

3.3.4 What next

Brief description, and rules of the implementation of the learning activity

“What next” is an adaptable learning activity that develops problem-solving and critical thinking skills of the students. During an investigation or design task, pupils encounter an unexpected problem that blocks their progress. Working individually or in small groups, students must brainstorm possible solutions, weigh the pros and cons, and gather the necessary materials to overcome the obstacle. This activity teaches children to analyse situations, make reasoned decisions, and reflect on their outcomes.

Skill focus

- **Primary Skill Focus**
 - Problem-solving
- **Complementary/Secondary Skill Focus**
 - Critical thinking

Age group	Student number	Duration
6-10 years old	Individual and whole class working in pairs or small groups	30 minutes

Proposed step by step implementation of the learning activity

1. Students begin the investigation or design task individually, in pairs, or in small groups.
2. An unexpected problem or obstacle arises during the activity.
3. Students identify and discuss the problem and think of possible solutions.
4. They select one solution, gather the necessary materials or resources, and test their idea.
5. Students evaluate whether the solution works and, if necessary, adapt their approach.
6. The activity ends with a short reflection and class discussion about the problem-solving process.

Indoor/Outdoor Classroom layout notes

This activity can be conducted both inside the classroom and in outdoor settings, depending on the investigation or design task.

How does this learning activity develop this particular skill?

- Encountering the problem: Students face an unexpected obstacle that prevents them from continuing their investigation or design task, which triggers the need for problem-solving.
- Analysing the situation: They examine the problem carefully, identifying the cause and the constraints, which develops analytical thinking.

- **Generating alternatives:** Students brainstorm possible solutions, exploring multiple approaches rather than settling on the first idea.
- **Evaluating options:** They weigh the pros and cons of each possible solution, learning to assess feasibility, effectiveness, and potential consequences.
- **Making a reasoned decision:** Students select the most suitable solution and implement it, practicing decision-making based on evidence and reasoning.
- **Reflecting on outcomes:** After attempting their solution, students reflect on what worked, what didn't, and why, which reinforces critical thinking and iterative problem-solving.

What do we want to achieve regarding primary skill development (student understanding and/or behaviour)?

As a result of this activity, students will:

- be able to recognize and analyse unexpected problems
- be able to develop and implement effective solutions
- able to reflect critically on their decision-making process.

Suggested use, and practical subject-related examples

This activity is suitable for tasks where unpredictable problems can naturally arise.

- **Science investigations:** During an experiment, a piece of equipment fails or results are unexpected, prompting students to figure out how to proceed.
- **Design and engineering tasks:** While building a model or prototype, students discover that a part doesn't fit or a design doesn't work as intended.
- **Outdoor learning activities:** Students encounter environmental or logistical obstacles, such as weather conditions or unavailable materials, requiring creative solutions.
- **Project-based learning:** When planning or executing a project, students face unforeseen challenges like missing data, time constraints, or conflicting ideas.

Materials and tools needed for implementation

The exact problem and the materials needed cannot be predicted in advance; students must identify the obstacle and, based on their proposed solution, determine and gather the materials required to address it.

Guiding questions

Teacher's role: the teacher is coaching, inquisitive and supportive, encouraging thinking, explaining and rethinking

Understanding the problem:

- What is the obstacle you are facing?
- Why can't you continue with the task?

Identifying needs:

- What do you need in order to move forward?
- What resources or materials could help you overcome this challenge?

Exploring possibilities:

- What can you use from the classroom or environment to help you?
- Are there alternative ways to solve the problem if your first idea doesn't work?

Decision-making and reflection:

- Which solution seems most feasible and why?
- How will you test whether your idea works?
- What might happen if your solution doesn't work as planned?

Tips and Tricks for dealing with challenges

- **Challenge:** Students may rush into solving the problem without fully understanding it.
Tip: Encourage students to pause and analyse the problem before jumping to a solution.
- **Challenge:** Students may become frustrated when their first idea does not work.
Tip: Ask guiding questions to stimulate critical thinking rather than giving the answer.
- **Challenge:** Some students may struggle to think of more than one possible solution
Tip: Promote brainstorming multiple solutions and considering alternatives.
- **Challenge:** Students may see mistakes or failed attempts as failure rather than part of learning.
Tip: Emphasize that mistakes are learning opportunities and part of the process.
- **Challenge:** Students may have difficulty identifying or adapting suitable materials and resources.
Tip: Allow students time to gather or adapt materials based on their chosen solution.
- **Challenge:** Some students may rely too heavily on the teacher or stronger peers for decisions.
Tip: Support collaboration but let students make decisions independently when possible.

Difficulty level tailoring

When using smart match as a working form with students aged 6 to 10, you can easily differentiate at three levels: beginner, advanced and expert.

- **Beginner learners (6-7 years old):** Provide smaller, simpler tasks where the obstacle is obvious. Offer hints or partial suggestions for materials needed. Encourage working in pairs to support problem-solving.
- **Advanced learners (8-9 years old):** Use more complex or ambiguous problems that require independent thinking. Limit hints, so students must brainstorm multiple solutions themselves. Encourage reflection on why certain solutions may or may not work.
- **Expert learners (9-10 years old):** Introduce open-ended or multi-step obstacles where the problem may have multiple possible solutions. Students must anticipate potential challenges and identify materials independently. Encourage them to evaluate the effectiveness of their solution critically and consider alternative strategies.

Debriefing and Reflection questions

- What did you learn about how to approach unexpected problems?
- Which strategies helped you solve the problem most effectively?
- What would you do differently if you faced a similar problem next time?
- How can you apply what you learned about problem-solving in other tasks or subjects?
- Did you notice any personal strengths or areas to improve in how you handle challenges?

