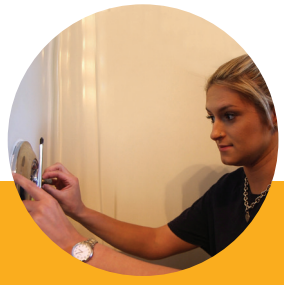
CTE STEM Digital Resource Study *Guide*



Welcome!

The CTE STEM Digital Resource Study is a new study that aims to understand the potential impact of **new digital tools** with middle-grade students. The tools have been developed for school counselors, career mentors, and other professionals to help get students excited about CTE STEM and future careers.

The goal of the digital tools is to present CTE STEM in an exciting, interactive way that will help transform young people's perceptions of career and technical education. By using the tools, users can cultivate middle school students' self-efficacy and awareness that these career paths are possible (and desirable).

The study is being conducted by the **Education Development Center (EDC)**, a nonprofit education research organization. The digital resources have been developed by **WGBH**, America's preeminent public broadcaster. WGBH is the largest producer of PBS content for TV and the Web, and is a national leader in the development of educational media.

About the Digital Tools

There are **three** digital tools that you will be testing over a four-week time period:

CAREER STORIES

This tool is designed to let school counselors, career mentors, and others working with young people document, organize, and share the trajectory of their own CTE career path in a fun and engaging way. The tool also contains a database of additional profiles of other CTE STEM professionals. Users upload photos, videos, anecdotes, and other details to a template to create a "history" of their career path and what led them to a STEM-related, skill-based career. The template is then stored in a database connected to the tool.

For students, the **Career Stories** tool will help them see how personal interests, family life, and influences can lead to choosing a field of study, and, in turn, how that education can be applied to numerous jobs in the real world.

CTE EXPLORATION

This multimedia tool combines full-screen video and engaging content galleries, all aimed at providing students with exciting information about CTE and STEM. The content ranges from success stories, to connecting hobbies with careers, to describing how CTE STEM jobs are making the world a better place. Animated video, gifs, and interviews with CTE students all help counteract any preconceptions previously associated with CTE.

COMMUNICATION COACH

This interactive video tool, to be used by adults working with students, offers effective ways to communicate with middle school-aged students. The video simulation allows the user to choose between conversation topics and watch different scenarios play out on screen between an adult and a student.

In addition to troubleshooting communication pitfalls that commonly occur between adults and middle schoolers, this tool is a dynamic way for new school counselors to learn communication tips, for experienced counselors to hone their interpersonal skills, and for career mentors to understand how to work with this age group.

YOU CAN USE THE TOOL:

- To sharpen individual skills in talking about CTE STEM with students
- As a professional development tool for incoming school counselors
- To prep career mentors, parents, or other professionals who come to school to speak about their careers

Before the study begins, consider using the **Communication Coach** tool on your own. Use the **Learning Log** at the end of this document to record your reflections as you navigate through the tool.

Lesson Plan

To help you utilize the digital tools, **we have provided a sample 4-week lesson plan to use with a group of middle-school students who meet regularly.** The lesson plan also weaves the tools into a larger discussion of CTE STEM.

Feel free to adapt it to your needs and those of your students. Note that the plan is based on **four, 45- to 60-minute sessions**, which can be easily condensed or extended, depending on the time you have and material you'd like to cover.

Equipment: The tools are web-based so you'll need an Internet connection. If students have their own tablets or laptops, they can watch separately or in pairs.

Week 1, Session 1 What Is CTE STEM?

5–10 MINUTES

During the first session, introduce students to the term "CTE STEM."

Explain that "CTE" stands for "Career and Technical Education."

- CTE programs prepare young adults for wide range of high-wage, high-skill, and high-demand careers by combining hands-on learning with academic learning.
- CTE programs are offered at many high schools and technical schools, and students can choose these programs as a way to complete their high school diploma.[1]

"STEM" refers to a strand of jobs and careers within CTE that are STEM-related (**S**cience **T**echnology, **E**ngineering, and **M**ath).

Ask students what they already know about STEM and CTE and write their responses on the board. (Save a copy of their responses for later.)

- What ideas do they have about these terms?
- Who tends to participate in CTE STEM?
- What skills or knowledge do you need for a STEM job?

1 You can find more information on CTE, including the history of the term and current statistics, at www.acteonline.org.

40–50 MINUTES

Use the **CTE Exploration** tool for the remainder of the lesson.

- **Have students watch the first chapter,** "CTE Introduction," together as a class.
- **Have students pair up and discuss** their out-of-school time activities and interests with a fellow student. Give them paper to write down their lists.
- **Bring the class back together** and play the "Hands-On Learning" and "Do What You Love" chapters. Prompt students to go back to their lists. What hobbies and interests of theirs might be related to CTE STEM careers? Give them time to think and list some careers they might like to pursue.
- **Ask a few volunteers** to share their lists to help guide a discussion on translating interests and hobbies into careers.

Week 2, Session 2 Ready to Change the World?

5–10 MINUTES

Discuss with students the importance of CTE STEM careers and their impact in today's world. Highlight any interesting statistical information about CTE STEM. Explain that the United States is currently experiencing a "skills gap," which means there are more jobs available than skilled workers to fill them. There are many jobs in CTE STEM for those who qualify.

40–50 MINUTES

Continue using the **CTE Exploration** tool:

- **Watch the "Building a Better World" chapter together.** Ask students to jot down their ideas on how CTE STEM is building a better world.
- **Watch the "Success Stories" segment together.** Ask students which of the stories were most compelling and which were surprising. Have them explain their answers.
- **Have students return to the lists they created during the first session.** Have them pair up again (same or different pairs) and talk about their lists together. What success stories may be theirs someday? How might the careers they are interested in contribute to a better world?
- Have volunteers share their future "success stories."

Optional: If time allows, show one of the stories from **Career Stories** tool. These real-life stories will help keep students engaged and intrigued.

Week 3, Session 3 Choosing a CTE Pathway

15–20 MINUTES

Provide students with details on choosing a CTE program (or "pathway"). Prior to class, gather specific information on the CTE programs available to them (local school options, how to apply, etc.). Present the options and answer any questions they may have during class.

30–40 MINUTES

Use the remaining chapters of the **CTE Exploration** tool. Choose one or more of the following chapters:

- **"Career Directions"** — learn more about the "career clusters" of CTE
- **"Challenge Yourself"**— learn how students in CTE programs compete in national conferences
- **"Your Future"**— hear first-hand accounts from students who've chosen a CTE pathway

After viewing the segments, ask students to talk about what they find appealing about choosing a CTE Pathway, and what they don't. Address their concerns and questions.

Week 4, Session 4 People of CTE STEM

45–60 MINUTES

Use the **Career Stories** tool to help students become acquainted with people who've pursued STEM-related CTE careers.

- **Scroll down to the "Meet STEM CTE Professionals" section** and tour the profiles. After you have reviewed several of the profiles with students, ask:
  - *What are some similarities across the career stories?*
  - *Which stories stood out to you? Why?*
- **Have students create their own "career story"** by filling out the "My Career Story" template found at the end of this document. Ask a few students to share their career story with the class.
- **Revisit students' ideas about STEM CTE from Week 1.** Remind the class of their original comments and discuss how they may have changed:
  - *A few weeks ago, you thought CTE was [take ideas from notes]. What new information have you learned? Have your opinions or ideas changed? If so, how?*
  - *Which CTE STEM careers might you be interested in? Why?*
  - *What CTE programs are available to you?*

Additional Ideas

In addition to using the tools on a regular basis over four weeks, we encourage you to find new and different ways to use the tools. Here are some ideas to get you started:

- **Create a short extension unit on careers in a related science class.** For example, if students are studying earth's resources, you could create a lesson around the video profile of Dan Sweeney (an engineer who has turns farm waste into energy) that appears in the **CTE Exploration** tool.
- **Use the Career Stories tool to support a "career day" event at your school.** Have guest speakers (parents, professionals) use the tool to create an engaging visual storyline of their career path to present to students.
- **Invite school staff to use the Career Stories tool.** Staff who have come from CTE career pathways can use the tool to create their own career storyline to add to the database of profiles. Feature one or more of these profiles in a display, presentation, or school assembly program.

This material is based upon work supported by the National Science Foundation under Grant No. DRL- 1513284. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Middle Grade Career Mentors is a project of WGBH Boston

Major Funding is provided by the National Science Foundation.

Communication Coach Learning Log

Before you begin working with students, watch each chapter and answer the prompts to record your reflections. After you work with students, we suggest watching the videos again and adding to the log.

Key Takeaways

- Use information you already know to break the ice
- Motivate students to share their interests
- Connect over common interests
- Talk about yourself to encourage students to open up
- Help students understand the wide variety of pathways available to them
- To explain CTE, connect the curriculum at local schools to their interests
- Keep it simple!

Breaking the Ice

Consider the strategies that you can use to "break the ice" with middle school students. What are some methods you already use? What **new** methods could you introduce?

Interests Outside the Classroom

Motivating students to open up and share their interests can be challenging. How can you help students feel comfortable sharing their interests?

Exploring Academic Interests

You just heard about ways to facilitate a conversation with students about their academic interests. What methods do you already use? What **new** methods could you introduce?

Expectations for High School and Beyond

There are many factors that can influence students' perceptions of their futures. What are some ways you can help expand students' vision of their futures?

Introducing CTE/STEM

Connecting students' interests to careers in CTE STEM is key in helping them choose this path. Where can you research CTE STEM careers before meeting with students?

Your Career and CTE Pathway

Middle school students respond best to communication that is simple and informal. What are some ways you can "keep it simple"?

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My Career Story

EDUCATION

JOBS

INTERESTS

CHALLENGES

SUCCESSES

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