

Team-Based Challenge Library

Overview and Guidance

Authentic Problem

Authentic Problems are problems characterized by their connection to genuine situations, contexts, or dilemmas that people encounter in everyday life or professional practice. These problems are often open-ended, and complex, and may not have a single correct solution.

Authentic Problems:

- Encourage critical thinking skills
- Allow for student voice and choice
- Require students to “ask more questions”
- Follow various processes that may allow their products to look differently
- Work with a career expert (not their classroom teacher)
- Encourages teamwork and individual student self-motivation

Competencies

Competencies are one of the most important aspects of the development of a Team-Based Challenge. Competencies are the “glue” of the challenge, connecting the Authentic Problem, Industry Partner, and Solution Products in a way that highlights the skills that students walk away with from the challenge. Competencies are hyper focused, meaning that one or two competencies at most should be utilized to drive the challenge.

Industry Partner

Community and Industry Partners provide support through various forms of feedback to student Solution Products. The partner would ideally provide support through all aspects of the challenge; however, the most important part is that they interact and provide feedback to students.

Solution Product(s)

Solutions Products are products that provide answers to the Authentic Problems. Some problems have multiples questions that arise that students will try to answer. Students determine the level and depth of knowledge by which they answer the questions through their Solution Products.

Feel free to use these samples as a guide or example and make changes as needed to encourage innovation. Make these your own. Choose the format for your students that matches your community's needs.



Authentic Problem

Farming equipment sales managers are routinely provided with customer profiles for farmers who purchase soil cultivators. The profiles are provided to managers to better meet the needs of their customers and ultimately increase sales. As a team of managers, your goal is to develop a sales plan that addresses various customer profiles using common marketing principles (4 P's or 7 P's).

Technical Competencies and Essential Employability Competencies

- Research and Innovation
- Planning and Organizing

Industry Partner

- Marketing expert
- Farm equipment company
- Farm Bureau

Solution Product(s) and More Examples

- Brochure
- Marketing Pitch ("Shark-Tank" style)
- Sales and Market Research Proposal

Other Considerations

Feel free to replace soil cultivators with various farm equipment (plows, tractors, balers, irrigation equipment) into the Authentic Problem that students can use to market the items.

Reference the corresponding [Team-Based Challenge Companion](#) for Agriculture, Food, and Natural Resources to find additional resources that can impact instructional practices.



Authentic Problem

Drastic weather conditions related to global climate change along with other environmental factors have increased localized fungi in farmers' corn crops. As members of the local Farm Bureau, develop a "plan of attack" against the fungi spread, while limiting the environmental impact to local flora and fauna.

Technical Competencies and Essential Employability Competencies

- Ethical Production
- Problem Solving

Industry Partner

- Farm Bureau
- Chemical Industry experts
- University of IL - Extension
- Plant and Fungi Experts

Solution Product(s) and More Examples

- Website/webpage
- YouTube Video
- Public Service Announcement
- Timeline (of spread of fungi and expected challenges)

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Agriculture, Food, and Natural Resources to find additional resources that can impact instructional practices.



Authentic Problem

Each year, students from FFA host an annual Petting Zoo. Common problems arise when various animals encounter each other and/or are near certain booths at the fair. As a team of biologists or veterinary pathologists, design a logistics plan to address common issues that impact risk management.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Health, Safety, and Compliance
- Decision Making

Industry Partner

- Biologists/Zoologist from the local Community College, College, or University
- Veterinarian
- Cattle Farmer
- Risk Management Specialists

[Solution Product\(s\)](#) and More Examples

- Floor plan of the fair
- Field guide or Brochure
- Risk Management Guide
- Plan Proposal

Other Considerations

Feel free to approach the problem through a biosecurity and/or animal welfare lens.

“As a team of biologists or veterinary pathologists, design a logistics plan to address common issues that impact risk management, biosecurity, and/or animal welfare.”

Reference the corresponding [Team-Based Challenge Companion](#) for Agriculture, Food, and Natural Resources to find additional resources that can impact instructional practices.

ARTS & COMMUNICATIONS

Authentic Problem

A new Walmart development is being proposed on the edge of the downtown district. The community has mixed feelings about whether this is a positive or negative event. As a team of reporters, create an unbiased news narrative that includes the 4 W's (Who, What, Where, When).

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Investigation and Research
- Communication

Industry Partner

- News station (TV)
- Radio
- Newspaper
- School of Journalism
- Attorney (libel and slander)

[Solution Product\(s\)](#) and More Examples

- Blog
- Newscast (video)
- News article
- Timeline of Events
- Photography Exhibit

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Arts and Communications to find additional resources that can impact instruction practices.

ARTS & COMMUNICATIONS

Authentic Problem

The local theater is staging a historical play set in the early 1900's with a cast of 20 actors. The director has already spent a large amount of the show budget on the rights to the play, set pieces, and advertising. As a group of costume designers, propose a costuming plan that addresses the time period, within a budget of \$750.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Creating
- Planning and Organizing

Industry Partner

- Historian (Local Historical Society)
- Historian (Community College/College/University)
- Theater manager or personnel
- Costume designers/Seamstresses

[Solution Product\(s\)](#) and More Examples

- Artwork on the costumes
- Financial Plan
- Proposal Presentation
- Flowchart

Other Considerations

Feel free to insert a different play, time period, and/or budget to approach the problem from another vantage point.

Reference the corresponding [Team-Based Challenge Companion](#) for Arts and Communications to find additional resources that can impact instruction practices.

ARTS & COMMUNICATIONS

Authentic Problem

A local shop owner's business is struggling and has identified that they would like to pursue a new "brand redesign." As a team of marketing and graphic arts experts, develop a strategy to tackle their brand refresh or full redesign.

Technical Competencies and Essential Employability Competencies

- Presenting, Performing, and Producing
- Innovation and Invention

Industry Partner

- Marketing Company
- Graphic Designer
- Web designer
- Social media messaging consultant

Solution Product(s) and More Examples

- Brand redesign proposal (written report with graphics)
- Brand redesign proposal presentation
- Brand portfolio
- Advertisement (video)
- Advertisement (print)

Other Considerations

Feel free to let students address the problem through various types of brand redesigns that may include a new tagline, logo, website, and/or social media page.

Business partners may not be able to reach a certain demographic of consumers, so make sure the brand redesigns focus on strategies that meet their demographic market.

Reference the corresponding [Team-Based Challenge Companion](#) for Arts and Communications to find additional resources that can impact instruction practices.

Authentic Problem

A local small business owner is at her “wits’ end” as she continues to bring her finances in order. She is struggling to find out why she is missing dollars the last three years and cannot identify the problem. As members of an accounting team, perform an audit and report the findings.

Technical Competencies and Essential Employability Competencies

- Technical Applications
- Critical Thinking

Industry Partner

- Auditor
- City or County wide accountant
- Tax professional
- Monetary policy expert at the local Community College, College, or University

Solution Product(s) and More Examples

- Financial audit report
- Financial findings (one-page summary)
- Presentation on possible problem areas

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Finance and Business Services to find additional resources that can impact instructional practice.

Authentic Problem

A local manufacturer, who has never attended a trade show, is attending the International Marketing Trade Show trade show in Chicago this fall. It has one dedicated employee who has registered for the show but is in desperate need of assistance with the design of its booth. As members of the company's marketing team, design a trade show booth that matches the manufacturer's brand awareness and creates a high number of customer interactions.

Technical Competencies and Essential Employability Competencies

- Customer Care and Marketing
- Planning and Organizing

Industry Partner

- Local manufacturer
- Small business
- Trade show specialists
- Marketing Firm

Solution Product(s) and More Examples

- Exhibit floor plan
- Model
- Drawing
- Photo/Collage
- Planning Proposal

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Finance and Business Services to find additional resources that can impact instructional practice.

Authentic Problem

The Chicago Bulls are working on a new strategy to drive ticket sales to the United Center for the upcoming season. They have a \$1 million budget that analysts believe could increase sales and bring 2-to-1 market earnings from the investment. As members of the sales team, create a plan to increase ticket sales that reflects current prices for resources and additional workers.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Fundamentals of Sales
- Decision Making

Industry Partner

- Local sports team
- College or University (Sports/events management)
- Local music/sports venue
- Return on Investment Analyst

[Solution Product\(s\)](#) and More Examples

- Report out on Return of Investment
- Poster
- Proposal Presentation
- SWOT Analysis
- Event plan
- Marketing Plan

Other Considerations

Feel free to partner with a local minor league team or specific sports organization (place them into the problem) that is local and fits your community's needs.

Reference the corresponding [Team-Based Challenge Companion](#) for Finance and Business Services to find additional resources that can impact instructional practice.

HEALTH SCIENCES & TECHNOLOGY

Authentic Problem

A local nursing facility has identified generational issues between veteran nurses and student nurses. Veteran nurses have made it known that they are resistant to new nurses partaking in student internships or shadowing opportunities. As a part of the nursing leadership team, develop a strategy to address the generational issues taking place at the nursing facility.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Healthcare Personnel and Roles
- Cultural Competence

Industry Partner

- Nursing Home
- Hospital
- Clinic
- At-home care provider

[Solution Product\(s\)](#) and More Examples

- Act Outs – Students present a script of small acts on how to tackle tough issues between the two groups
- Media Campaign for Nurses
- Training Video
- Training Manual Edits or development
- Brochure

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Health Sciences and Technology to find additional resources that can impact instructional practices.

HEALTH SCIENCES & TECHNOLOGY

Authentic Problem

The Midwest Medical Center has had a recent increase in falls by their older patients. This has resulted in negative outcomes for both the patients and the facility. As a group of nursing professionals, analyze a recent fall report and create a safety plan on how to reduce fall risks and minimize injuries for patients.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Healthcare Delivery Practices
- Problem Solving

Industry Partner

- Nursing Home
- Hospital
- Senior Assisted Living

[Solution Product\(s\)](#) and More Examples

- Presentation of safety plan
- Brochure
- Training manual
- Training video

Other Considerations

Feel free to replace “falls” with other common occurrences.

Reference the corresponding [Team-Based Challenge Companion](#) for Health Sciences and Technology to find additional resources that can impact instructional practices.

HEALTH SCIENCES & TECHNOLOGY

Authentic Problem

Based on patient surveys, the hospital staff has concluded that the Emergency Room operations are not in-line with “best practices.” As a team of the Emergency Room staff, work together to design a more efficient emergency medicine delivery system within specified budgetary parameters.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Healthcare Delivery Practices
- Problem Solving

Industry Partner

- Hospital
- 24-Hour Emergency Clinic

[Solution Product\(s\)](#) and More Examples

- Training Manual
- Schematic Drawing
- Training Video
- Proposal Presentation

Other Considerations

Consider covering this Team-Based Challenge later in the year as it covers many topics and will need extensive pre-teaching.

Reference the corresponding [Team-Based Challenge Companion](#) for Health Sciences and Technology to find additional resources that can impact instructional practices.

Authentic Problem

Teachers have identified that students face uncertainty and fears about transitioning from elementary to junior high or junior high to high school. As a team of educators on the Planning Committee, develop multiple strategies to address the uncertainties and fears of students.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Childhood and Student Development
- Problem Solving

Industry Partner

- Administration (from another school)
- Counselor
- School Psychologist
- Transition/Transfer student specialist at a local Community College or University

[Solution Product\(s\)](#) and More Examples

- Welcome Video
- Presentation
- Act-outs/Improv Skit with scenarios
- Agenda for a Welcome Event

Other Considerations

Reference the corresponding [Team-Based Challenge Companion](#) for Human and Public Services to find additional resources that can impact instructional practices.

Authentic Problem

A third-grade mathematics teacher was teaching a lesson on placing fractions on a number line (3.NF). At the lesson's end, the teacher gave the students a formative assessment to gauge their understanding of the topic. Unfortunately, the results of the assessment indicated a small group of students were not proficient in this standard. As a team of third-grade teachers, develop a targeted instruction plan to address the students' misconceptions.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Problem Solving
- Observation and Adaptation

Industry Partner

- Teacher from another building
- Math or Reading Specialist

[Solution Product\(s\)](#) and More Examples

- Create a support video to address the lesson need
- Create a new "mini" lesson to supplement the re-learning
- Create a learning activity and present it to the class

Other Considerations

Feel free to adjust the grade level, content area, standard, and/or the size of group.

Reference the corresponding [Team-Based Challenge Companion](#) for Human and Public Services to find additional resources that can impact instructional practices.

HUMAN & PUBLIC SERVICES



Authentic Problem

The city is opening a new teen community center which will host special events once a month. The center is in a new building with all new activities, events, and spaces. As a team of event planners, design and plan an event considering floor plan and space (physical environment), motivation of students, and social interaction to optimize student learning.

Technical Competencies and Essential Employability Competencies

- Planning and Organizing
- Managing and Monitoring Learning

Industry Partner

- Social Services Provider
- After-school programming Organization
- Event coordinator

Solution Product(s) and More Examples

- Proposal Presentation
- Celebration/Event Plan
- Floor Plan or Exhibit (Design)

Other Considerations

Place your city/town in the first sentence of the Authentic Problem. Be sure to work with your local governing bodies that plan similar events (Convention and Visitor Bureau, Local Chamber of Commerce, or city government)

Reference the corresponding [Team-Based Challenge Companion](#) for Human and Public Services to find additional resources that can impact instructional practices.

HUMAN & PUBLIC SERVICES



Authentic Problem

Recent data from the FBI (National Incident-Based Reporting System) indicates that certain violent crimes have increased in the last three years in your town/village/city. As a team of crime analysts, create a proposal to address the crime issue within specified budgetary parameters (a maximum of two additional staff members).

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Problem Solving
- Community Awareness

Industry Partner

- Local Police Officer
- Detective
- Violent Crimes Prosecutor
- Surveillance Company
- Military Police/Military Recruiter

[Solution Product\(s\)](#) and More Examples

- Proposal Presentation
- Crime Prevention Video
- Brochure – How to reduce crime in your neighborhood

Other Considerations

Students should be able to determine restructuring of the plan based on when criminal reports are happening.

These are not official [Criminal Justice technical skills](#), but schools have used similar skills or developed their own to provide students with Human and Public Services technical skills.

Reference the corresponding [Team-Based Challenge Companion](#) for Human and Public Services to find additional resources that can impact instructional practices



Authentic Problem

Through a series of community meetings with the city council and the mayor, over 60% of the seniors in the area have identified the need for more support with setting up their wireless home networks. As a team of computer network installation specialists, create and publish accessible resources to assist senior citizens with setting up their wireless home networks.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Routing and Network Configuration
- Cultural Competence

Industry Partner

- Internet Connection Company
- Local Computer Company
and
- Senior Assisted Living

[Solution Product\(s\)](#) and More Examples

- Training Manual
- Training Video – How to video on YouTube
- Graphic Artwork
- Planning an Event – Setting Up Your Router

Other Considerations

This Team-Based Challenge could be one that is multidisciplinary in nature. Students could work across pathways with Human and Public Services/Health Sciences students and work to organize how to solve the problem from multiple viewpoints. Students could focus on the skills that are specific to their pathway.

Additional note: The teacher could have students address the router, wireless connections, or other connectivity components.

Reference the corresponding [Team-Based Challenge Companion](#) for Information Technology to find additional resources that can impact instructional practices



Authentic Problem

A recent internet carrier identified that one of its systems was at risk due to a breach in its firewall. As a team of security protocol analysts, your job is to protect the confidentiality of the firm's clients by designing a plan to safeguard the firewall.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Risk management
- Teamwork and Conflict Resolution

Industry Partner

- IT Company
- School IT staff
- IT representatives from a Hospital, Government, or other large institution

[Solution Product\(s\)](#) and More Examples

- Demonstration
- Video
- Proposal/Presentation

Other Considerations

There are six ways or vulnerabilities to firewalls that students should understand before doing this IT Team-Based Challenge. They include the following:

- *Malware and payload delivery*
- *Phishing attacks*
- *Social engineering tactics*
- *Deep packet inspection evasion*
- *Virtual private networks and remote access*
- *Intrusion Prevention Systems Bypass*

Reference the corresponding [Team-Based Challenge Companion](#) for Information Technology to find additional resources that can impact instructional practices



Authentic Problem

Artificial Intelligence (AI) has become one of the most talked about advancements in the computing and science worlds. A local company is working with AI experts and school districts to offer its clients a more streamlined process when the AI technology interfaces with human beings. As a team of AI specialists and/or human interface specialists, provide a plan on how AI can better interface with human users in an education--type setting.

Technical Competencies and Essential Employability Competencies

- User and Customer support
- Planning and Organizing

Industry Partner

- AI Company
- Local Computer or web-based company (interface companies)
- Local College or University (IT or professor in computer sciences field)

Solution Product(s) and More Examples

- Brochure
- Think Sheet or Thinking Map
- Video
- Proposal Presentation

Other Considerations

This Team-Based Challenge could be one that is multidisciplinary in nature. Students could work across pathways with Human and Public Services/Education students and work to organize how to solve the problem from multiple viewpoints. Students could focus on the skills that are specific to their pathway.

Reference the corresponding [Team-Based Challenge Companion](#) for Information Technology to find additional resources that can impact instructional practices

MANUFACTURING, ENGINEERING, TECHNOLOGY & TRADES

Authentic Problem

A local automotive body shop has a client with a vehicle with a major suspension issue. As a team of technicians, identify the issues and develop a plan that addresses the problem using industry tools, standards, and shop procedures.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Process, Design and Development
- Adaptability and Flexibility

Industry Partner

- General Car or Truck Repair
- Suspension Repair Specialist

[Solution Product\(s\)](#) and More Examples

- Schematic
- Step by Step – How to (Video or Presentation)
- Estimate for Repair
- Customer Recommendation Proposal

Other Considerations

Insert a different part for the suspension and approach the problem from another vantage point.

Reference the corresponding [Team-Based Challenge Companion](#) for METT to find additional resources that can impact instructional practices.

MANUFACTURING, ENGINEERING, TECHNOLOGY & TRADES

Authentic Problem

Baxter is an American company that produces medical equipment. It is required to conduct durability tests on its products to ensure that they not only meet but exceed regulatory requirements from U.S.-based organizations such as the Food and Drug Administration and Underwriters Laboratories, as well as international health and product safety requirements. These requirements and the results must be documented and approved by the regulatory body. As a team of durability scientists, test a product and provide analysis of the testing with a testing rationale.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Quality Assurance and Continuous Improvement
- Critical thinking

Industry Partner

- Manufacturer
- Durability testing company
- Scientist

[Solution Product\(s\)](#) and More Examples

- Video
- Presentation
- Product Test Live Demonstration

Other Considerations

Students can access the [Baxter E-catalog](#) to choose a product. Something to note: Students' rationale for the test they conducted may differ based on the product they choose.

Reference the corresponding [Team-Based Challenge Companion](#) for METT to find additional resources that can impact instructional practices.

MANUFACTURING, ENGINEERING, TECHNOLOGY & TRADES

Authentic Problem

John Deere is concerned with the extra costs associated with fixing, discarding, or repurposing damaged or defective products. As a team of manufacturers, develop a defect reduction plan that includes the possible cause of the defects and the solutions to eliminate defects through the manufacturing process.

[Technical Competencies](#) and [Essential Employability Competencies](#)

- Quality Assurance and Continuous Improvement
- Problem Solving

Industry Partner

- Local Manufacturer
- Welder or welding company
- Cabinet maker or Carpenter
- Any partner that focuses on manufacturing processes

[Solution Product\(s\)](#) and More Examples

- Proposal presentation
- Video presentation
- Flowchart

Other Considerations

Feel free to adjust the Authentic Problem to fit for welding or any aspect of manufacturing systems.

Reference the corresponding [Team-Based Challenge Companion](#) for METT to find additional resources that can impact instructional practices.