LEARNING BOX OF UNPLUGGED ACTIVITIES

The home repair cascade

In this unplugged activity, participants are presented with a clear challenge:

“Stop a small home issue from escalating into a major problem.”

They are given a scenario where a minor issue (e.g., a leak, faulty bulb, or unusual noise) has already started to trigger additional problems. As the challenge progresses, new complications are revealed (e.g., water damage, electrical risks, structural issues), creating a cascade effect.

Participants must act quickly and strategically to understand the situation, prioritize actions, and prevent further escalation. They cannot fix everything at once, so they must decide what to address first, what can wait, and how problems are interconnected.

The activity unfolds in rounds, where each decision may reduce, maintain, or worsen the situation. Participants receive feedback after each round, showing how the system evolves based on their choices.

The goal is to stabilize the situation using the fewest actions and least resources, while preventing the cascade from growing.

Target Group

- ☐ Low-skilled adults with low digital competences
- ☑ Low-skilled adults with limited formal education or qualifications
- ☐ Low-skilled adults with low participation in lifelong learning / training opportunities

Learning Objectives

- Analyze a cascading problem where small issues lead to larger, interconnected consequences
- Apply decomposition to break down interconnected

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Theme

Problem escalation and systems thinking in everyday home maintenance situations

Duration

60 mins - 90 mins

Level

Advanced

Computational Thinking Steps Used

- ☑ Decomposition
- ☑ Pattern recognition
- ☑ Abstraction
- ☑ Algorithmic thinking

Methodological Approach

- ☐ Gamification
- ☑ Challenge-Based Learning
- ☐ Collaborative learning
- ☑ Experiential learning

problems into manageable components
- Identify cause-effect relationships between different elements within a system
- Apply abstraction to focus on critical problems and dependencies while ignoring secondary details
- Prioritize actions under constraints and time pressure

Competence Areas

a) Innovation Competences

- ☑ Creativity
- ☑ Critical thinking
- ☑ Problem solving
- ☐ Communication
- ☐ Collaboration

b) Information Literacy Competences

- ☑ Ability to access, understand and critically analyse information
- ☐ Interpretation of digital and visual content
- ☐ Awareness of media influence and biases

c) Life and Career Competences

- ☑ Flexibility and adaptability
- ☑ Initiative and autonomy
- ☐ Sociability and intercultural competence
- ☐ Productivity
- ☑ Leadership and responsibility

Learning Outcomes

- Respond effectively to cascading problems where small issues lead to multiple interconnected consequences
- Make informed prioritization decisions based on urgency, impact, and constraints
- Understand how actions influence the progression and resolution of interconnected problems within a system
- Manage problem-solving under constraints by focusing on the most critical elements

Notes

- Design the cascade carefully so it feels realistic: a small initial issue should logically trigger connected problems (e.g., leak → humidity → electrical risk).
- Introduce problems progressively in “waves” so participants can react step by step rather than seeing everything at once.
- Clearly define consequences of decisions (e.g., ignoring a leak worsens damage, but fixing it too late is more costly).
- Keep the number of simultaneous issues manageable to avoid cognitive overload.
- Encourage participants to explain *why* they choose certain actions first, not just what they do.
- Emphasize dependencies between problems so participants must think in terms of cause-effect chains.

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The home repair cascade

Step 1: Identify the initial problem and understand the situation

Participants are presented with a small home issue (e.g., a water leak, flickering light, or unusual noise). At first, the problem seems minor, but they are informed that it may have already triggered or could trigger additional complications.

They analyze the situation, identify what is happening, and consider possible immediate risks or consequences.

Computational thinking focus: Decomposition, breaking down the situation into the initial problem, possible causes, and potential affected areas.

Step 2: Respond to the cascading issues

The facilitator introduces new problems in stages, showing how the initial issue escalates (e.g., water damage spreads, electrical systems are affected, safety risks increase).

Participants must decide which issue to address first in each round, knowing they cannot solve everything at once. Each decision influences how the situation evolves in the next round.

Computational thinking focus: Pattern recognition, identifying cause-effect relationships between problems. Abstraction, focusing on the most critical issues while ignoring secondary details under pressure.

Step 3: Resolve and stabilize the situation

Participants design a final action plan to stop the cascade and stabilize the home environment. They prioritize repairs, explain the order of actions, and justify their decisions based on urgency, impact, and dependencies.

Teams present their solution and reflect on how their choices influenced the outcome of the situation.

Computational thinking focus: Algorithmic thinking, creating a structured, step-by-step plan to resolve interconnected problems efficiently

ACTIVITY CARDS

The home repair cascade

Card Categories

- **Team role**
- **Initial information**
- **Cascade events**
- **Actions**

Priority Levels

- **Essential**
  Extremely necessary to take into consideration
- **High**
  Importance
- **Medium**
  Helpful to take into consideration

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Print and cut the cards on the following slides to use in the activity.

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COORDINATOR

Leads the discussion.

Ensures everyone contributes.

Makes sure decisions are reached.

PROBLEM ANALYST

Identifies the causes and consequences of each issue.

PRIORITY MANAGER

Ranks repair actions according to urgency and impact.

RESOURCE MANAGER

Keeps track of available repair actions and budget.

LEAKING PIPE

A small leak has appeared under the kitchen sink.

Current Risk: Low

FLICKERING LIGHT

A ceiling light flickers occasionally.

Current Risk: Low

CRACKED WINDOW

A window has a growing crack.

Current Risk: Low

BLOCKED DRAIN

Water drains away very slowly.

Current Risk: Medium

WATER DAMAGE

The leak has spread into the wall.

Repair costs increase.

Priority: Essential

MOULD GROWTH

Moisture creates mould in one room.

Health risk increases.

Priority: Essential

ELECTRICAL HAZARD

Water reaches an electrical socket.

Immediate action is required.

Priority: Essential

HIGHER ENERGY BILL

The weather is getting worse.

Transport will become more difficult.

Priority: Essential

REPAIR INMEDIATELY

Solve the problem now.

Cost: High

Future Risk: Low

TEMPORARY FIX

Reduce the immediate risk.

Cost: Low

Future Risk: Medium

MONITOR THE SITUATION

Wait before taking action.

Cost: None

Future Risk: Unknown

CALL A PROFESSIONAL

Pay for expert repairs.

Cost: Medium

Long-Term Reliability: High