

ERASMUS + KA219
ENERGY FOR LIFE



THE ATMOSPHERIC POLLUTION

GRADE: 4th Primary Education

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TO. CURRICULAR ASPECTS

| Yam | | No lessons | | Grade |
|-------------------------|--|------------|--|-------|
| worked standards | | | | |

Spanish Language and Literature

B1-1.1 Expresses own opinions in discussions, giving explanations and arguments.

B3-4.1 produces expository texts in which objective and subjective descriptions of events and processes are included.

B3-1.3 invents and writes survey questions

B3-1.3 uses written language to produce different types of text. (Comic, stories, polls ...)

NATURAL SCIENCES

B1-1.1. Seeks, selects and organizes specific and relevant information, analyzes, draws conclusions, communicates his experience, reflects on the process followed and communicate orally and in writing.

B1-1.2. Uses own means of observation.

B1-1.3. Consultation and uses written documents, images and graphics

B1-1.4. Develop appropriate information to access the texts of scientific strategies.

B2- 3.3. It identifies and adopts hygiene and care

B2- 4.1. actively participates in the activities taking place in the classroom and in the center, respecting the norms established.

B3-4.1. Use the magnifying glass and other technological means in the observation and study of living things.

B3-4.2. Observes and records any process associated with living things, using the tools and appropriate audiovisual and technological means, communicating orally and in writing the results.

B3- 5.2. Manifests a certain precision and rigor in observing and developing related work.

B5-4.1 Use the resources provided by information technology to find information in a guided manner, communicate and collaborate in carrying out a project.

ARTISTIC EDUCATION

B1-2.4. Develop habits of order, correct use and proper maintenance of materials and tools used in their artistic creations.

B1-2.5. Shows interest in participating in group tasks.

B1-2.9. Rate respectfully visual compositions made

Makes a visual composition

MATHEMATICS

B5-2.1 Perform and interpret graphs with data from nearby situations.

| Planification of the task | | |
|---|--------------------------|--|
| Phase | Number of lessons | Observations |
| TO. Approach to challenge or problem | 1 | In assembly, discussion on the subject |
| B. Study of the topic | fifteen | <ul style="list-style-type: none"> • Experiment "Air pollution" • Experiment: "Cultivation of bacteria" • Experiment: We yogurt bacteria • Experiment: Planting mold • Talk by Health on the subject • Search ICT by groups • Pooling of the investigation • Art Session "Mounting pollution in our school" • Math session: interpreting graphs, coordinate work, analysis of findings • Sign Language: Invention of comic about the problem • Sessions language: manufacturing surveys and report results • Planting plants in the garden of the College • Visionado short PDI on atmospheric pollution and short made "Mucus" • Programming with blue-bot • Mounting shelf to put plants in the class |
| C. Planification and development. | | |
| D. Final analysis and explanatory of results | 2 | <ul style="list-style-type: none"> • Group- conversation class to see the conclusions we have reached • Drawings / Summary / stories / comics ... |

Contents

ARTISTIC EDUCATION

- *Audiovisual language*
- *Still and moving images*
- **visual compositions group**
- **Creating art installations**

NPPs

- *Introduction to scientific activity. experimental approach to it.*
- *Using different sources of information (direct, analog and digital materials).*
- *Reading texts typical of the area.*
- *using the technologies information and communication to find and select information, similar processes and present conclusions.*
- *Disease prevention habits and accidents in the classroom, school and environment.*
- *Utilization from various materials, taking into account safety standards.*
- *Individual and group work.*
- **Health and sickness. healthy habits (hygiene) prevention and detection of health risks.**
- *Personal development. The activities and participation in the activities of a collective nature.*
- *Interest in observation and rigorous study of living things.*
- *active in the preservation and care of the natural environment behavior.*
- **Use of technology for the study of living things and communicating results orally and in writing.**
- *Guided search for information online.*
- **The atmospheric pollution. Causes and effects.**
- **Fungi, viruses and bacteria**

LANGUAGE

- *Communication interaction, spontaneous or directed, with different intent, spatial order respecting a logical, chronological or speech*
- *Production of written texts. Surveys and reports thereof. Stories and comics*

MATHEMATICS

- Collection, sorting and representation of qualitative and quantitative data

B. PROBLEM OR CHALLENGE

One function of the rain is clear the atmosphere of harmful particles such as viruses and bacteria.

The lack of rain causes air pollution increases the risk of respiratory infections and respiratory diseases caused by viruses and bacteria.

With this unit STEAM intend to show our students where the harmful elements for people, where the bacteria (although we can not see them with the naked eye) and the importance of washing your hands often and what can we do to clean the air are.

One of the function of the rain is to clean the atmosphere of harmful particles like bacteria and viruses.

If it doesn't rain, atmospheric Greater cotamination Increases the risk of suffering respiratory deseases like infections, viruses and bacterial illnesses.

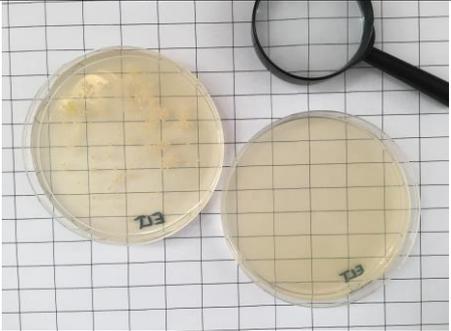
With This we would like STEAM unit to show our children where are the bacteria (even if we can't see them naked With the eye), The Importance of washing our hands Several times and what can we do to clean the air.



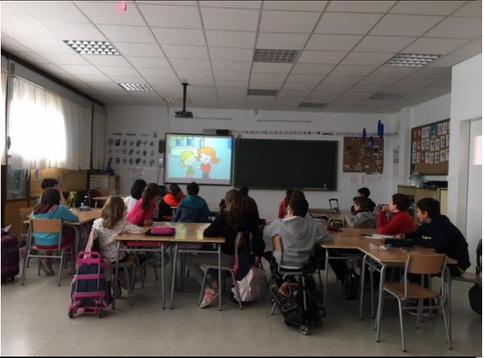
C. STUDY OF CASES

Next, the exposed activities and means used for the case study.

| ACTIVITIES | | |
|--|--|--|
| Activity | Resource | Observations |
| <p>Initial assembly for the approach to the topic</p> |  | <p>Students learn various causes of environmental pollution, is a fluent conversation and very participative</p> |
| <p>Search of It More on bacteria in groups</p> | <p>Tic classroom, notebook and pen to go scoring information found. Questionnaire.</p>  |  <p>Annex VII</p> |
| <p>Experiment air pollution</p> | <p>"Chimney", papers, matches, tweezers and bottles empty transparent. Annex I</p> |  |

| | | |
|---|---|--|
| <p><i>Experiment or</i></p> <p>Culture of bacteria in Petri dishes</p> | <p><i>Our hands Petri plates</i></p> <p><i>Annex II</i></p> |  |
| <p><i>Experiment or</i></p> <p>We yogurt bacteria</p> | <p><i>Tablespoon whole milk</i></p> <p><i>plain yogurt</i></p> <p><i>Glass jar</i></p> <p><i>Annex III</i></p> | <p><i>We see the manufacturing process from other bacteria of yoghurt</i></p>  |
| <p>Mold culture</p> | <p><i>Two pieces of bread, one wetter than another and airtight bags</i></p> <p><i>Annex IV</i></p>  | <p><i>At first it made a little mess on the difference of molds and bacteria so it was decided to conduct a mold culture to see its features and differentiate well.</i></p> |
| <p>Collaboration chat with Health</p> | <p><i>Annex V</i></p> |  |
| <p>Art</p> | <p><i>Balloons, helium and blue ribbon</i></p> <p><i>Annex VI</i></p> |  |
| <p>Elaboration</p> | <p><i>Pencil and paper</i></p> | <p><i>The groups have developed and have</i></p> |

THE ATMOSPHERIC POLLUTION

| | | |
|---|---|---|
| <p><i>from surveys on the subject</i></p> |  | <p><i>Last individually</i></p>  |
| <p><i>Report results surveys</i></p> | <p><i>Pencil and paper</i></p> | <p><i>Annex IX</i></p> |
| <p><i>Interpreting graphs, coordinate work and analysis of findings</i></p> | <p><i>elaborate graphics</i></p> | <p><i>Annex VIII</i></p> |
| <p><i>Visionado short PDI on Short air pollution, bacteria and made "Mucus"</i></p> | <p>https://www.youtube.com/watch?v=EKE7ezl4B <i>lw</i> https://www.youtube.com/watch?v=zqEEgYuL <i>EQQ</i> https://www.youtube.com/watch?v=1jJ9lr8Ba <i>E8</i></p> |  |
| <p><i>Blue-bot programming</i></p> | <p><i>Mat, cards pollution and blue-bot</i> <i>Annex XI</i></p> |  |
| <p><i>Developing stories and comics</i></p> | <p><i>Pencil, paper and colors</i></p> | <p><i>Annex X</i></p> |
| <p><i>planted plants</i></p> | <p><i>Earth</i> <i>Water</i> <i>plants</i> <i>rake</i></p> | <p><i>One solution to clean the atmosphere are plants could not stay without trying to improve.</i> <i>Annex XII</i></p> |
| <p><i>Small shelf assembly</i></p> | <p><i>Instructions</i> <i>screwdriver</i> <i>screws shelf</i></p> | <p><i>Annexed</i> <i>We assemble a small shelf to put plants in the classroom</i></p> |
| <p><i>final assembly</i></p> | | <p><i>Here we review what worked and came to conclusions.</i></p> |

D. DEVELOPMENT AND PLANNING

see Annexes

AND. EVALUATION PROCESS

In the evaluation process we will evaluate, on the one hand, the teaching, assessing whether we have encouraged students if the material used has been adequate, if they have worked well groupings, whether the activities are well designed and if times are well planned.

On the other hand, we will evaluate the contents of the standards by observing the talks at meetings that we have made, we will also be assessed by analyzing the survey questions they have prepared, comics, stories, motivation, participation and interest.

ANNEX I: EXPERIMENT POLLUTION ATMOFÉRICA (Duration: 1 Session)



TITLE: "Atmospheric pollution"

WHAT DO WE NEED?

- *Fireplace made with a can*
- *Papers*
- *transparent empty bottles*
- *Clamps to hold "chimney"*
- *matches*



How is it done?

We threw the papers in the fireplace, close the little door and we hold with tweezers, put the bottle upside down and filled with smoke. We cover.

What will happen to the smoke we have in our bottles?

Hypothesis students

It will escape through the plug

Nothing, he stays in and goes white bottle.

EXPLANATION:

The smoke is trapped in the bottle simulating the toxic gases that get trapped in the atmosphere, but after a few hours the smoke no longer looks white because it has dissipated, but if you can see that the water droplets remaining in the bottles have been contaminated and now are not transparent, are yellow.

ANNEX I: EXPERIMENT POLLUTION ATMOFÉRICA (Duration: 1 Session)



ANNEX II: EXPERIMENT bacterial culture (Duration: 1 Session)



TITLE: Bacteria culture

WHAT DO WE NEED?

- *Petri dishes*
- *Our hands*



HOW IS IT DONE?

Touch the plate with his finger before eating, then we wash our hands and touch another Petri dish with clean hands and leave them near the radiator to go observing in later days.

Hypothesis students

A plaque will be dirtier than the other

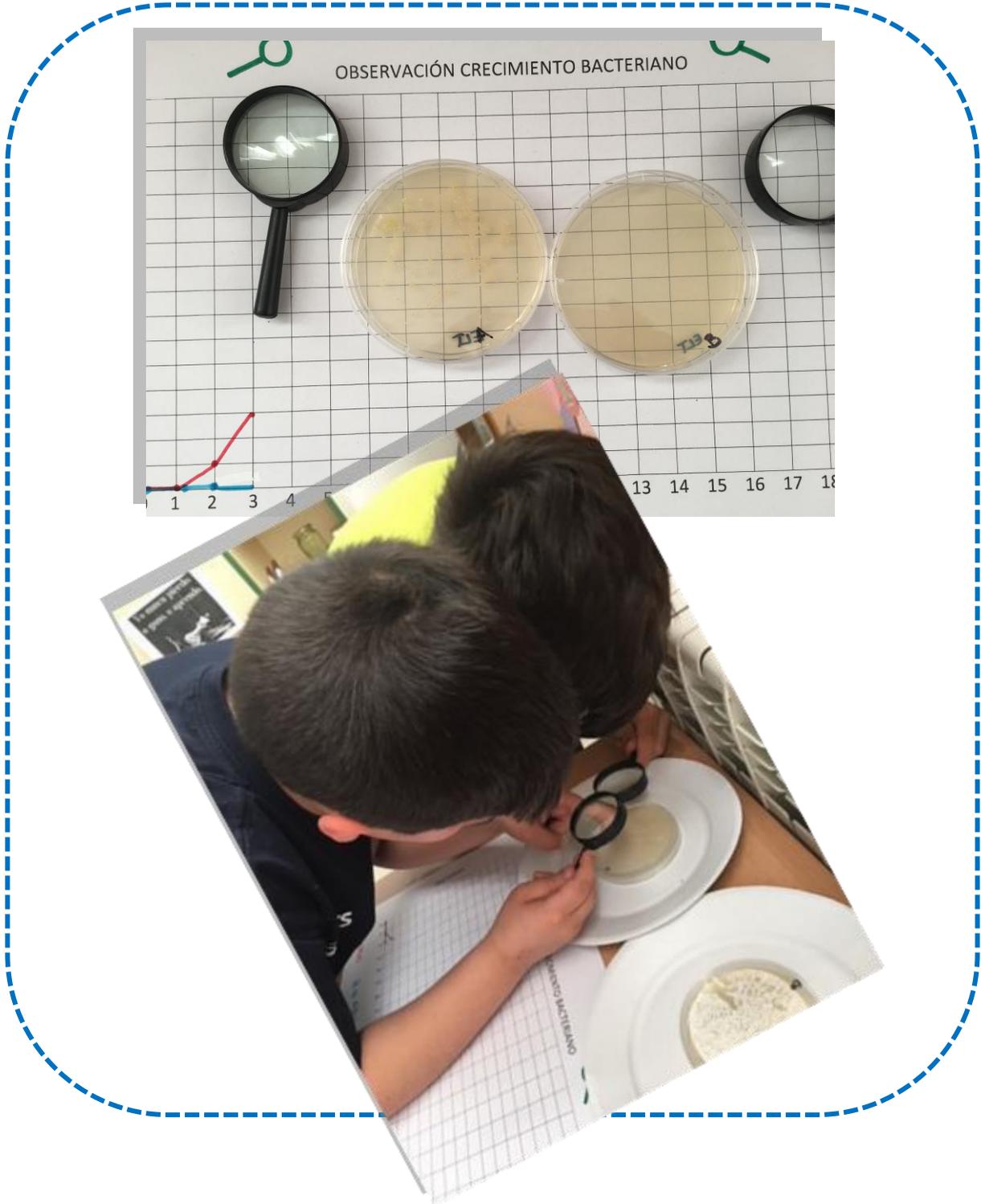
Nothing we have clean hands

EXPLANATION:

Petri plates are used for culturing microorganisms and when they contact some bacteria, they grow quickly and can be observed, so we can see the untouched plate before washing hands it has many more bacteria which have been washed.

This experiment demonstrates the importance of hand washing as touching an object are touching many bacteria.

ANNEX II: bacterial culture (Duration: 1 Session)



ANNEX III: WE DO WITH YOGURT BACTERIA (Duration: 1 Session)



TITLE: WE DO WITH YOGURT BACTERIA

WHAT DO WE NEED?

hot whole milk

A spoonful of yogurt

Glass jar with lid

HOW IS IT DONE?

In the hot milk, a spoonful of yogurt is cast, stir and let stand in a closet so not cool so quickly. You will see the next day.

Hypothesis students

You know bad milk

It will be a chemical reaction and will bubbles or something weird

Yogurt melts in milk

EXPLANATION:

Yogurt is a dairy product obtained by bacterial fermentation of milk, therefore, to throw the milk a spoonful of yogurt containing the bacteria that cause fermentation and having the required temperature so that they can be incubated (hot milk) and fermented milk becomes yogurt.



ANNEX IV: mold culture (Duration: 1 Session)



TITLE: *Mold culture*

WHAT DO WE NEED?

Two pieces of bread

Resealable bags

Spray bottle with water



HOW IS IT DONE?

We put the pieces of bread in a bag, one of them moisten with water using a vaporizer and tightly closed bags to save the humadad and prevent children who may be allergic in direct contact with the mold.

Hypothesis students

They will smell really bad

It's going to rust out

EXPLANATION:

Mold is a fungus found both outdoors and indoors. ... Mold grows best in warm conditions, wet and damp, and spreads and reproduces by spores, which have also discovered is mold growth pattern (circular shape) and there are different types of mold (different colors) .



ANNEX V: HEALTH TALK (Duration: 1 Session)



LECTURE Public Health

Two official veterinary public health, have come to give a talk on air pollution, microorganisms and their impact on our health.



Resources used

Power Point presentation

<https://www.youtube.com/watch?v=3U8XVkj8Pz4>

<https://www.youtube.com/watch?v=uJvOR32r1Jc>

<https://www.youtube.com/watch?v=lp9ou8kq0uc>

Annex VI: INSTALLATION ART (Duration: 1 Session)



TITLE: "RIDING POLLUTION IN OUR SCHOOL"

WHAT DO WE NEED?

gray balloons

Helium

blue ribbon

round stones

WHAT do we propose?

Reflect, through art.

An installation can be an excellent way to think critically and creatively about the meaning of a problem and remove to school spaces acting on them and transform them.

With this facility we intend to involve the entire educational community of the problem of pollution and raise awareness of all of the importance of the environment.

Gray balloons represent pollution and blue ribbons pure air

CHARACTERISTICS OF THE INSTALLATION

- *Promotes environmental care*
- *It stimulates the mind and the senses*
- *Integrates the viewer with the work*
- *Ephemeral art*

Annex VI: INSTALLATION ART (Duration: 1 Session)



RIDING THE POLLUTION





Tic information search

In couples seeking information about mold and bacteria, having to complete some questions given above.

<http://www.cca.org.mx/cca/ninos/html/tomo9/44.htm>

<https://es.wikipedia.org>

<http://www.profesorenlinea.cl/Ciencias/Bacteria.htm>

<https://www.youtube.com/watch?v=1jJ9lr8BaE8>

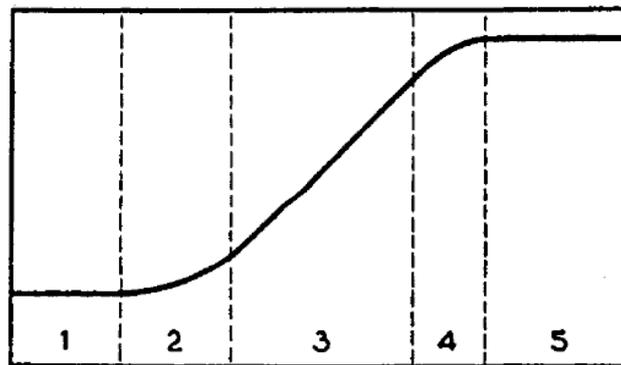
<https://www.youtube.com/watch?v=EKE7ezl4BLw>



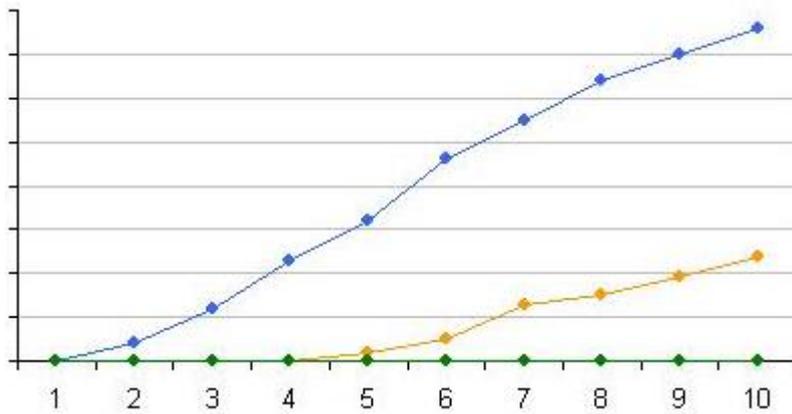
ANNEX VIII: INTERPRETATION OF GRAPHICS (Duration: 1 Session)



GRAPHIC bacterial growth



MOLD GROWTH CHART (WET BLUE PAN. PAN AMARILLO SECO)



ANNEX IX: DEVELOPMENT OF SURVEYS (duration 2.5 sessions)



DEVELOPMENT OF A SURVEY

Steps we have taken to produce it:

- 1. cooperative work. Deciding between all the subject of the survey.*
- 2. To take note of what you want to find out.*
- 3. Develop a list of questions trying to be specific questions, which are well understood and that are easy to answer.*
- 4. Review the questions and arrange them (grouping the questions that are more closely related)*
- 5. Carry out among all the survey. (Each will carry a copy of the questions and record the answers.*
- 6. review the responses and prepare a summary of them (In the summary you will gather the information they give, (without saying who you have been told you. You can use expressions like most, only one, almost no one ...*

THESE ARE THE QUESTIONS THAT HAVE WORKED students @ S

First name:

Age:

- 1. Do you think there is air pollution?*
- 2. Does it matter this topic for you? (Much, little, almost nothing)*
- 3. Do you think that air pollution affects our health?*
- 4. Do you know any illness that causes us contamination?*
- 6. Do you think there are bacteria and viruses in the atmosphere?*
- 7. How they cleaned?*

ANNEX IX: DEVELOPMENT OF SURVEYS (Duration: 2.5 Sessions)



8. Can we do something to clean the atmosphere?

9. What do you propose?



SURVEY REPORT :

The age of respondents is 10 - 11 years.

First detacamos the high level of agreement of all in terms of atmospheric pollution.

100% of respondents think there is air pollution and that this affects our health, still coughing, fatigue and lung cancer the most known diseases.

All tell us that there are viruses and bacteria but as to how clean the atmosphere, there are different answers: tending the plants, using more bus and leaving used cars and trucks, with fines factories that pollute a lot, with filters in chimneys, not usardo sprays ect.

ANNEX X: COMIC



TITLE: BACTERIA TO LEAK



ANNEX XI: Programming Blue-bot



TITLE: Blue-bot took a clean place

DESCRIPTION: Must be programmed to Blue-bot to reach the field dodging obstacles pollutants (Factories, cars, snuff, nuclear ...), there is increasing obstacles and it gets a little harder.



ANNEX XII: We plant



TITLE: CHECKING FOR SOLUTIONS

We have to put our grain of sand. In groups of 4alumn @ s it is planted in the school garden.



ANNEX XIII: DRAWINGS



ANNEX XIV: ASSEMBLE OUR PLANT SHELF



SHELF FOR PLANTS OUR RIDE

MATERIAL:



disassembled shelf

Manual

Screws and washers

screwdriver





STEAM

Experiments: air pollution (Annex I), bacteria culture (Annex II), we yogurt bacteria (Annex III),
mold (Annex IV), planting (ANNEX XII)

*Finding information on the Internet (Annex VI), YouTube videos (Annex V), programming
bluebot (Annex XI)*

Mounting shelf for our plants (ANNEX XIV)

Assemble pollution (Annex VI)

Interpreting graphs: growth of mold and bacteria (Annex VIII)

Count surveys and polls percentages (Annex IX)