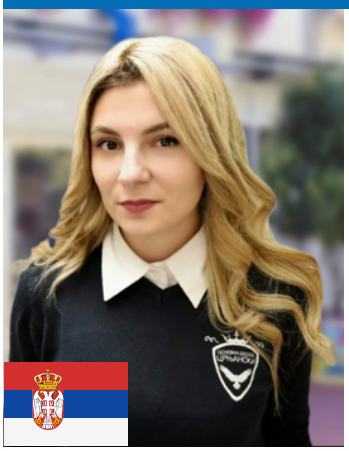
Creative Waste Reduction



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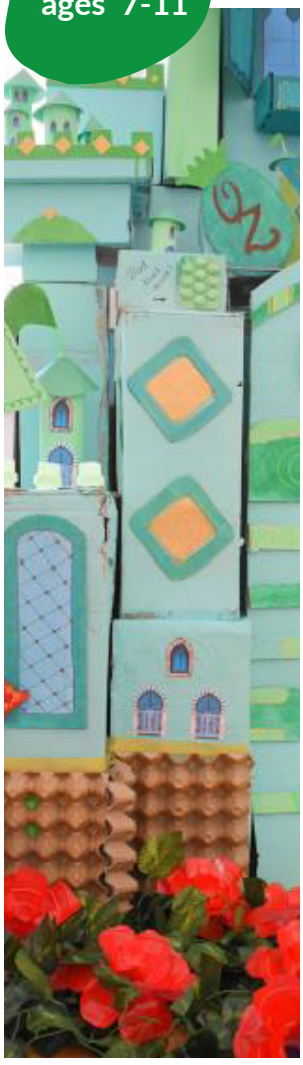
"My lesson plan focuses on raising awareness about reducing litter and waste among students, emphasizing responsible production and consumption. This STEM project stimulates students' creativity, collaboration, and environmental responsibility, providing them with practical experience and empowering them to take positive steps in their community".

Suitable for ages 7-11



Learning Objectives

- Explain the main waste management strategies and concepts such as composting, landfill, and waste-sorting.
- Segregate waste and identify materials and items that can be recycled.
- Define and give examples of pollution.
- Ask relevant questions about environmental pollution and resource utilization.
- Reflect on your own littering and waste-handling behaviour. Show concern/s regarding the effects of pollution on all life forms.
- Show responsibility for handling waste and advocate for no littering.
- Influence others by sharing constructive ideas/thoughts about pollution and waste handling.
- Collaborate as a group on environmental projects such as waste prevention and recycling projects.

Introduction

The lesson involves students participating in socially responsible waste collection and it's creative reuse through an interdisciplinary STEM project. Students take an active role as project leaders throughout all stages of work. Initially, students, based on previously researched sources of information, discuss the importance of waste reduction using the **Six Thinking Hats** technique. Then, based on the quantity and type of collected waste, an action plan is developed, upon which students create constructions from waste materials titled the *"Emerald Eco-City,"* inspired by Frank Baum's "The Wizard of Oz."

Teacher Preparation

- Prepare video material for content analysis.
- Prepare discussion questions in the form of QR codes that will be available for scanning through the 6 hats.

Designed by teacher Aleksandra Filipović,
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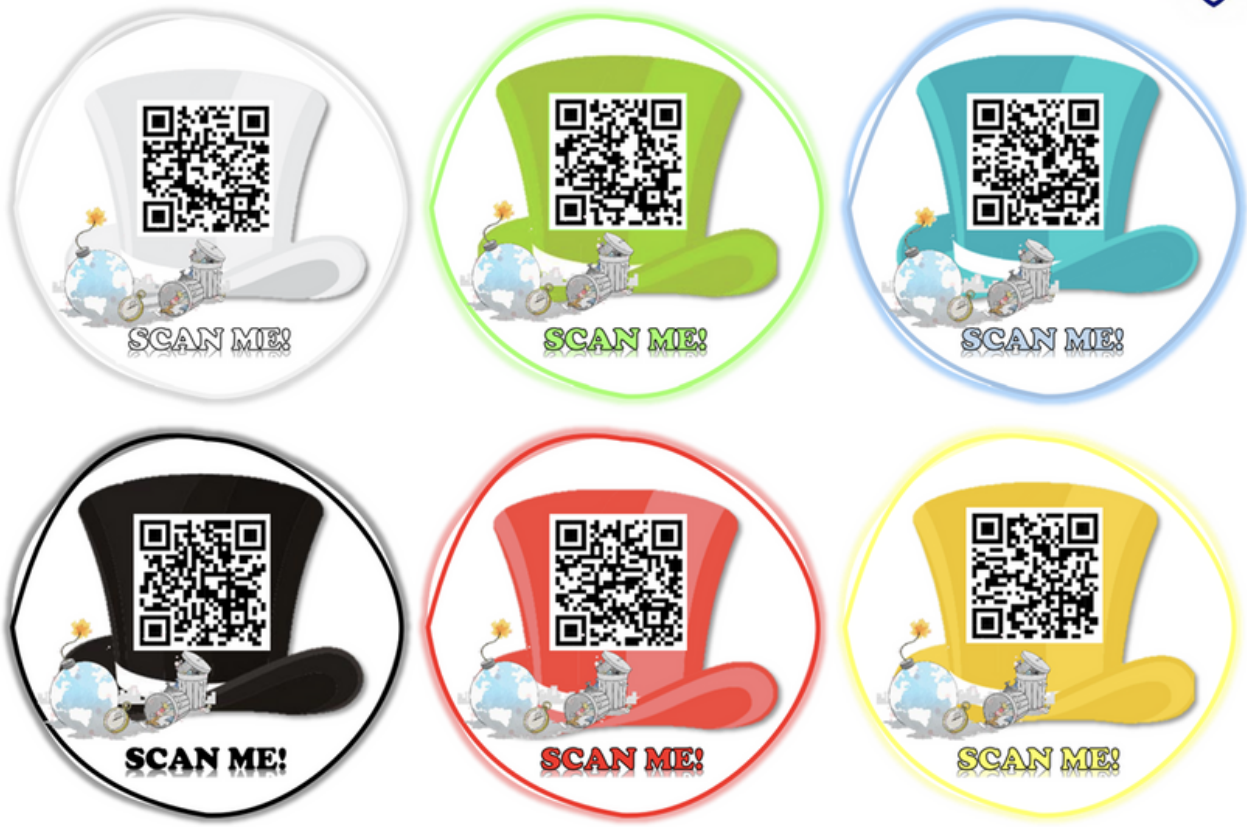

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Timings

Lesson 1: Research and Discussion, 45-60 minutes

Waste Collection to be completed over two weeks

Lesson 2: Development of the Action Plan, 45-60 minutes

Creation of the "Emerald Eco-City"

- Lesson 3- Organizing materials and considering the most stable solution, 45 minutes
- Lesson 4- Colouring the construction, 90 minutes
- Lesson 5- Adding decorative cardboard elements, 60 minutes
- Lesson 6- Making a flower field of poppies from plastic bottles, 60 minutes

Lesson 7- Presentation of the Project and Promotion, 45-60 minutes

Planning Considerations

Trash Disappears: Some students might believe that once they throw something away, it magically disappears. Warn against this by explaining the concept of landfills and how they impact the environment over time.

Waste only affects nature: Help students understand that waste pollution impacts human health and well-being too, through issues like air and water pollution.

We can keep producing waste: Warn against the idea that we can continue producing waste at the current rate without consequences. Discuss the limitations of Earth's resources.

Someone else will take care of it: Some students may believe that it's solely the responsibility of authorities or organizations to handle waste pollution. Teach personal responsibility and the importance of individual actions.

Waste pollution is someone else's problem: Remind students that waste pollution affects everyone, and it's essential for individuals to take responsibility for their actions.

Lesson 1

Motivational Introduction (10 minutes)

Students are shown a video about waste pollution and are instructed to pay attention to the following:

- Why is waste pollution a problem?
- What does waste pollution affect?
- How does waste pollute the earth?

https://www.youtube.com/watch?v=EGzg77rx7Uo

After watching the video, the conversation about what was watched is approached through questions:

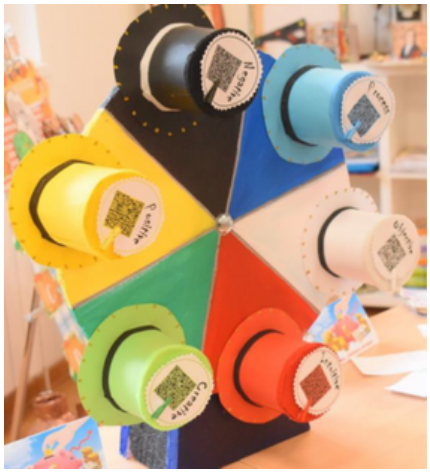
- What are your first associations with the term waste pollution? (make a mind map with this concept on the board based on the students' answers)
- Why is waste pollution a serious problem?
- Who is affected by everything?
- In what way do we contribute to the creation of waste pollution?

Research stage (20-25 minutes)

Form 6 groups depending on the number of students. Try to make the groups as equal in number and abilities as possible so that the members cooperate. The groups have the task of preparing for the class discussion by representing the appropriate point of view, using the literature brought (which they can share among themselves) and digital resources under the supervision of the teacher.

Each group chooses paper of a certain colour (red, white, blue, green, yellow or black). The paper symbolises the colour of the hat that the groups will represent, that is, the point of view they will represent.

In this case, the groups turned the hat wheel to randomly choose the colour. They accessed the tasks by scanning QR codes, however, it is possible to write the tasks by hand on the back of the paper of the selected colour.



Lesson 1 cont.

WHITE HAT: Show facts about the most common types of waste and how it affects the environment.

BLACK HAT: Present the negative effects of waste pollution on the ecosystem, human health, and economy.

RED HAT: Create a poster advertisement that would show your emotions in photos or stories about the harmful effects of waste pollution on nature and people.

YELLOW HAT: Make a list of positive examples and initiatives to reduce waste pollution.

GREEN HAT: Make a list of at least 6 creative solutions to reduce waste pollution by linking the contents to other teaching subjects.

BLUE HAT Suggest concrete steps that the school or individuals can take to reduce waste pollution.

Depending on the number of students, give more tasks to one group or modify the tasks

Discussion (20-25 minutes)

Groups present their task outcomes, taking care to comply with the success criteria that have been shared with them. *This can be seen on the following page and downloaded from this website:*

https://drive.google.com/file/d/1x0K8fCD2NVAJAOYdp6X6p4947Suo5S-Q/view?usp=sharing]

The others follow the presentations and have the opportunity to ask their peers at least one additional question or to supplement their presentations.

Summarising and further steps (5 minutes)

Assessment of the success of the discussion based on success criteria and agreement on waste collection. For the next two weeks, each student has the task of collecting cardboard and plastic packaging from home and immediate surroundings and bringing it to the school warehouse for storage.

Homework

For the next two weeks, students collect clean (safe) household waste and bring it to school

Lesson 1 cont.

SUCCESS CRITERIA

Dear team members,

In order for your work on this task to be successful, it is very important to define the criteria that should be respected right at the beginning. Please read all items carefully. You will evaluate each of these criteria at the end of your presentation by circling the appropriate number of stars.

Good luck!

- Every team member actively contributes to the preparation process.
- Team members listen actively to each other.
- Ideas and information are communicated clearly and respectfully.
- Roles and responsibilities are defined and understood by all team members.
- Each team member fulfills their assigned role effectively.
- Team members work together cohesively and support one another.
- Conflicts are resolved constructively, and compromises are made when necessary.
- Team members collaborate with other teams by sharing literature.
- Various sources of knowledge were used during the research.
- Relevant facts, evidence, and examples are gathered.
- Information is organized logically and coherently in preparation materials.
- The team's theme keywords are highlighted.
- Each member of the group knows how to explain the key words in his own words.
- The team manages time effectively to meet deadlines for preparation.
- The team acknowledges and respects diverse viewpoints and experiences.
- The team is open to feedback from peers and makes improvements to their preparation based on feedback received.
- Team members practice their roles and the discussion to ensure a smooth and effective presentation.
- The team effectively resolves any conflicts or disagreements that arise during the preparation process.
- After the discussion, the team reflects on their performance, identifies strengths, and areas for improvement.

Team score: _____

Lesson 2 (45-60 minutes)

The students have the task of voting on a creative solution that will contribute to the reuse of the collected waste, based on the proposal made by the team that represented the green hat or by expanding the list with their proposals. First of all, an analysis of the collected waste is performed (which packaging has the most, which has the least), suggestions for re-use, and the selection of the best solution are given.

In this case, the decision was made to use the collected waste for the creation of an Eco-Emerald City based on the novel "The Wizard of Oz" by Frank Baum to link in with their literature studies.

After deciding on the most creative solution, the action plan is drawn up:

- Division of responsibilities.
- Creating a sketch of a creative solution.
- Consideration of materials for making specific parts.

Creation of the Emerald Eco-City

Lesson 3: (45 minutes)

Students organize and classify the collected waste (cardboard packaging more stable/softer, larger/smaller, plastic bottles, corks...) and assemble the parts according to the constructed sketch or as closely as possible. The construction must be stable and visually attractive.

Lesson 4 (90 minutes)

Prepare the area for painting (cover the floor with nylon or old newspapers, put on old clothes...). Distribute parts of the castle to colour to foster teamwork and cooperation.

Lesson 5: (60 minutes)

Assign roles for making decorative elements: drawing and colouring cardboard windows, doors, and decorative parts on the very surface of the castle.
Create signs as landmarks for finding your way around the eco-city.

Lesson 6: (60 minutes)

Make a field of poppies out of plastic bottles and start painting.

Session 7: (45-60 minutes)

Organize an event where students present their "Emerald Eco-City" (or a construction they have made). Invite parents, school staff, and other students to see the project and hear about its purpose. Create brochures or posters that will spread information about your action and the importance of recycling

Extension Activities

Social networks are an excellent way to disseminate ideas. Through the website and Instagram page of the school, we shared photos of the work and a video of the procedure itself. https://www.instagram.com/p/ClEisCMrlPY/?utm_source=ig_web_copy_link&igshid=MzRlODBiNWFlZA==

We presented the idea to the general public by participating in the social action of the French-Serbian Chamber of Commerce. As part of this action (according to data from the organizer's website), over 30,000 people gained insight into the constructions, which we hope will motivate other schools to undertake similar endeavours. https://francuskanedelja.rs/csr-akcija/os-crnjanski-jagodina.html

We also presented the project at the 7th Republic Review on ecology "The Magic of Recycling" organized by the Belgrade Teachers Association, where students presented the products of their work through a PowerPoint presentation. https://drive.google.com/file/d/10fSYy4nzoAvPQznPEC59Tu0vY-AGvEM0/view?usp=sharing

After the project is completed, encourage students to maintain the construction and continue waste reduction activities. You can organize regular recycling days or other activities to maintain awareness of the importance of caring for the environment.

Extension Activities Cont.

Encourage students to delve deeper into waste management strategies and concepts by exploring more advanced topics or studying real-world waste management case studies.

Have students conduct a more comprehensive analysis of the collected waste, including identifying specific recycling programs or waste reduction initiatives in their community.

Challenge students to develop more complex action plans that involve collaboration with local environmental organizations or government agencies.

Allow students to tackle more intricate designs or larger-scale constructions for the "Emerald Eco-City" project.

Encourage students to give presentations that incorporate data analysis and advanced research findings, showcasing their in-depth understanding of the topic.

Assign mentoring roles to gifted students to help guide and support their peers in research and project development.

Support students in publishing their project outcomes or findings in relevant journals or presenting their work at conferences.

Quote from a student who helped make Eco-Emerald City

"We can use our project as an example of the work of an Eco-School that can turn everything into useful things, instead of throwing away garbage".