

The background of the slide features a photograph of three construction workers. They are wearing white hard hats and safety glasses. The worker in the center is in sharp focus, looking slightly to the right. The workers on either side are slightly out of focus. The entire image is overlaid with a semi-transparent dark blue filter.

Using AI to Develop Authentic Workplace Scenarios for Contextual Learning in CTE

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Real-world Scenario criteria

- Contain fact-based stories provided by local companies, modified from news headlines, or invented (must be plausible)
- Provide the real-world context in which the lesson/project takes place
- Prepare students to examine a complex situation
- Illustrate the need for using an integrated, multi-disciplinary instructional approach

Why Use Scenarios?

- Provide “instant” lesson context
- Facilitate development of lessons that meet employer/workforce needs
- Engage students in learning
- Scenario-based instruction helps students see how a broad, versatile skill set will be important to their futures

Activity: Rate the Scenario

Good, Bad, or Indifferent?

1. What is the real-world context?
2. What is the complex problem being addressed?
3. How are multiple skill areas required for solving the problem?
4. Can this scenario be improved?

| Scenario 1

USED AS A PROBLEM

A manufacturing facility had problems with consistent equipment breakdowns causing assembly lines to stop working. The equipment was overheating, vibrating, and losing electrical connectivity. The maintenance technicians would find the problems but only after the assembly line broke down. The company was losing money on a weekly basis. The plant manager asked Cynthia, a production technician, to find a solution. After a few days. . .

STUDENTS **DEVELOP THE SOLUTION**

Cynthia reported to her manager she found a solution using IoT. Cynthia's plan was to install IoT devices to monitor the part of the assembly line that was breaking down. The IoT devices were attached to the motors, conveyor belts and electrical systems, and then connected to a central monitoring system. The central monitoring system allowed the maintenance technician to identify and repair parts that were going bad before they failed and shut down an assembly line.

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Scenario 2

USED AS AN ILLUSTRATION/EXAMPLE

Evan Garcia is a technician for Green Mountain Power Company. He is responsible for tracking increased system outages over time across a metropolitan network, collects outage statistics, including system logs, environmental information, and helpdesk ticket details from network nodes and service centers in order to determine the cause. Evan stores the data in an Excel workbook, then imports data into SAS, Tableau, or MS Power BI visualization tools and creates a dashboard to present to management. The data dashboard provides an interactive geographical heat map showing outage details and other graphical representations of his data analysis of the event. The heat map allows management to make real-time decisions and troubleshoot problems.

| Consider...

Are you using
scenarios?

What purpose do they
serve in your lessons?



Have local employers
helped you develop
them?

What other sources are
you using for
authenticity?

| Scenario-writing Jumpstart:

Use generative AI to develop cross-disciplinary scenarios when you want to show how academic or technical skills from one discipline are applied in another discipline/field.

CREATE PROMPT WITH PRECISE
PARAMETERS

1. # SCENARIOS (1-3)
2. POTENTIAL REAL WORKPLACE SITUATION
3. LEVEL OF WORK
4. JOB POSITION
5. CTE FIELD/INDUSTRY SECTOR
6. CROSS-DISCIPLINARY SKILL TO BE DEMONSTRATED
7. PURPOSE/DESIRED OUTCOME

| Resulting ChatGPT Prompt:

Write three¹ real world² scenarios for entry-level³ technicians⁴ in cybersecurity⁵ using computational thinking⁶ to solve a problem in the workplace⁷.

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ChatGPT response:

Sure, here are real-world scenarios for entry-level technicians in cybersecurity that require the application of computational thinking to solve workplace problems:

Example Scenario generated with the prompt



Cybersecurity using the cross-disciplinary skill Computational Thinking

You're an entry-level cybersecurity analyst in a financial institution. A series of security breaches has occurred, and you must identify vulnerabilities in the network. You employ computational thinking to analyze log files, conduct threat modeling, and develop security patches to prevent future breaches.

Example Scenario generated with the prompt



Energy Scenario using the cross-disciplinary skill Computational Thinking

You work for an energy company aiming to optimize power distribution. Using computational thinking, you analyze energy consumption patterns, weather forecasts, and grid data to develop algorithms that help distribute electricity efficiently, reducing waste and costs.

Replacing “computational thinking” with the cross-disciplinary skill set “AI” in the same kind of prompt

- **Nanotech/Manufacturing/Semiconductor Scenario:** An entry-level technician in micro/nanotechnology is involved in manufacturing semiconductor devices. They use AI-powered process control systems to monitor and adjust manufacturing parameters in real-time, ensuring consistent quality and high yields. This helps accelerate the production process and reduce manufacturing costs.
- **Environmental Technologies Scenario:** An entry-level technician in environmental technologies is tasked with monitoring air quality in a city. They use AI-powered sensor networks to collect real-time data on pollutants such as particulate matter and nitrogen oxides. This data is then analyzed to identify sources of pollution and inform policy decisions aimed at improving air quality and public health.

Activity: Try it!

1. Select an AI tool to help you
2. Create and input the prompt to generate a scenario starter
3. Evaluate the responses
4. Repeat, if needed
5. Select the best one and share the prompt and response with the group

Your Scenario Starter Should...

1. Provide a *realistic* story that situates the problem/lesson in the technology workplace (e.g. advanced manufacturing, ag/biotech, IT, energy, environmental, engineering, geospatial, etc.)
2. Require a *cross-disciplinary* approach integrating at least one of the prioritized skill sets
3. Ask students to examine a complex situation and *think critically* to address an issue or resolve a problem.