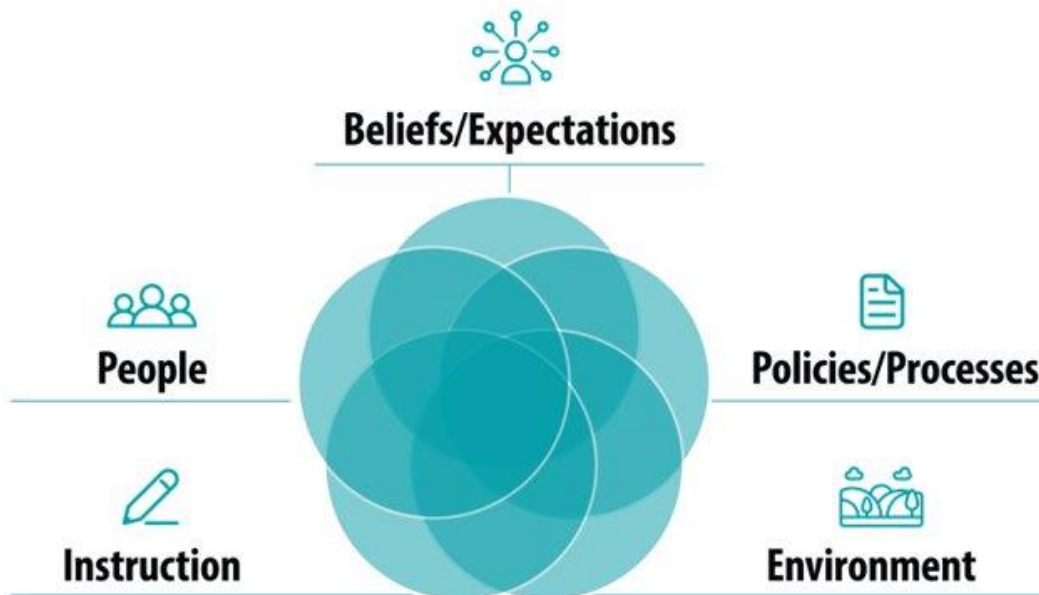
BELIEFS/EXPECTATIONS: The broader expectations and values in relation to CTE itself and/or to specific learner groups. This category is where one may observe examples of implicit bias, CTE stigma, and stereotypes about particular groups.

POLICIES/PROCESSES: State, district, and/or institutional policies and procedures that create barriers to access or success in CTE programs. This category may include admission requirements, scheduling barriers, or funding limitations.

ENVIRONMENT: The geographic and/or socioeconomic factors that affect access and/or prevent learners from realizing their education and career goals. This category may include lack of access to equipment, financial barriers, and/or transportation.

INSTRUCTION: The barriers to teaching and learning in the CTE classroom such as lack of accommodations for students with disabilities, teaching strategies that are not inclusive, bias in the curriculum, or insufficient academic preparation prior to entering the CTE program.

PEOPLE: Barriers related to staffing — such as insufficient numbers of school counselors or career advisers, shortages of qualified teachers and faculty, and/or lack of leadership capacity — or lack of representational diversity in the CTE teacher workforce and among industry partners.

Root Cause Brainstorming

Individual Brainstorming

Using the opportunity gap statement assigned to your small-group discussion, list all possible causes you can think of for this opportunity gap.

Potential Causes:

Validating Assumptions and Considering Other Input

When completing a root cause analysis, you may also realize that you need more input from others to assist in determining and validating your assumptions. Whom do you need to consult to get perspective and further explore and/or confirm the accuracy of these assumptions?

Stakeholder/Group Specific Person	What Do You Want to Explore?	How Will You Do This?
Parents of learners with disabilities	*To what degree are CTE options for learners with disabilities limited by the lack of transportation to Sycamore Area Technical Center?*	*Organize a series of focus groups with parents of learners with disabilities, one for each high school in the Sycamore Public Schools district.*

Validating Assumptions and Considering Other Input

You may also have data from your Comprehensive Local Needs Assessment and other sources that can inform and/or validate assumptions. List other data sources to be reviewed along with any specific detail on what you will examine below.

Other Data Sources	Specific Information to Examine/Explore

Validating Assumptions and Considering Other Input

You may have also uncovered policies that need to be examined to fully address the identified root cause(s) for this opportunity gap. List these policies and how you will address them below.

Policies to Examine	How Will This Be Done?

Practical Strategies to Improve Access and Equity

UNDERSTANDING DIFFERENT LEVELS OF EVIDENCE

The next step in developing an equity action plan is to identify impactful strategies that will help you close opportunity gaps. The best place to start is with existing evidence. Learning how other states, districts, colleges, and schools addressed similar opportunity gaps helps ensure that your plan of action will lead to the desired outcomes.

When evaluating whether a strategy can effectively close opportunity gaps, practitioners often seek research or evidence-based practices. These are practices that have been proven to work — through rigorous experimental or quasi-experimental studies or even just through early anecdotal evidence.

Not all strategies have the same base of evidence to support their effectiveness. As practitioners seeking to implement evidence-based strategies, differentiating levels of evidence before committing to a particular strategy is important. Some things to look for when you examine evidence are:

The Rigor of the Analysis: Does the study use descriptive or inferential statistics to draw conclusions? What methodology is used? Experimental studies that use randomized control trials are the strongest, but other approaches can provide useful information as well.

The Effect Size: How big was the detected impact? If an intervention results only in a slight shift in outcomes for learners, is it worth the effort? This answer will help you determine how to prioritize your strategies.

The Breadth of Supporting Evidence: Is the evidence to support this strategy isolated, or has this approach been validated across multiple studies?

Face Validity: Does this strategy make practical sense? Can you draw a logical connection from the strategy to the outcome?

Lack of evidence does not necessarily indicate a strategy is ineffective; it could simply mean that the research base has not yet been developed to determine its effectiveness. Plenty of practical strategies are widely used in classrooms and institutions across the country even though no formal evaluations have been conducted to date.

The below strategies utilize a three-level system to identify evidence-based practices that is based on the breadth of research supporting that particular intervention or strategy.

Level 3 — Strategy has a wide breadth of research supporting its effectiveness (6+ pieces of evidence)

Level 2 — Strategy has a moderate amount of research supporting its effectiveness (3-5 pieces of evidence)

Level 1 — Strategy has limited research supporting its effectiveness (1-2 pieces of evidence)

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Practical Strategies for Closing Opportunity Gaps in CTE

The following table describes root causes and related strategies to improve equitable access to CTE. While most of these strategies have backing evidence supported by a broad literature review, a few have been demonstrated anecdotally but not rigorously. Additionally, since the research base in CTE is still relatively light, some of these strategies have not been tested specifically among CTE learners.

LEVELS OF EVIDENCE ARE DESIGNATED AS FOLLOWS:
*** Level 3 (supported by 6 or more pieces of evidence)
** Level 2 (supported by 3-5 pieces of evidence)
* Level 1 (supported by 1-2 pieces of evidence)

BELIEFS/EXPECTATIONS The broader expectations and values in relation to CTE itself and/or to specific learner groups. This category is where we may see examples of implicit bias, CTE stigma and stereotypes about particular groups.	
LACK OF AWARENESS ABOUT CTE	- Implement technology-based platforms for career exploration and planning*** - Provide middle school CTE/career exploration curriculum and experiences** - Provide early high school CTE/career exploration curriculum and experiences** - Develop recruitment materials and host recruitment events* - Require individual academic and career plans* - Engage key influencers (school counselors, teachers, CTE learners or alumni) to share information about CTE* - Provide informational materials in multiple languages
IMPLICIT BIAS/ STEREOTYPES ABOUT PARTICULAR LEARNER GROUPS	- Implement inter-generational mentoring programs*** - Provide professional development on implicit bias, stereotype threat, disability awareness and more*** - Implement peer mentoring programs or peer support groups** - Develop targeted recruitment materials and strategies* - Partner with media organizations to promote positive representations of diverse learners in different occupations* - Assign learners to counselors from the same racial group* - Develop inclusive recruitment materials and strategies that depict diverse learner populations
CTE STIGMA	- Engage families in career development** - Use learner and parent ambassadors to address outdated perceptions about CTE* - Use career exploration and planning platforms and recruitment materials to highlight the benefits of CTE

POLICIES/PROCESSES
State, district and/or institutional policies and procedures that create barriers to access or success in CTE programs. This category may include admission requirements, scheduling barriers, disciplinary barriers, etc.

ADMISSIONS REQUIREMENTS	• Eliminate admission requirements • Reserve seats/spaces for targeted learner groups • Create an appeals procedure or alternative admissions criteria
SCHEDULING BARRIERS	• Implement career academies or similar cohort-based, inter-disciplinary models for high school learners*** • Schedule CTE courses to maximize access, considering graduation requirements and other requirements for students with disabilities and English learners* • Provide courses and services in the evenings and on the weekends
DISCIPLINARY BARRIERS	• Implement school-wide positive behavior interventions and supports at the middle school or high school level*** • Ensure that educators, counselors, administrators and other faculty and staff are trained on using trauma-informed practices to promote a culture of safety and support**
LACK OF POLICIES THAT SUPPORT DIVERSITY	• Develop and enforce non-discrimination policies* • Develop and enforce anti-bullying/anti-harassment policies • Use data to monitor enrollment patterns and identify opportunity gaps • Conduct learner surveys or focus groups to evaluate whether programs are inclusive and welcoming for under-represented populations
LACK OF SYSTEMATIC COUNSELING AND ADVISEMENT	• Implement online platforms for career exploration and planning*** • Implement dropout prevention/early warning systems** • Provide proactive counseling/advising/career coaching* • Require individual academic and career plans* • Provide professional development for counselors/advisers on how CTE programs and programs of study can prepare learners of all backgrounds for high-skill, high-wage and in-demand employment opportunities aligned to regional labor market needs
SILOED DEPARTMENTS AND SERVICES	• Implement career academies or similar cohort-based, inter-disciplinary models***

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	• Implement postsecondary guided/accelerated pathways through program maps, intensive advising and early warning systems*** • Implement sector-specific training programs scaffolded by career advisement, job placement and financial/tangible supports, among other support services*** • Structure postsecondary education to enable early entry into CTE programs/pathways*
ENVIRONMENT **The geographic and/or socioeconomic factors that affect access and/or prevent learners from realizing their education and career goals. This category may include lack of access to equipment, financial barriers and/or transportation.**	
LACK OF ACCESS TO RELEVANT FACILITIES AND EQUIPMENT	• Provide equipment that is inclusive for students with disabilities and various genders (differently sized protective equipment, etc.)* • Share facilities and equipment with other learning providers or industry partners • Enact a one-to-one technology policy to scale up virtual or remote learning opportunities • Provide facilities that are inclusive for students with disabilities and various genders
LACK OF ACCESS TO QUALIFIED CTE INSTRUCTORS AND INDUSTRY PARTNERS	• Develop "grow your own" programs in the Education & Training Career Cluster®* • Develop induction/mentoring programs for new instructors that build industry and/or pedagogical knowledge and skills* • Provide virtual access to industry representatives, including through simulated work-based learning* • Establish formal dual or concurrent enrollment partnerships between secondary and postsecondary institutions to give high school learners access to postsecondary instruction* • Provide externships for teachers and faculty that build industry knowledge and skills* • Enable co-teaching/team teaching that pairs instructors with differing levels of experience/ qualifications or pairs instructors with industry experts* • Provide virtual access to qualified instructors
FINANCIAL BARRIERS	• Provide free/low-cost opportunities to earn articulated credit*** • Award credit for prior learning/military experience/work experience*** • Cover fees for industry-recognized credential assessments* • Cover fees for Career Technical Student Organization (CTSO) activities* • Provide financial aid for learners from low-income families that covers tuition, equipment, fees, etc.

TANGIBLE BARRIERS	• Provide integrated learner services including health care, mental health services, meals/ food pantry, child care, academic services, etc.** • Provide case management/a single point of entry to non-academic support services* • Provide transportation to the CTE program and/or work-based learning site*

INSTRUCTION
The barriers to teaching and learning in the CTE classroom such as lack of accommodations for students with disabilities, teaching strategies that are not inclusive, bias in the curriculum, or insufficient academic preparation prior to entering the CTE program.

LACK OF RELEVANT, ENGAGING HANDS-ON AND WORK-BASED LEARNING EXPERIENCES	• Provide CTSOs that build technical, employability and leadership skills through competitive events, service learning and other activities*** • Provide work-based learning scaffolded by employability skills training and mentoring/coaching, among other support services*** • Provide virtual/simulated learning when real-world learning is not safe, legal or accessible*** • Teach soft/employability skills* • Provide early career exploration opportunities to give learners the chance to "try on" careers and develop their own occupational identity* • Provide professional development for educators and industry partners to maximize these experiences • Expand access to paid work-based learning opportunities so learners who need to support their families can participate
BIAS IN INSTRUCTION/ CURRICULUM	• Teach self-efficacy/self-determination and a growth mindset*** • Provide professional development on topics related to bias in instruction/ curriculum*** • Implement Universal Design for Learning, an instructional approach that draws on a variety of teaching methods to ensure equal opportunities to learn** • Use culturally responsive curriculum* • Employ microaffirmations through active listening, recognizing and validating experiences and affirming emotional reactions * • Be sensitive to logos and imagery that perpetuate stereotypes

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BARRIERS TO LEARNER PROGRESS	• Implement bridge/remediation programs, often through contextualized academic- CTE curriculum and instruction*** • Provide accommodations for students with disabilities and English learners** • Implement peer tutoring** • Include CTE representatives on Individualized Education Program/504 teams* • Create space for peer affinity groups so that learners of similar identities can receive support and fellowship*

PEOPLE	
Barriers related to staffing — such as insufficient numbers of school counselors or career advisers, shortages of qualified teachers and faculty and/or lack of leadership capacity — or lack of representational diversity in the CTE teacher workforce and among industry partners.	
LACK OF DIVERSITY IN THE CTE EDUCATOR WORKFORCE	• Recruit diverse instructors through minority-serving institutions and affinity groups, among other methods*** • Develop "grow your own" programs in the Education & Training Career Cluster* • Develop more inclusive pipelines into leadership and administration
LACK OF DIVERSITY AMONG INDUSTRY PARTNERS	• Recruit diverse industry partners through affinity business groups, among other methods

Selecting Actionable Strategies

Now that you have explored some practical strategies for closing opportunity gaps in education — and in CTE specifically — it is time to start thinking about which strategies you would like to implement. Refer to your data and the root causes you identified in the fishbone exercise earlier to identify strategies that will make the most sense in your community. Consider the following questions:

• **WHAT STANDS OUT TO YOU?**

• **ARE YOU ALREADY USING ANY OF THESE STRATEGIES? HOW EFFECTIVE ARE THEY?**

• **ARE ANY OTHER IDEAS NOT INCLUDED ON THIS LIST?**

LIST ANY EVIDENCE-BASED STRATEGIES THAT CAN HELP ADDRESS THIS OPPORTUNITY GAP

Looking to other schools, districts, and institutions for evidence of effective practices is helpful. What are others doing to address similar opportunity gaps? What lessons have they learned? If possible, try to find evidence of success from external evaluators or researchers.

Strategy	Evidence

ADDITIONAL RESOURCES TO IDENTIFY PRACTICAL STRATEGIES

- Achieving the Dream — Knowledge Center
- American Youth Policy Forum — Topic Areas
- JFF — Ensuring Equity in Advancement
- National Alliance for Partnerships in Equity — Root Causes and Strategies
- National Center for Homeless Education — Homeless Education Issue Briefs
- National Technical Assistance Center on Transitions — Effective Practices and Predictors
- MDRC — Center for Effective Career and Technical Education

District Data Reports

Below are directions for running the necessary report in InTERS to view **performance data** for just your career center (or one specific school). This data can then be used to fill in the Achieving Inclusive CTE Goal-Setting Tool (AIC Tool) allowing you to narrow your review of performance data just to students who take courses at your career center or another single location. **Access a how-to video on the AIC Goal-setting Tool [here](#).**

Reminder: Students who have only completed a Principles course at the career center may be put into a pathway that you do not offer (i.e. Agriscience) as that is how InTERS sorts students to avoid showing duplicate enrollments.

1. Once you have logged into InTERS, click the "Reports" tab at the top of the page.

2. Click the "Federal" button under Reports.

3. On the left side of the screen, choose the report "CLNA: Pathway Group Enrollment."

4. Choose the Report Year you'd like to look at.

5. Choose your area district in the "District" drop down.

6. In the "School" drop down, choose your career center or the school you'd like to see performance data for.

7. Select "Goal Setting Tool" as the Output Type.

8. Click the blue "Run Report" button at the bottom of the screen and your report will download as an Excel document. The data can then be copy/pasted into the AIC Tool on the "Counts Entered By User" tab to update the heatmap.

Closing Thoughts

It takes a team effort to realize the vision for equity in CTE: that each learner can access, feel welcome in, fully participate in, and successfully complete a high-quality CTE program of study. In the Performance Data Labs, and using this workbook, you have identified barriers to access and examined evidence-based research to select practical strategies for closing opportunity gaps.

But the work does not stop here. Ensuring access and equity for all learners is a process that takes persistence, dedication, and commitment. Each of us has a role to play in this effort. As you look ahead, consider the following commitments:

- **If you have not already, engage learners, families, and representatives of special populations to understand what they see as the most urgent barriers.**

- **Set incremental, achievable goals targeted toward ensuring equity and access for all learners in your district.**

- **Hold yourself accountable to practices, behaviors, and language that further equity and access in the programs of study you offer.**

- **Hold yourself and your leaders accountable for following through on the action steps stakeholders in your district identified.**

- **Take advantage of the Comprehensive Local Needs Assessment or other local planning processes to push for increased equity and access in your CTE programming.**

- **Continually monitor your data and keep an eye out for potential patterns of inequity.**

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