



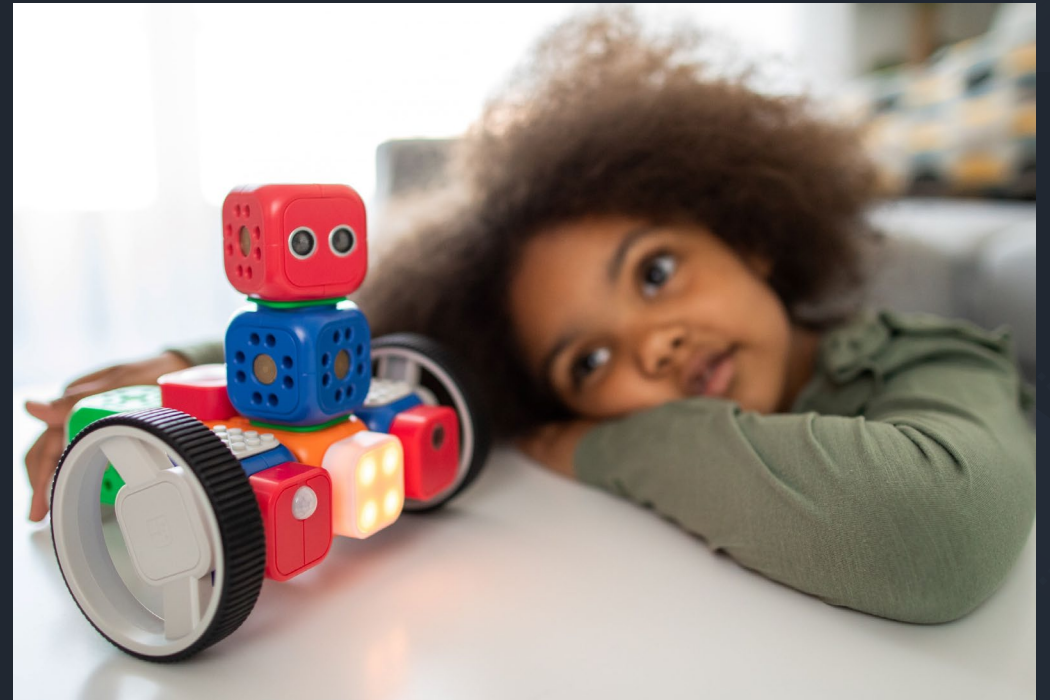
# **Real-World Problem-Solving**

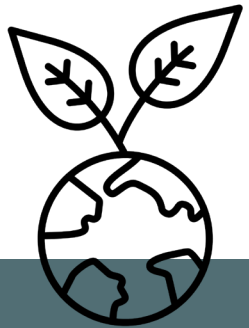
Learners solve real-world problems



# Why is Real-World Problem-Solving important?

In our global, knowledge-based economy, employers actively seek workers who are adept at generating and testing creative ideas to solve complex problems. According to employers, the most critical skills in recruits include teamwork, problem-solving and innovative thinking.





**REAL-WORLD PROBLEM-SOLVING**

*Big Ideas!*

**Problem-solving?**

A **defined challenge** to:

- develop a solution OR
- complete a task without instructions OR
- design a complex product.

**Main Requirement?**

The main part of the activity where learners spend the most **time** and **effort** AND is usually for the most **marks**.

**Real-world?**

**Authentic** situations:

- Are **experienced** by real people.
- Have a specific **audience**.
- Have specific **contexts**
- Use actual **data**.

**Innovation?**

Learners' ideas or solutions are **put into practice** in the real world.

**1** Main Requirement?

**2** Real-world problem?

**3** Requires innovation?

**4** Requires innovation?

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# Problem-Solving?

A **defined challenge** to:

- develop a solution OR
- complete a task without instructions OR
- design a complex product.

**Problem-solving?**

The main part of the activity where learners spend the most **time** and **effort** AND is usually for the most **marks**.

**Main Requirement?**

- To count for this rubric, problem-solving must be the learning activity's main requirement.
- Often, problem-solving tasks require learners do some or all of the following:
  - Investigate the parameters of the problem to guide their approach.
  - Generate ideas and alternatives.
  - Devise their own approach or explore several possible procedures that might be appropriate to the situation
  - Design a coherent solution.
  - Test the solution and iterate on improvements to satisfy the requirements of the problem.





# Real-World?

## Authentic situations:

- Are **experienced** by real people.
  - Have a specific **audience**.
- Have specific **contexts**
- Use actual **data**.

Real-world?

- Are experienced by real people.
- Have solutions for a specific, plausible audience other than the teacher.
- Have specific, explicit contexts.
- If learners are using data to solve a problem, they use actual data.





# Innovation?

- Putting learners' ideas or solutions into practice in the real world.
- Benefits people other than the student.

Learners' ideas or solutions are **put into practice** in the real world.

**Innovation?**



# Real-World Problem- Solving

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Learners solve real-world problems

**MCE Sample Exam Questions**





# Question 1

City officials in your community recently announced that the local recycling program is being overhauled because the cost of improper waste disposal has been rising each year. There is a lot of confusion in the community about recycling correctly.

You assign your geography class the task of developing a marketing strategy that promotes the new program. Students must create advertising materials that the city can use to educate citizens on how to recycle. The teacher will mark the advertising materials.

Which level of the 21CLD Real-World Problem-Solving rubric does this learning activity meet?

- A. Level 1.
- B. Level 2.
- C. Level 3.
- D. Level 4.





# Question 2

You are identifying learning activities that encourage students to problem-solve, innovate, and apply a solution with a real set of requirements and constraints at Level 4 of the Real-World Problem-Solving rubric.

Select Yes for each of the following learning activities if it facilitates Level 4 of Real-World Problem-Solving rubric. Otherwise, select No.

- A. Students learn about user experience and modify the user interface of their web app.  
YES / NO
- B. Students learn about velocity and acceleration. They follow instructions and use Microsoft MakeCode block-based programming environment to write a program that identifies when an object is in motion.  
YES / NO





# Real-World Problem- Solving

Learners solve real-world problems

**Microsoft 21CLD**

**Rubrics & Decision Tree**





# Rubric



## Real-World Problem Solving and Innovation rubric

- 1
  - The learning activity's main requirement IS NOT problem solving. Learners use a previously learned answer or procedure for most of the work

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- 2
  - The learning activity's main requirement IS **problem solving**
  - BUT the problem IS NOT a **real-world problem**

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- 3
  - The learning activity's main requirement IS **problem solving**
  - AND the problem IS a **real-world problem**
  - BUT learners DO NOT **innovate**. They are NOT required to implement their ideas in the real world nor to communicate their ideas to someone outside the academic context who can implement them

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- 4
  - The learning activity's main requirement IS **problem solving**
  - AND the problem IS a **real-world problem**
  - AND learners DO **innovate**. They ARE required to implement their ideas in the real world or to communicate their ideas to someone outside the academic context who can implement them





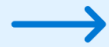
# Decision Tree



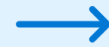
## Real-World Problem Solving and Innovation decision tree

Main requirement is  
**problem solving?**

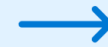
Yes



Yes



Yes



4

No



1

Are learners working on  
a **real-world problem?**

No



2

Requires  
**innovation?**

No



3



Real-World Problem Solving  
and Innovation