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STEAM Lesson

2



NAME	HOW CAN THE GUILTY BE FOUND?
DESCRIPTION	<p>The animal seems is hiding in the waste. We have been 5 days collecting data.</p> <p>Are we able to predict where the mouse is? Which information is provided by available data? Do we need more information to validate the hypothesis?</p> <p>Analyse the data and decide which trash to go for to catch the mouse.</p>
DURATION	 50 MIN
RESOURCES	<ul style="list-style-type: none">• Waste available at the classroom• Video/photo camera• If there is no video camera: Cardboard, markers, glue and paper• Computer with office tools• If there is no computer: paper rulers and crayons
WORKING METHODOLOGY	<p>Work by projects. Inductive thinking. Team work.</p>  3-5 TEAM MEMBERS
EVALUATION METHODOLOGY	Group evaluation template



OBJECTIVES	<ul style="list-style-type: none"> • Think about the information provided by the data available • Measuring waste generation in the classroom/corridor/centre • Be able to identify a pattern • Be able to generate a method and explain how it is used
COMPETENCES	<ul style="list-style-type: none"> • Competence for verbal, non-verbal and digital communication • Mathematics, Science and Technology • Digital competence • Learn to learn
CONTENTS	<ul style="list-style-type: none"> • Data analysis • Values • Correct classification of waste
CREATION	<ul style="list-style-type: none"> • Research template section 6. Presentation of team results.



ACTIVITY 1

Data analysis

OBJECTIVES: To develop the capacity to extract information from data collected

CONTENT:

Each team will have to collect all the data acquired during the 5 days training and analyse them. Data will be classified in:

- Data showing the presence of the mouse at school installations
- Images showing the research process
- Characterization of generated waste
- Mouse capture test
- In case of having used them, recorded data about the mouse presence

COMPETENCES:

- Competence in verbal, non-verbal and digital communication
- Competence in learning to learn and thinking
- Technological competence
- Mathematical competence

DURATION:



ACTION:

Data analysis. Answers to the questions posed. Identification of a pattern from data.

CONCLUSIONS:

Available data made possible to detect where the mouse was.

It's proven that data can provide valuable information.

RESULT:

Answer to the 3 questions, pattern of the mouse movement.



ACTIVITY 2

Where's the mouse?

OBJECTIVES: To be able to reach an agreement for decision making. Use a pattern to predict an event based on real data.

MATERIALS:

Wastey research data Template. Map of bins. Answers to the questions in Activity 1.

COMPETENCES:

- Competence in verbal, non-verbal and digital communication
- Competence in linguistic and literary communication
- Competence in learning to learn and thinking
- Technological competence
- Mathematical competence

DURATION:



ACTION:

Decide as a team and among all the team's members where the mouse is located. Data analysis and presentation of results.

RESULT:

Identification of the bin where the mouse is located.



STEAM PREPARATION

TEACHER'S TEMPLATE

METHODOLOGY: Research, inductive thinking. Working by projects

Activity 1 Where is WASTEY 1?

Objective: To develop the capacity to extract information from data collected

Materials:

Data acquired during the 5 days training. + Bin map

Validate that data available can provide the following information:

- Data showing the presence of the mouse at school installations.
- Weighing data from the bins.
- Characterization of generated waste.
- Images showing the research process followed

Methodology and timing:

1. Put the team together. They must pull out the data capture template must be available and the bin maps too.
2. 20 minutes. You must answer these 3 questions:
 - a) Have you identified which bin the mouse has been in every day?
 - b) How did you identify the presence of the mouse? Traces, there are bins that are heavier than usual, ...
 - c) Do you think there is a pattern that the mouse follows? Did you someday succeed guessing where the mouse would appear?
3. 10 minutes. Sharing the results of the answers and discussion.

Basic concepts for all ages:

- Data
- Selective classification
- Scientific method
- Food Residue
- Organic Waste
- Inorganic Residue

Conclusions:

Available data made possible to predict where the mouse was.
It has been validated that data can provide valuable information.
A pattern has been detected.



Activity 2 Where is WASTEY 2?

Objective: To be able to reach an agreement about decision making. Use a pattern to predict an event based on real data.

Materials:

- Wastey research data template.
- Bins map.
- Answers to the questions in Activity 1

Methodology and timing:

Open questions. All answers are valid if they are based on the data collected. The teacher should help them to recognize the pattern previously agreed.

Based on data collected, can you decide which bin the mouse is in?
All working teams together must decide which bin the mouse is in and check if we have used the correct data to guess it.

You have 10 minutes to decide which bin the mouse is in (the decision must be based on collected data) and 10 minutes to decide among all the participants in which bin to look for it (only one option)

Concepts

- Data
- Selective classification
- Hypothesis
- Disprove
- Scientific method
- Food Residue
- Organic Waste
- Inorganic Residue

Results:

On the sixth day, which bin the mouse will be in must be selected. There is only one chance to catch it.



ACTIVITY 1 – EVALUATION

WHAT HAVE YOU LEARNT?

CONTENTS & COMPETENCES	Totally agree	I agree	I disagree
We know the difference between waste and waste as a resource			
We can correctly classify the paper, plastic and other remaining			
We can differentiate what a food waste is			
We can identify a data			
We know how to extract information from the available data			
We know how to record the data along the time			
We know how to record the data with the correct measurement units			
We can identify an erroneous data			
We can make a hypothesis and validate or discard it			
We can plan actions in different time slots			
We are able to represent data at least 3 different ways			
We are able to identify what prevention, reduction, reuse and recycling are			
GROUP WORK	Totally agree	I agree	I disagree
We have created a team			
We have put a name to the team			
We have shared the work equally			
We have participated all the people fairly			
We were able to reach an agreement when different opinions raised.			
We have helped our group partners when it has been necessary			
If we had a problem, we tried to solve it			
If we have not been able to solve it, we have asked the tutor for help			
We have improved any action included in the previous evaluation (only answer if you wrote any)			
USE OF ORAL AND WRITTEN LANGUAGE	Totally agree	I agree	I disagree
We have spoken clearly respecting available time and in the requested language			
The texts created have no spelling mistakes			
We have used commas and punctuation marks correctly			
We have used capital letters at the beginning			
We have look for words that we did not understand			
We have used at least one new word throughout the activity			
USE OF TECHNOLOGY	Totally agree	I agree	I disagree
We have used internet images correctly (free images or quitting authorship)			
We have surf in internet searching for information from reliable sources			
We have verified the sources of information and validate the contents shown.			
We have used digital tools to create a video or podcast			



What would you improve in your next group activity? Free space for suggestions



ACTIVITY 2 - CARD

ANIMAL FOOTPRINTS

- Write down in the map the bin where your team has decided to look for the mouse.
- Write down in the map the bin in where the classroom has decided to look for the mouse.



ACTIVITY 2 – EVALUATION

WHAT HAVE YOU LEARNT?

CONTENTS & COMPETENCES	Totally agree	I agree	I disagree
We know the difference between waste and waste as a resource			
We can correctly classify the paper, plastic and other remaining			
We can differentiate what a food waste is			
We can identify a data			
We know how to extract information from the available data			
We know how to record the data along the time			
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