AI Introductions & Implementations Lesson Plan

Name: AI Crisis Response Challenge - An introduction to AI
Grade Level: 9-12
Lesson Content Area: STEM / CTE

Title: AI Crisis Response Challenge

Learning Objectives:

1. **Analyze AI Applications:** Students will explore how AI is used in crisis management, including machine learning, automation, and algorithmic decision-making.
2. **Develop Problem-Solving Skills:** Students will apply AI-based decision models to optimize evacuation routes and resource allocation.
3. **Evaluate AI Ethics:** Students will assess potential biases in AI decision-making and propose strategies to improve fairness and effectiveness.
4. **Synthesize AI Solutions:** Students will design AI-driven crisis response plans and present their findings.

Digital & Physical Materials Needed:

1. Power Point - Introduction to AI + Debrief
2. 4 stations setup:
    a. Sample dataset, pattern recognition worksheet
    b. graph theory worksheet, traffic/weather condition data set, city map with roads
    c. internet access, city map with crisis centers marked, 1d6 or random number generator
    d. AI fairness worksheet
3. Presentation materials (posters, digital, etc)

Pre-Lesson Activities for Learners:

1. **AI Awareness Survey:** Students reflect on their daily interactions with AI.
2. **Discussion:** Where do we unknowingly rely on AI? (Examples: GPS, recommendation systems, facial recognition.)
3. **Quick AI Demo:** Show an example of AI-based image recognition or chatbot interactions.

Lesson Outline:

1. Introduction (15 min)

- **Discussion:** Ask students where they encounter AI in daily life.
- **Presentation:** Briefly introduce machine learning, algorithms, automation, and bias.
- **Scenario Introduction:** Explain the wildfire crisis and how AI will help solve it.

2. Challenge Stations (45 min total, ~10 min per station)

Station 1: Machine Learning for Crisis Prediction

Concept: AI analyzes data to predict disasters.

Task:

- Analyze a **mock dataset** of past wildfires (temperature, wind speed, humidity).
- Identify patterns and predict future wildfire risks.
- Unlock the next station by explaining why AI is useful in crisis preparedness.

Materials:

- Sample wildfire dataset (editable)
- AI pattern recognition worksheet
    - Extension: students could model it using computer code (ie Python, Java, etc)

Station 2: Algorithmic Thinking for Evacuation Routes

Concept: AI optimizes transportation routes.

Task:

- Analyze a **city map with road closures and traffic data** to determine the safest evacuation route.
- Apply a **simplified shortest path algorithm** (Dijkstra's concept).
- AI twist: A fire shift or major accident forces route adjustments.

Materials:

- Editable city map with road networks
- Traffic/weather condition dataset
- Graph theory worksheet

Station 3: AI in Automation & Resource Allocation

Concept: AI manages resources in disaster response.

Task:

- Simulate AI decision-making by **allocating food, water, and medical aid**.
- AI twist: New data forces reallocation.

Materials:

- 1d6 or random number generator
- Internet/devices to look up case studies on AI in disaster response

Station 4: AI & Ethics - Bias in Emergency Systems

Concept: AI can have biases in decision-making.

Task:

- Analyze **real-world cases** of AI bias.
- Compare biased vs. unbiased AI models.
- Unlock the final challenge by proposing solutions.

Materials:

- Internet/devices to look up a case study on AI bias (hiring, healthcare, disaster relief)
- AI fairness worksheet

3. Final AI Mission: Preventing Future Disasters (25 min)

- Using all collected AI knowledge, teams present their final AI-driven solution.
- Propose a **real-world AI system** (e.g., AI for wildfire detection, smarter evacuation alerts, AI-based aid distribution).
- Teams vote on the best AI crisis solution based on feasibility and impact.

4. Exit Ticket (5 min)

Total Time (90 min)