AI4 WASTE

FOSTERING AWARENESS AND INNOVATION IN ADULT EDUCATION

2023-2-PT01-KA210-ADU-000184346

TOOLKIT

GROUP DYNAMICS:

AI in Action – Smart Waste Solutions

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SUMMARY..... Erro! Marcador não definido.

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GROUP DYNAMICS: "DESIGNING AI FOR THE PLANET"

Objective:
To help waste management professionals understand the different types of AI through hands-on application in real-world, industry-specific scenarios—fostering innovation and cross-functional thinking.

Setup & Duration:
Group Size: 4–6 participants per group
Number of Groups: 5 (each assigned a different type of AI)
Total Time: 60–75 minutes

- 25 min for scenario creation
- 20 min for presentations
- 20–30 min for group discussion and reflection

Step-by-Step Instructions:

1. AI Type Assignment
Each group receives one of the following types of AI to work with:

- Machine Learning (ML)
- Deep Learning (DL)
- Expert Systems
- Predictive AI
- Generative AI

Provide each group with a short explainer (can be printed or shown on screen) summarizing the key features of their AI type, drawn from the presentation.

2. Industry Scenario Challenge (25 mins)

Each group is tasked to **design a waste management solution** that leverages their assigned AI type. Encourage them to be specific and realistic.

They should answer the following prompts:

*What **problem or inefficiency** in waste management are you solving?*

*How does your assigned **AI type** help solve it?*

*What **data** does your system need to work?*

*What are the **benefits** of using this approach?*

*What **limitations, risks, or ethical concerns** should be considered*

Examples (to inspire creativity):

AI Type	Example Application in Waste Management
Machine Learning	Analyzing recycling patterns across neighborhoods to suggest targeted awareness campaigns.
Deep Learning	Vision-based sorting system that uses cameras and neural networks to identify and separate waste types on conveyor belts.
Expert Systems	A decision-support tool for landfill operators that recommends treatment methods based on the composition and volume of incoming waste.
Predictive AI	Forecasting waste volume increases in specific zones during events or holidays to optimize collection routes and resources.
Generative AI	Generating draft communication plans or awareness posters from prompts to educate communities about better waste segregation.

3. Group Presentations (20–25 mins)

Each group will present their AI-powered waste management solution in **3–5 minutes**. Encourage visual aids (diagrams, quick sketches, or mock interfaces) if time allows.

4. Group Reflection & Discussion (20–30 mins)

Facilitate a discussion with guiding questions like:

*Which AI types seemed more **practical** or **innovative** in waste management?*
*Were there overlaps between the solutions or potential for **hybrid approaches**?*
*What types of **data infrastructure** or **policy changes** would be needed to support these ideas?*
*How can AI make waste systems more **sustainable and inclusive**?*

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EVALUATION QUESTIONNAIRE

1- Which of the following is a subset of Machine Learning that uses neural networks to process unstructured data?
a) Expert Systems
b) Predictive AI
c) Deep Learning
d) Generative AI

Correct Answer: c) Deep Learning

2- True or False:
Machine Learning typically requires human intervention for feature selection.

Correct Answer: True

3-Which AI type uses a knowledge base and inference engine to simulate expert decision-making in a specific field?
a) Machine Learning
b) Deep Learning
c) Expert Systems
d) Generative AI

Correct Answer: c) Expert Systems

4-True or False:
Predictive AI can only analyze structured data.

Correct Answer: False

5-Generative AI creates new content based on:
a) Hardcoded rules
b) Past predictions
c) User prompts and training data
d) Decision trees

Correct Answer: c) User prompts and training data

6-What major innovation did the 2017 paper "Attention Is All You Need" introduce?
a) Decision Trees
b) Inference Engines
c) Transformers
d) Generative Adversarial Networks

Correct Answer: c) Transformers

7-True or False:
Deep Learning models are better suited for image recognition tasks than traditional Machine Learning models.

Correct Answer: True

8-Which AI type is commonly used for forecasting future outcomes based on historical data?
a) Predictive AI
b) Deep Learning
c) Expert Systems
d) Machine Learning

Correct Answer: a) Predictive AI

9-Which of the following best describes the primary use of Expert Systems?
a) Generating creative content
b) Forecasting market trends
c) Replacing all human jobs
d) Simulating expert-level decision-making
✓ Correct Answer: d) Simulating expert-level decision-making

10-True or False:
Foundation models used in Generative AI are trained on a narrow, domain-specific dataset.
Correct Answer: False