CTE | Career & Technical Education RESEARCH NETWORK

Module 3: Career and Technical Education Program Evaluation: Why It Matters to Practitioners

Facilitator's Guide

Authors:
Marjorie Cohen
Steve Klein
Cherise Moore

Reviewers:
Pradeep Kotamraju
Linda Romano
Lyn Velle

December 2020

Contents

Page

Overview....3

Module Description....3

Module Objectives....3

Intended Audience....3

Materials....4

Time Requirements....4

Outline of Module....4

Facilitator's Script/Notes for Module....5

References and Resources....18

Overview

This module is part of a series of six practitioner training modules developed as part of the CTE Research Network Lead. The six modules are:

Module 1: Understanding CTE Data and Why It Matters

Module 2: Using Data and Research to Improve CTE Programs

Module 3: CTE Program Evaluation: Why It Matters to Practitioners

Module 4: Using State Data to Partner With Researchers

Module 5: Using Research to Design Your CTE Program for Equity

Module 6: How to Communicate About Your CTE Program Using Research

The work of the CTE Research Network Lead is supported by the Institute of Education Sciences at the U.S. Department of Education with funds provided under the *Carl D. Perkins Career and Technical Education Act* through Grant R305N180005 to the American Institutes for Research. The work of the Network member projects is supported by the Institute. The opinions expressed are those of the authors and do not represent the views of the Institute or the U.S. Department of Education.

Module Description

Program evaluation is a critical tool for assessing if your program is working or not and why. Have you ever wondered why you can have all the right components in place and the results can still be ineffective at meeting your goals? Programs want to know if what they are offering students makes a difference—do your programs have an impact on student outcomes? Program evaluation can help to determine if program efforts are successful so that you can communicate this information to key stakeholders. In this module, you will learn about program evaluation, when and why to conduct an evaluation, the different types of evaluations, logic models, what it means to have an impact, best practices in program evaluation, and the difference between program evaluation and performance measurement.

Module Objectives

After viewing this module, practitioners will be able to:

- Define impact and what it means to have an impact.
- Explain the difference between performance measures and program evaluation.
- Explain why program evaluation is valuable for career and technical education (CTE) programs.
- Understand the different types of evaluation and their purpose.
- Identify best practices in program evaluation.
- Learn what a logic model is and how to use one to assess program outcomes.

Intended Audience

This training module is intended for local and state program administrators. It can be done individually using the facilitator's guide. Groups or teams also will benefit from this module being led by a facilitator using this guide.

Materials

The following materials are recommended for the training module and associated activities:

- Module 3 PowerPoint
- Chart paper
- Copies of Activities 1–4:
  - Activity 1: Opening Self-Reflection
  - Activity 2: Program Evaluation Benefits
  - Activity 3: Using Logic Models
  - Activity 4: Closing Self-Reflection

Time Requirements

The total time required for this module is approximately 60 minutes. You may need to allot additional time for the activities depending on the audience's familiarity with the content.

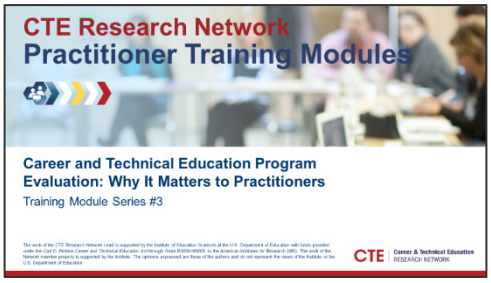
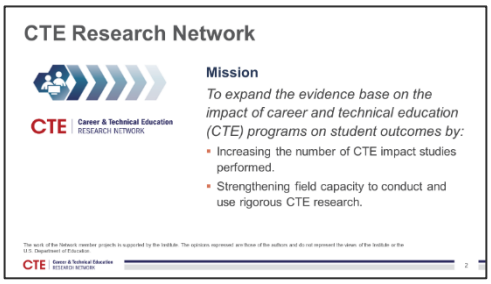
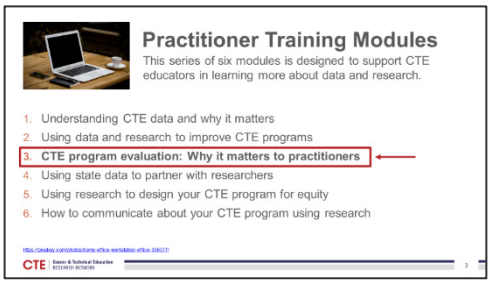
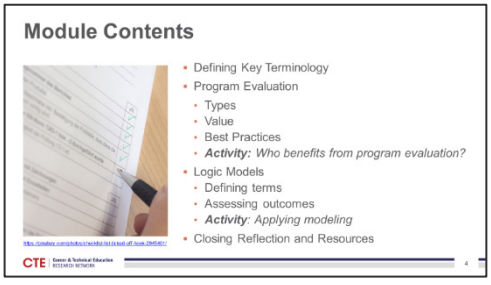
Outline of Module

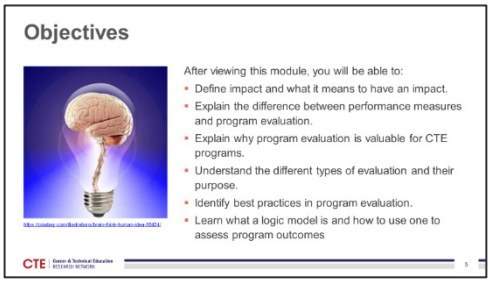
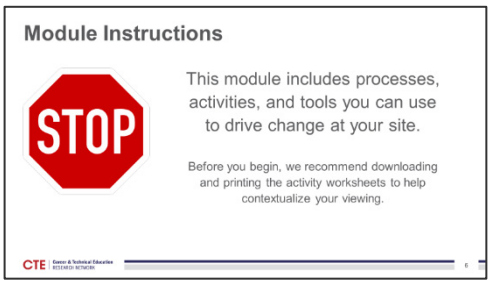
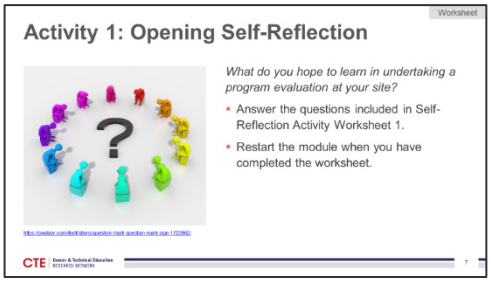
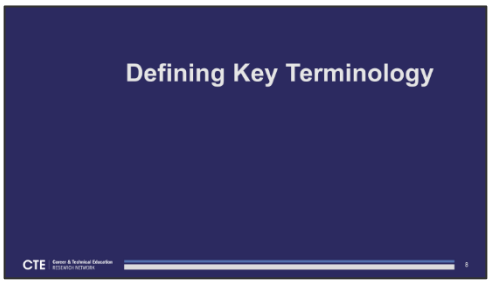
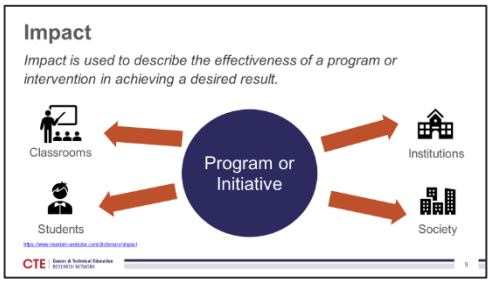
Materials	Activities	Estimated Time
Slide 1	None (cover slide)	As participants arrive (if in-person)
Slides 2–4	Welcome, Introductions, Agenda, and Overview	5 minutes
Slides 5–6	Objectives/Instructions	3 minutes
Slide 7; Activity 1	Opening Self-Reflection Activity	5 minutes
Slides 8–12	Defining Key Terminology	5 minutes
Slide 13	Logic Model	6 minutes
Slides 14–26; Activity 2	Program Evaluation ▪ Types ▪ Value ▪ Performance Measures Versus Program Evaluation ▪ Assessing Impact ▪ Typical Evaluation Designs ▪ Assessing Impact in CTE: Postsecondary ▪ Best Practices in Evaluation ▪ Activity 2: Program Evaluation Benefits	15 minutes
Slides 27–36; Activity 3	Logic Models ▪ The Logic Behind Logic Models ▪ Logic Model Inputs, Activities, Outputs, and Outcomes ▪ Types of Outcomes ▪ Postsecondary and Secondary Examples ▪ Activity 3: Using Logic Models	15 minutes
Slides 37–41; Activity 4	Closing Activity, Resources, and Contact Information	6 minutes
Total Time		**60 minutes**

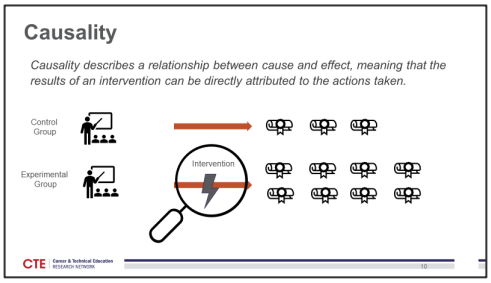
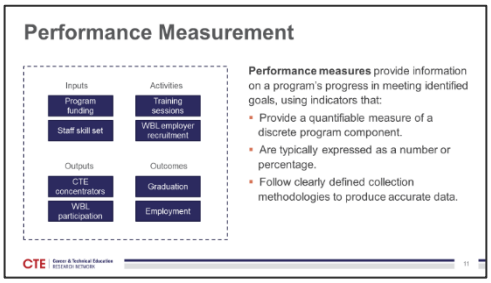
Facilitator's Script/Notes for Module

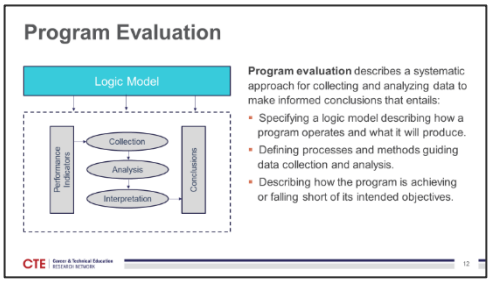
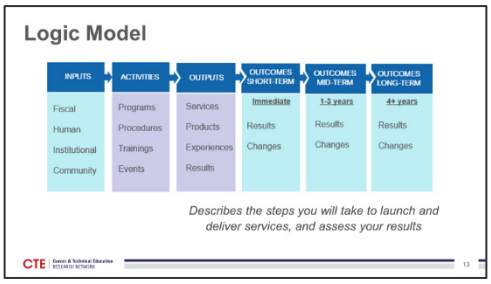
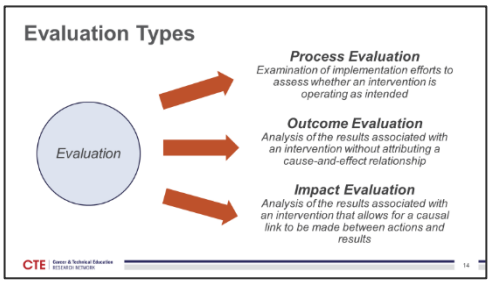
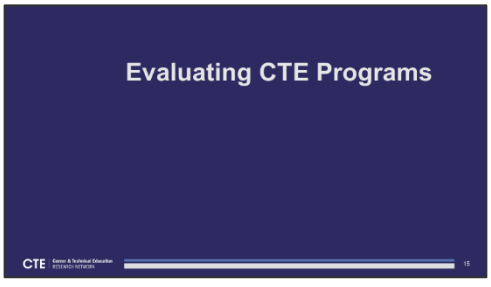
The following section is a slide-by-slide script that provides guidance to facilitators as they present the content and learning activities included in this module. Reviewing the entire guide prior to facilitating the module is highly recommended.

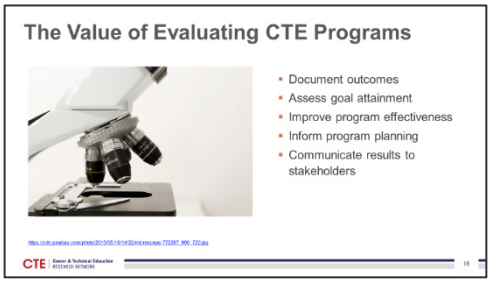
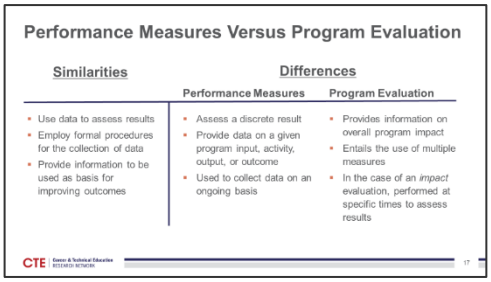
Module 3: CTE Program Evaluation: Why It Matters to Practitioners

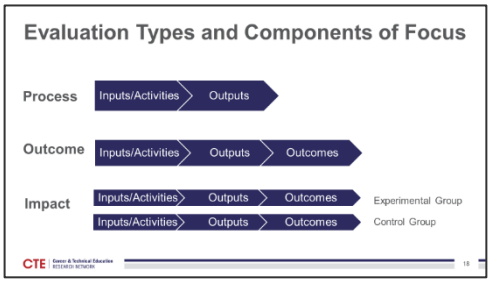
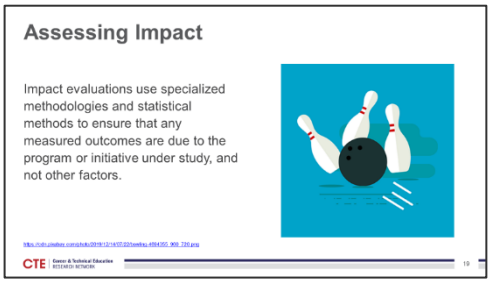
Script and Notes	Slide
Slide 1: High-quality career and technical education, often referred to as CTE, can prepare students to succeed in postsecondary education and careers. This module is designed to support school district and college CTE program administrators in understanding CTE data and how best to use them. *NOTE: This slide is showing when participants arrive if done in-person.*	
Slide 2: The work of the CTE Research Network Lead is supported by the Institute of Education Sciences at the U.S. Department of Education with funds provided under the Carl D. Perkins Career and Technical Education Act through Grant R305N180005 to the American Institutes for Research (AIR). Network activities are directed toward increasing the number of CTE impact studies and strengthening the capacity of the field to conduct and use rigorous CTE research. AIR and its partners—the Association for Career and Technical Education, JFF, and Vanderbilt University—serve as the CTE Research Network Lead.	
Slide 3: The CTE Research Network has developed this series of practitioner training modules to support CTE stakeholders in learning more about how to use data and research to improve CTE programming. Although the modules need not be viewed sequentially, we suggest that you consider doing so if you plan to complete the entire series. This third module in the series is directed toward addressing program evaluation in CTE and why it should matter to practitioners.	
Slide 4: Have you ever wondered why you can have all the right components in place for your CTE programming and yet still are not be able to meet your instructional goals? Program evaluation is a critical tool for assessing whether your program is working and how you can act to improve it. In this module, you will learn about program evaluation and how it can be used to assess educational impacts. You will learn key terminology, understand the different types of evaluations and their value, and consider who benefits when an evaluation is performed. Next, you will learn about logic models and how they are applied to assess outcomes to support program evaluation. The module concludes with an overview of best practices in program evaluation.	

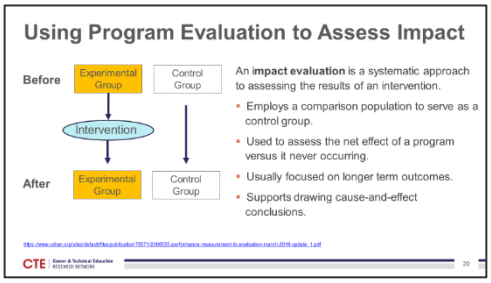
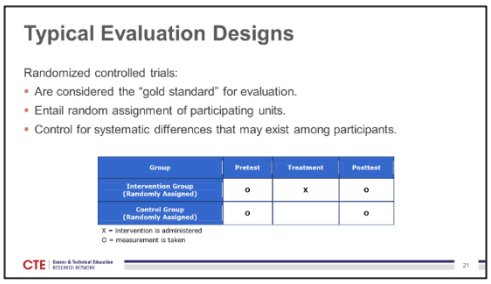
Script and Notes	Slide
Slide 5: Upon completion of this module, you will be able to define educational impact and what it means to have an impact in CTE. You will understand the different performance measures and program evaluations, be able to explain why program evaluation is valuable for CTE programs and understand the different types of evaluations and their purposes. Examples of best practices in program evaluation also will be provided to help you in undertaking your own evaluation efforts. Finally, you will learn what a logic model is and how to use one to assess program outcomes.	
Slide 6: This interactive module is intended to provide you with resources to help you identify the CTE data available at your site. To help contextualize your experience, activities are provided to help you gain an understanding of how you may use the tools provided to implement change. Before you begin viewing, we recommend downloading and printing the activity worksheets so that you may use them to apply your learnings.	
Slide 7: Activity 1: To help frame your module engagement, this activity asks you to consider what you might hope to learn in undertaking a program evaluation at your site. Stop the module and follow the directions on Self-Reflection Activity Worksheet 1. *NOTE: For facilitated in-person professional learning, this opening reflection question activity should be done as a think-pair-share.*	
Slide 8: This module introduces a set of terminology commonly used by CTE researchers. You may wish to download the module glossary that includes these terms, as well as others relating to the use of data and research, to help inform your work.	
Slide 9: Merriam-Webster defines impact as "the force of impression of one thing on another: a significant or major effect." In education evaluation, impact is used to describe the effectiveness of a program or intervention in achieving a desired result. This may be measured in terms of how it affects different groups, which may include students, teachers, classrooms, institutions, or society as a whole. In assessing impact for a given intervention, researchers seek to isolate the effects of external factors that also might affect outcomes. In doing so, it becomes possible to assign causality to an intervention, meaning that the outcomes achieved can be directly attributed to the program or initiative that has been introduced.	

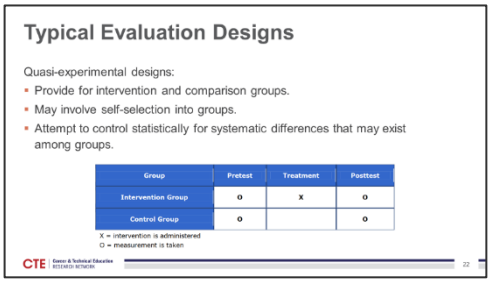
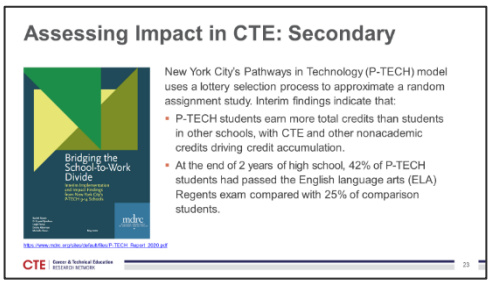
Script and Notes	Slide
Slide 10: Causality is used to describe a relationship between cause and effect, meaning that the results of an education program or initiative can be directly attributed to the actions taken. To make this connection, researchers must use research methods that enable them to compare the outcomes of an intervention with what would have happened had nothing occurred. These research methods require the use of comparison populations, often referred to as "control groups," which are comprised of individuals who are identical or nearly identical to those receiving the intervention. Research methods used to conduct causal research typically include randomized controlled trials, in which individuals are randomly assigned to either an experimental group, which receives an intervention, or a control group, which does not. Where randomization is not possible, researchers use quasi-experimental approaches, which seek to pair individuals in the experimental group with individuals with similar characteristics in sites that do not receive services. These methods are described in more detail below.	
Slide 11: Performance measures are used to gather data that can be used to help evaluate the results of a program or initiative. To do so, educators specify a set of performance indicators to provide information on discrete program components, which are typically expressed in terms of numbers or percentages. These components generally fall into one of four categories: (1) **inputs** describe the resources invested in offering a program or new initiative; (2) **activities** describe the actions taken to effect change; (3) **outputs** describe the immediate results that lay the groundwork for achieving program or initiative goals; and (4) **outcomes** provide information on the short-, middle-, or long-term gains achieved. For example, to assess an intervention to increase student engagement in CTE programs of study, a school district might create indicators to measure the amount of money invested in creating programming or the skill sets of staff as an **input**; the number of training sessions held with educators or students participating in work-based learning as an **activity,** the percentage of students achieving concentrator status or participating in an off-site work-based learning experience as an **output**; and the percentage of students who graduate or who find employment as an **outcome**.	

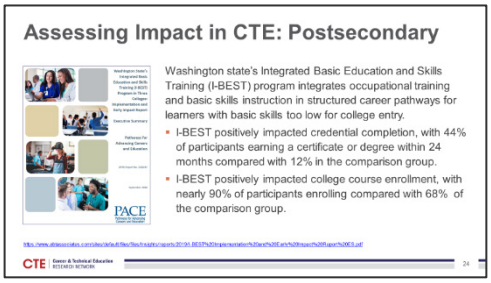
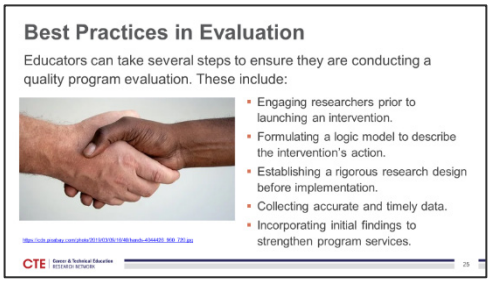
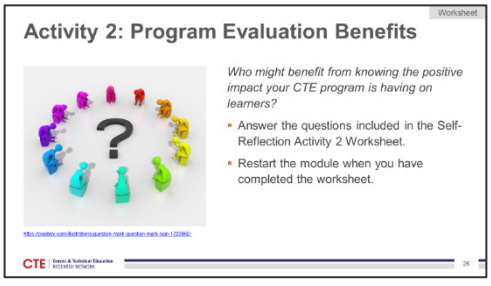
Script and Notes	Slide
Slide 12: Program evaluation describes a systemic approach to using data to make informed conclusions. Evaluations typically are guided by a logic model that specifies the underlying mechanism by which a program or intervention is believed to operate. This model includes the inputs used to support the initiative, activities in which educators engage, and the expected outputs and outcomes of their efforts. Once a logic model is specified, educators can move to identifying a set of performance indicators to assess whether the program or intervention is producing its desired results. These indicators inform the subsequent collection of data, which are then analyzed and interpreted to assist in drawing conclusions about the overall impact of the work. This describes evaluation at the program level, and there are specific types of evaluation to be defined later in this module.	
Slide 13: Logic models tell the story of your intervention. They are designed to simply and succinctly describe the steps you will take to launch and deliver services and assess the results of your actions. They should be research-based. You will want to reference your logic model often as you implement your intervention to make sure you are on the right track. Logic models will be discussed in depth later in this module.	
Slide 14: Not all evaluations are the same: how you can use your results will depend upon the approach you take. Evaluations fall into three categories. **Process evaluations** are directed at understanding the extent to which implementation efforts were successful. Emphasis is placed on assessing how program inputs and activities are carried out as well as any outputs that are achieved. Here, the goal is to assess whether the preconditions necessary for an outcome are achieved. **Outcome evaluations** are focused on assessing results. Although the collection and analysis of data may occur for inputs, activities, and outputs, the goal is to quantify and/or qualify the results achieved. This may include indicators of short-, middle-, or long-term results. However, outcome evaluations do not enable cause-and-effect conclusions to be drawn. **Impact evaluations** also focus on results; however, because of the way they are designed, they allow for a causal link to be made between a program and its subsequent results. Specifically, impact evaluations can be used to assess whether and, if so, to what extent a program or intervention is directly associated with changes in a target population.	
Slide 15: This section describes how evaluation is used to assess impact, the different forms that evaluation can take, and the value that evaluation confers. Program evaluation in CTE is used to assess whether instructional efforts are achieving their desired effects.	

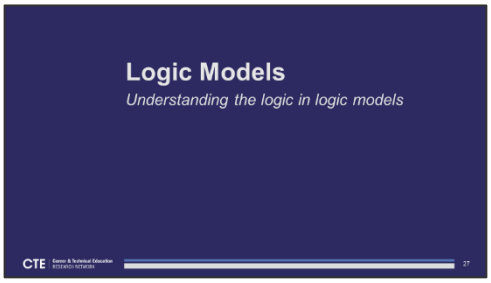
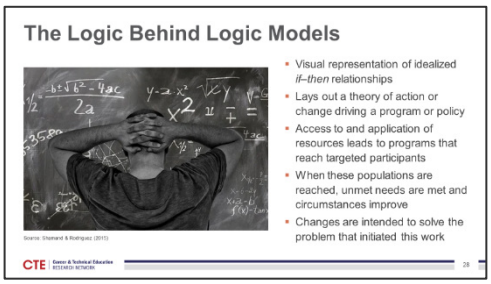
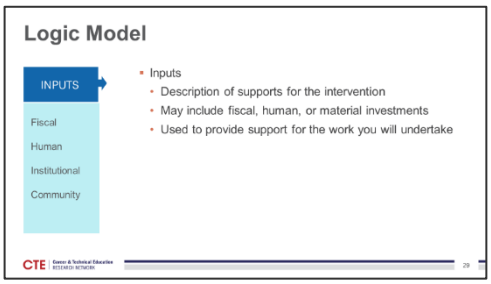
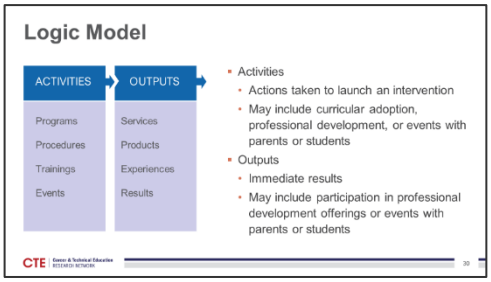
Script and Notes	Slide
Slide 16: Evaluating CTE programs is essential to ensuring high-quality CTE instruction. Educators can use program evaluation results to document the outcomes that students, programs, or schools achieve along a range of dimensions, as well as the extent to which these outcomes are connected to student and other relevant stakeholders' longer-term goals. Findings also can be interpreted to assess program effectiveness and, where results are less than desired, offer insight into changes that might be needed. In addition, findings can help to inform program planning; for example, if an evaluation reveals that the award of industry-recognized credentials leads to higher wages, educators may wish to consider expanding student access to these opportunities. Well-formulated evaluations also can be used to communicate the results of CTE instruction to a range of stakeholders. Evaluations may take many forms, ranging from descriptive studies that describe results to impact studies that can be used to ascribe causality.	
Slide 17: Performance measures and program evaluation are intended to provide information that can be used to assess program results and employ formal procedures that dictate how information is collected and used. Both provide information that can be used to improve outcomes. There are, however, important differences. Performance measures are designed to assess a discrete result. For example, a performance measure might be used to assess the high school graduation rate for students who achieve CTE concentrator status in a district or college CTE program. In contrast, a program evaluation would provide comprehensive information on the overall impact of a program. To evaluate a program, educators employ multiple performance measures to collect data on the inputs, activities, outputs, and outcomes of the program, which may be collected on an ongoing basis to help inform the progress of implementation. In contrast, impact evaluations are typically done at a specific point in time; for example, 6 months following program rollout or at the end of the intervention.	

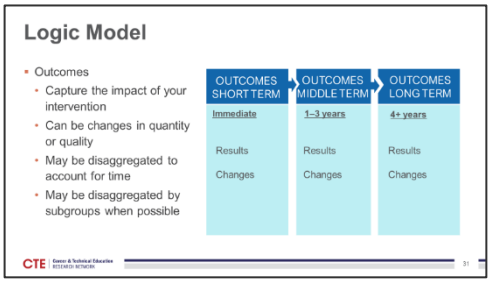
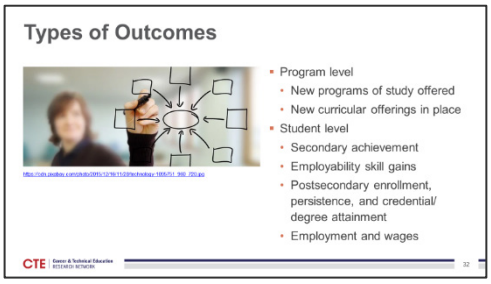
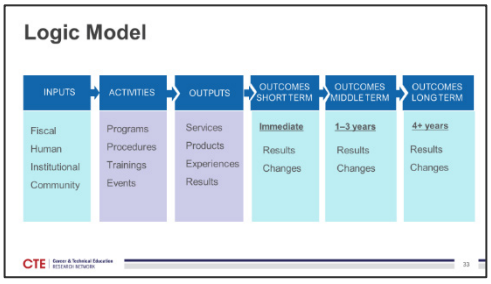
Script and Notes	Slide
Slide 18: Although the purpose of all types of evaluations is to assess outputs and/or outcomes, the components and approach differ. For example, an education institution seeking to increase female completion of science, technology, engineering, and mathematics (STEM) programming might implement a new curricular approach designed to motivate females to persist. However, how the evaluation is designed will determine the conclusions that can be drawn. A **process evaluation** would seek to determine how program inputs and activities are carried out, along with any outputs that are achieved. Here, the goal is to assess whether the preconditions necessary to realize an outcomes exist. In this example, a process evaluation would focus on determining whether the CTE instructors were successful in implementing the new program; for example, by examining the investment and deployment of resources and the fidelity of program adoption. An **outcome evaluation** focuses on results. This type of evaluation can help you to assess the outcomes that are produced based on your inputs, activities, and outputs, though they will not allow you to attribute them to a cause-and-effect relationship. In the case of increasing female participation in STEM programming, you would use an outcome evaluation to assess whether females ultimately persisted in the program; for example, by assessing the number of women who initially enrolled in and then completed the programming. An **impact evaluation** is designed to establish a causal link between a program and subsequent results. Specifically, impact evaluations can be used to assess whether and, if so, to what extent a program or intervention is directly associated with changes in a target population. In this example, an impact evaluation would seek to assess whether the new curricular approach was directly responsible for increases in female completion of STEM programming by comparing results for an experimental group with those of a control group that did not receive services. Ultimately the type of evaluation performed should reflect the needs to be addressed.	
Slide 19: Although all types of evaluations can offer important information to assess programs, an impact evaluation is the most powerful tool you can use because it allows for cause-and-effect relationships to be established. Causality is determined by examining the changes that can be directly attributed to a program or intervention, inclusive of those intended and unintended. To allow for this determination to be made, impact evaluations use specialized methodologies and statistical methods to ensure that any measured outcomes are due to the program or initiative under study, and not other factors. This permits researchers to be able to assign causality to an intervention, meaning that they can accurately assess whether the results achieved can be directly attributed to the actions taken. In CTE, impact can be used to describe the effect of a student participating in CTE programming relative to one who is not.	

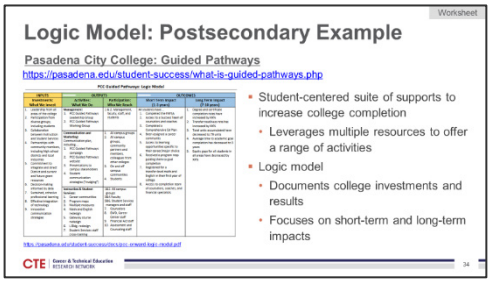
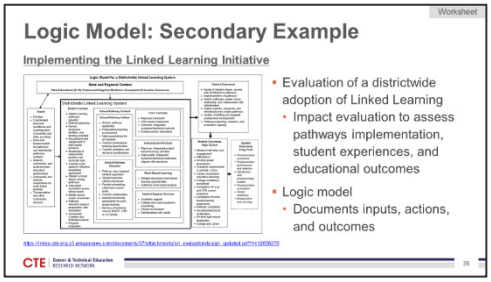
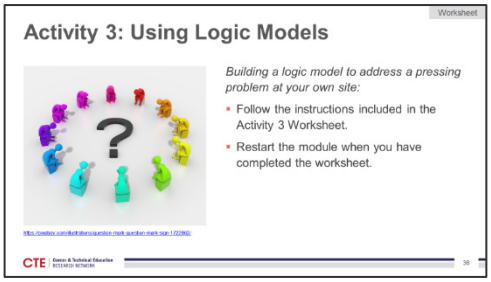
Script and Notes	Slide
Slide 20: An **impact evaluation** is intended to provide information on the net effect of a program; that is, it is intended to assess the results of an intervention relative to what would have happened if no action had been taken. This approach provides for the identification of both a treatment and control group for which the same data are collected. This allows for the results of the intervention on the experimental group to be assessed relative to those of the control group that does not receive services. These groups must be of sufficient size to provide statistical precision, with the number of individuals determined by the type of intervention, site conditions, and type of analysis that is to be performed. Impact evaluations typically are focused on longer term outcomes; for example, changes in the number of students who achieve CTE concentrator status or employment outcomes after graduation. Consequently, an impact evaluation supports educators in drawing conclusions and making cause-and-effect statements as to whether the results observed from an intervention can be directly attributed to it.	
Slide 21: In designing program evaluations, researchers seek to use study methods that will enable them to establish clear linkages between cause and effect. **Randomized controlled trials** are considered the "gold standard" in evaluation because they randomize student participation in a given intervention. For example, as CTE is typically offered as elective coursework, students who choose to participate may have personal characteristics or attributes that predispose them to enroll. This may introduce bias if these individuals are systematically different from other students. Random assignment of students to an intervention prior to its introduction can help control for this bias. Although theoretically practical, in real life, random assignment of students into CTE programming is impractical. Consequently, researchers often look for alternatives that approximate this condition; for example, by studying CTE programs that are oversubscribed and that use lotteries to randomly select student participants. http://www.eblcprograms.org/docs/pdfs/NREPP_Non-researchers_guide_to_eval.pdf	

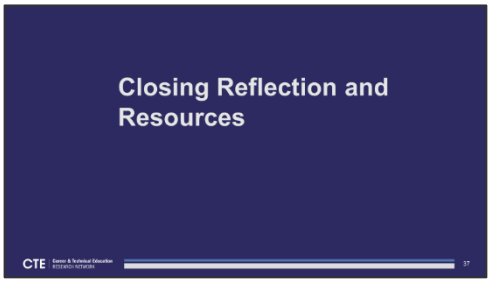
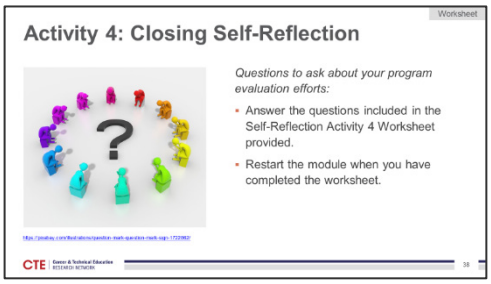
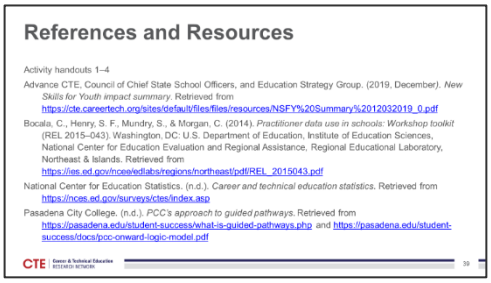
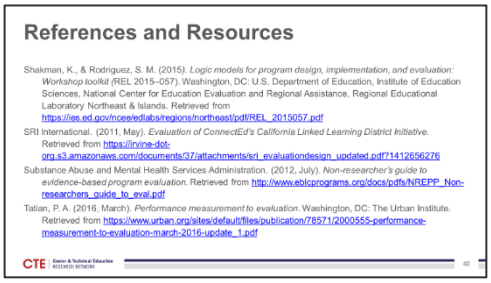
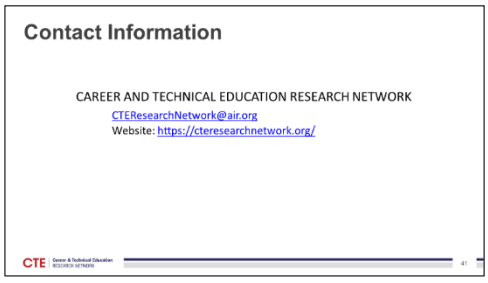
Script and Notes	Slide
Slide 22: When randomization is not possible, researchers seek to use **quasi-experimental designs** to remove some of the bias associated with participant selection. Here, intervention and control groups are identified with an effort made to find individuals who share one or more characteristics; for example, gender, race/ethnicity, socioeconomic status, and/or prior school performance. Although students still can self-select into programming, matching participants with nonparticipants, or using statistical methods to control for differences between the two groups, is intended to help control for some level of bias. Although not as rigorous as a randomized controlled trial, a well-defined quasi-experimental design can allow for some level of causality to be attributed. The more information that can be used to control statistically for systematic differences among groups, the more rigor that can be attributed to an evaluation.	
Slide 23: One way to assess impact is to compare how students participating in programs employing CTE as an instructional approach compare with students similar to those who were not enrolled. New York City's P-TECH 9-14 model is an innovative approach that partners a high school, a local community college, and one or more employers to prepare youth for college and careers. Programming starts in ninth grade and, in addition to accelerated high school course work, includes college visits and coursework with career exposure, including site visits and work-based learning. Students are selected to participate via an admissions lottery that approximates a random assignment study. As more students apply to the program than openings exist, the evaluation compares students who applied and randomly won the lottery with those who applied and randomly lost the lottery. Interim findings from an impact study reveal that P-TECH students earn more total credits than students in other schools, with CTE and other nonacademic credits in work-based learning, technology, engineering, and human service subjects driving credit accumulation. At the end of 2 years of high school, 42% of P-TECH students had passed the English language arts Regents exam compared with 25% of comparison students, indicating that more P-TECH students were eligible to dual enroll in City University of New York coursework in earlier years than their comparison-group counterparts.	

Script and Notes	Slide
Slide 24: Similarly, at the postsecondary level, impact studies may be used to assess outcomes for learners in programs utilizing CTE principles to frame instruction. For example, Washington state's Integrated Basic Education and Skills Training program, I-BEST, combines occupational training with basic skills instruction, offered in a structured career pathway for students who have basic skills levels too low for college entry. Without I-BEST, students would first have to enroll in Adult Basic Education or English as a second language classes to raise their basic skills. An impact study of three community colleges utilizing I-BEST indicates that among students randomly assigned to the program, I-BEST had a positive impact on the number of academic and workforce credits earned, with participants earning 13 more academic and workforce credits than comparison students. I-BEST also increased completion rates for program participants, with 44% of participants earning a college certificate or degree within 24 months compared with 12% of those in the control group. College course enrollment also was positively impacted, with nearly 90% of participants enrolling compared with 68% of the comparison group.	
Slide 25: Although conceptually simple to understand, designing and launching a high-quality evaluation can be a complicated process, particularly if the goal is to use results to drive change. For this reason, educators should consider taking the following steps to ensure their evaluation produces useful information. One first step is to approach evaluation as a collaborative experience: Educators and researchers should partner prior to launching an intervention to ensure that project outcomes can be measured. The mechanism for how the intervention will proceed also should be documented in a logic model, profiled later in this module, to clarify the relationships between actions and results. Once an approach is identified, the two parties should consult to establish a rigorous research design to provide accurate information and collaborate to collect accurate and timely data. Finally, steps should be taken to incorporate initial evaluation findings into the intervention to strengthen program services. Program evaluation should be an integral part of every CTE program, and evaluation considerations need to occur early in the program design phase and prior to the implementation phase.	
Slide 26: If your district or college is currently offering CTE programming, you may already have access to a range of data. This activity will help you to think about the types of data your program could have, or is already collecting, to assess CTE program operations and outcomes. Stop the module and follow the directions on Self-Reflection Activity 2 Worksheet. *NOTE: For facilitated in-person professional learning, this opening reflection question activity should be done as a 15-minute think-pair-share.*	

Script and Notes	Slide
Slide 27: Logic models tell a story. They are designed to help educators and researchers visually illustrate how an intervention is expected to lead to a set of desired outcomes. They do so by clearly and logically describing the relationships that exist between the investments you make, the actions you take, and the results you achieve.	
Slide 28: A logic model is a visual representation of the underlying theory of action or logic guiding the design and implementation of a program or policy. It is expressed as a series of idealized if-then relationships that describe the connections between action taken and results achieved. These relationships are expressed in terms of the application of resources that lead to the development of services, which in turn lead to programs or interventions that reach targeted participants. When these populations are served, unmet needs are met and situations change, which lead to the solution of the problem that initiated this work.	
Slide 29: The first step in specifying a logic model entails identifying the i**nputs**, or resources, that are needed to carry out your work. This may include a range of factors, including financial investments made in support of your programming, staff to be engaged, and any institutional or community assets you will harness. For example, if an activity is to design and deliver professional development experiences to help CTE instructors integrate industry certifications into their programming, then an input might be the budget set aside for it and the expertise of designers and facilitators.	
Slide 30: Inputs are used to support a**ctivities**. This is the actual work you will do to execute your intervention. These may include the programming or procedures used to carry out your intervention, professional training offered to teachers, or events and meetings with participating students and parents. The next step in developing a logic model is defining what it is you hope to accomplish. **Outputs** describe the things your activities produce. For example, if an activity is to design and deliver professional development experiences to help CTE instructors integrate industry certifications into their programming, then an output might be the number of training activities held and/or the number of instructors who successfully completed the training. In some instances, logic models group together activities and outputs under outputs. Note that in some instances, logic models group together activities and outputs.	

Script and Notes	Slide
Slide 31: The last step in developing a logic model is defining what it is you hope to accomplish. **Outcomes** describe the results or changes that your intervention intends to produce. Typically, this entails quantifying or qualifying the benefits of your intervention. The outcomes should be driven by the research—using the literature as a foundation for what outcomes to expect. Because students participating in CTE programming often must complete years of coursework, it is a good idea to consider short-, medium- and long-term outcomes to account for the time it will take to realize them. It also may be necessary to disaggregate by subgroups whenever possible if you expect different results for subpopulations. Returning to our example of industry certifications, a short-term outcome might be an increase in students earning new industry-recognized certifications that are integrated into existing CTE programming at the end of the first year of the intervention. A middle-term outcome might be an increase in students earning a certification within 3 years, and a long-term outcome might be an increase in graduates finding employment within a given field. Note that the amount of time that counts as short-, middle-, and long-term will vary depending on the horizon of the program. One program may target high school students' high school outcomes, and another may target high school students' postsecondary outcomes. In the first example, short-term outcomes may be immediate, middle-term outcomes may be within 2 years, and long-term outcomes may be within 4–5 years. In the second example, short-term outcomes may be immediate, middle-term outcomes may be 4–5 years, and long-term outcomes may be within 6–10 years.	
Slide 32: The outcomes you specify in your logic model may vary depending upon the purposes you hope to achieve. Many outcomes can be described as occurring at the program or student level. Program-level documents systems-level information relating to how CTE is offered. For example, outcomes might relate to expanded CTE programs of study or new CTE instructional curricula, such as simulated work-based learning. Student-level outcomes capture how your intervention affects students' lives. Here, outcomes could include secondary achievement, employability skill gains, and rates of postsecondary enrollment, persistence, and credential or degree attainment. Given the contribution that CTE can make to career development, there also can be workforce outcomes, such as students' postprogram employment and wages.	
Slide 33: In summary, a logic model clearly and succinctly communicates the rationale underlying your intervention. It is used to help individuals understand why they are acting and what they hope to achieve. It summarizes the resources you will invest and actions you will take to deliver services as well as the intended results of your activities and the short-, middle-, or long-tern outcomes you aim to achieve.	

Script and Notes	Slide
Slide 34: Logic models are routinely used by researchers to ground their program evaluations. Perhaps the simplest way of understanding them is to see how they are used in practice. For example, Pasadena City College (PCC) offers students guided pathways to structure their college experience. Guided pathways include a suite of student-centered supports, such as program maps with semester-by-semester course sequences, career assessment and guidance, and support services to help students overcome barriers to their success. To illustrate the logic of this approach, the college has developed a logic model that illustrates the inputs, outputs, and impacts of this work. We recommend visiting the college's webpage to learn more about guided pathways programing and opening the PCC Guided Pathways Logic Model to see how these resources are hypothesized to connect.	
Slide 35: Here, we show a more complete example of a secondary logic model. To assess ConnectEd's California Linked Learning District Initiative, SRI International conducted a rigorous impact evaluation to evaluate the results of the initiative's adoption in nine districts. To ground their work, researchers developed a logic model to document how the Linked Learning approach was introduced within participating sites, its core components, and the district and student outcomes hypothesized to result. We recommend following the link to the study report for an excellent illustration of how a logic model can be used to document the rationale for a study. Not all logic models need to look this complex, but they do need to include inputs, activities, and outcomes.	
Slide 36: Logic models are used to visually display the rationale and components of a proposed intervention. This activity will help you to understand how to develop a logic model to address a pressing issue at your own site. Stop the module here and follow the instructions contained in Activity 3. *NOTE: For facilitated in-person professional learning, this activity should be done as a 20-minute group activity. Provide teams 15 minutes to begin crafting their logic model and, as a concluding activity, ask members to share their work. Prompt the group to share the stumbling blocks they encountered and how they overcame them.*	

Script and Notes	Slide
Slides 37–41: References, Resources, and Contact Information *Review resources and final slide with contact information.* *Thank participants for attending.*	    

References and Resources

Institute of Education Sciences. (n.d.). What Works Clearinghouse. https://ies.ed.gov/ncee/wwc

Michigan Department of Education. (2019). *Michigan career and technical education 2018-2019 facts.* https://www.michigan.gov/documents/mde/CTE_Fact_Brochure_201920_online_ADA_687807_7.pdf

Santa Ana Unified School District. (2020). *Career technical education: Preparing all students for success in college and career.* https://www.sausd.us/cte

The College System of Tennessee, Office of Policy and Strategy. (n.d.)..*Data and research*. https://www.tbr.edu/policy-strategy/data-and-research

U.S. Department of Health and Human Services. (2020). Pathways to Work Evidence Clearinghouse. https://pathwaystowork.acf.hhs.gov/

Activity Handouts 1–3