R4.1. DataScEd4CiEn STEAM Scenario Template

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Introduction

Title

Clean Air as a Shared Responsibility – How clean is the air we breathe? What can we do to combat air pollution?

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Summary of the scenario

In this lesson, students actively explore the real-world problem of air pollution, which threatens the health of both humans and animals. First, students watch an informative video to learn about the topic of air. They compare urban and rural areas and form hypotheses about air quality in both environments. Particulate matter levels in Münster (city) and Recke (countryside) are examined using a digital map (OpenSenseMap). The values are then presented in a table. Next, two averages are calculated for the previously recorded measurement data from Münster and Recke, which are then converted into a bar chart. Through this, students learn to collect data, record it in tables, and present it in diagrams (NRW Curriculum, Mathematics, content-related competency area: “Data, Frequencies, and Probabilities”[1]). Based on the results of their work, students develop measures to improve air quality, which are then presented in a product of their own choosing. Finally, all results are presented in a museum tour. Concrete ideas for action are highlighted and discussed so that students experience themselves as active contributors to a clean environment.

Age of the students

This lesson series is designed for fourth-grade students. In order for the students to successfully complete the lesson series, they must possess certain prior knowledge and meet certain prerequisites. This includes, among other things, familiarity with data, as a basic understanding is necessary to complete the individual tasks in the lesson series. In addition, the children should already have a general idea of where the air tends to be clean or dirty, so that they can build on these ideas as they continue working. Furthermore, the children must know and be able to follow the rules and proper behavior for the respective social settings so that the work phases can proceed productively and the lesson objectives are

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[1] See Ministry of Schools and Education of the State of North Rhine-Westphalia. (2021). Curriculum for Primary Education in North Rhine-Westphalia. Mathematics. Düsseldorf: Ritterbach. pp. 93–94.

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achieved. Furthermore, the class should be familiar with the thumb method for reflection so that it can be carried out efficiently. The cinema seating arrangement should also be known and practiced so that every child knows where their seat is and no time is wasted. Another important aspect is the safe use of iPads, as the children need them for research and reading data. In this lesson unit, learning how to use them is not the primary focus but is viewed as a prerequisite. The use of iPads should be an enrichment and not an obstacle. Finally, the students must know how to use and work with voice memos, as this is in the
This unit assumes that students have completed Unit 4. For Unit 4, students should also have basic skills in drawing with a pencil and ruler so they can create a bar graph. Additionally, a basic proficiency in speaking and listening is essential for all lessons in this unit, so that students can present their own work and follow along with their classmates.

‘Data Science Content in STEAM for Civic Engagement and Social Justice from the Early Years’

Subjects and topics

The lesson on air pollution focuses on environmental impact, health, responsibility, and sustainable development. The starting point is the issue that air quality is not the same everywhere and, in extreme cases, can even lead to health problems. This inequality in how people are affected by air quality raises questions of social justice. There are areas with higher and lower levels of pollution. Nevertheless, everyone should work to reduce air pollution and improve life for all, as every person has the right to clean air. At the same time, civic engagement is explored as students examine what actions individuals or larger groups can take to reduce air pollution. In doing so, they are encouraged to reflect on their own role as part of society and develop ideas on how they themselves can actively contribute to improving air quality and motivate others to get involved as well. The transdisciplinary STEAM approach supports the exploration of this issue by integrating different perspectives. Scientific content helps, among other things, to better understand the causes and effects of air pollution. Mathematical methods, in turn, are used to collect, evaluate, and present measurement data. The artistic-creative component promotes the visual and communicative presentation of the results to raise awareness about the issue of air pollution among others. Overall, the STEAM approach helps ensure that air pollution is understood as a challenge for society as a whole and makes it clear that collective, responsible action is necessary.

Real-life questions

How clean is the air we breathe? What can we do to combat air pollution?

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Objectives for the scenario

Overall objective of the lesson series:
Students explore the importance of clean air by investigating differences in air quality between urban and rural areas, mathematically analyzing real measurement data and presenting it in various ways, and developing and reflecting on their own ideas for responsibly addressing environmental pollution.

Objective of Unit 1:
Students describe characteristics of different living environments (urban and rural) and formulate hypotheses about factors influencing air quality.

Objective of Unit 2:
Students gather information from a digital map by extracting, comparing, and tabulating measurement data on particulate matter levels.

Objective of Unit 3:
Students use mathematical methods to analyze data by calculating averages and interpreting them in the context of air quality in two living environments.

Objective of Unit 4:
Students present data in bar charts, describe and interpret them, and derive initial ideas for improving air quality from the results.

Objective of Unit 5:
Students develop their own strategies for improving air quality by creatively applying their findings to a final product.

Objective of Unit 6:
Students organize, connect, and document their work by compiling information, visualizations, their own ideas for action, and their products into a poster.

Objective of Unit 7:
Students present their posters, discuss specific actions they can take to improve air quality, and reflect on the significance of their actions for the environment and themselves.

Skills and competencies

This lesson unit aligns with the core curriculum for elementary schools in North Rhine-Westphalia for the subjects of mathematics, social studies, and German.

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The mathematics curriculum identifies the content-related competency area "Data, Frequencies, and Probabilities."[2] This competency area is addressed in the lesson unit, as students collect, organize, and compare data. In the second lesson, students extract data from a digital map and transfer it into a table. In the fourth lesson, the previously calculated averages are converted into a bar chart, which is then described and interpreted. In addition, all process-related competencies from the curriculum are present in the unit. The process-related competency "problem-solving" runs throughout the entire lesson unit.[3] The students test the class hypothesis formulated earlier (Lesson 1) by collecting real measurement data on particulate matter levels, organizing this data into tables (Lesson 2), calculating averages (Lesson 3), and presenting the results in a bar chart (Lesson 4). The results are then interpreted and applied to possible actions in everyday life. Additionally, there is a return to the class hypothesis (Lessons 4 through 7). As part of the problem-solving process, students simultaneously apply basic modeling steps (process-oriented competency "Modeling").[4] A real-world situation (air pollution) is analyzed using mathematical representations, and the results are related back to the students' everyday lives. Furthermore, the process-oriented competency "Representation" is present in lessons two and four, as students represent real data in a table and a bar chart.[5] Students verbalize conjectures, explain procedures, describe mathematical representations, and share their insights through discussions, presentations, and the museum tour. This describes the process-oriented competency of "Communicating," which is present in all phases of the lesson unit.[6] Finally, the process-related competency of "arguing" is present in the lesson unit.[7] This is developed step by step: first, students justify their hypotheses in terms of everyday life; then, increasingly based on data using measurements, calculations, tables, and diagrams; and finally, they develop possible courses of action based on the research results.

The core curriculum for German identifies, among other things, the competency area "Speaking and Listening—Speaking in Front of Others."[8] Students always present their work results at the end of each work phase during the (interim) review and reflection, using supporting materials such as worksheets. This skill is particularly fostered in the seventh lesson, as a museum tour is conducted there and part of the group must explain their own poster to the other students. In the fifth lesson, students develop role-plays and radio plays, consciously employing facial expressions, gestures, and voice. This aligns with the expectation that students "realize different speech styles in a dramatic context in a manner appropriate to their roles."[9] Furthermore, the lesson unit promotes the competency area "Writing—Using writing strategies and composing texts."[10] In the fourth lesson, students write

[2] See Ministry of Schools and Education of the State of North Rhine-Westphalia. (2021). Curriculum for Primary Education in North Rhine-Westphalia. Mathematics. Düsseldorf: Ritterbach. pp. 93–94. Hereinafter abbreviated as "Curriculum, Mathematics."
[3] See Curriculum, Mathematics, p. 82.
[4] See Curriculum, Mathematics, p. 83
[5] See ibid., p. 84.
[6] See ibid., p. 83.
[7] See ibid., p. 84.
[8] See Ministry of Schools and Education of the State of North Rhine-Westphalia. (2021). Curriculum for Primary Education in North Rhine-Westphalia. German Language. Düsseldorf: Ritterbach. p. 20. Hereinafter abbreviated as "Curriculum, German."
[9] See Curriculum, German, p. 20.
[10] See ibid., pp. 21–22.

a text describing the Säulen diagram they created earlier, using the language bank. In addition, during the fifth lesson, students create projects that incorporate the measures they previously developed to improve air quality. Possible projects include role-plays, plays, songs, radio plays, letters, etc. Students must put their product ideas into written form before implementing them in a media format, for example, by creating a script for a play. In the seventh lesson, a poster is designed to document all the results. Texts are also written during this process. Furthermore, the fifth lesson addresses the competency area "Reading—working with texts and media, presenting content" by allowing students to choose between analog and digital tools for presentation when creating their own products.[11] Finally, the competency area "Examining language and language use" is addressed in this lesson unit, as the fourth lesson involves working with the language bank in the bar chart.[12] The curriculum for the subject General Studies specifies the competency area "Nature and Environment—Animals, Plants, Habitats."[13] This competency area is addressed in the fourth and fifth lessons, as concrete courses of action for the sustainable use of air as a resource are developed there, and students design their own product that illustrates these options. Students actively engage with their responsibility toward the environment. The competency area "Space and Mobility—Orientation in Spaces" is addressed in the first lesson, in which students compare characteristics of different spatial structures (city and countryside) using a mind map. By comparing the locations of Münster and Recke in the second through fourth lessons, ecological differences (air quality) are directly contrasted.[14] In addition, the competency area "Body and Health—Body and Healthy Lifestyle" is addressed in the first lesson.[15] In this lesson, the Students watch an informative video on the topic of air and the impact of clean air on human health. In the fourth period, students develop strategies to improve air quality and thereby enhance their well-being. Finally, the competency area "Engineering, Digital Technology, and Work—Technical and Digital Developments" is addressed in the fifth lesson, during which students can independently choose between analog tools and digital tools to create a product. This aligns with the expectation that students "use common (including digital) tools and materials appropriately and safely."[16]

Teaching approaches and learning strategies/theories

The pedagogical models and methods of STEAM education include the following theories and principles: inquiry-based learning, problem-based learning, project-based learning, differentiated learning, individualized and adaptive learning, collaborative learning, game-based learning, and learning through design. The inquiry-based learning approach, among others, has been incorporated into the design of this lesson. The aim here is to encourage learners to engage with scientific processes and develop analytical, creative, and critical

[11] See ibid., p. 26.
[12] See ibid., pp. 27–29.
[13] See Ministry of Schools and Education of the State of North Rhine-Westphalia. (2021). Curriculum for Primary Education in North Rhine-Westphalia. General Studies. Düsseldorf: Ritterbach. pp. 188–189. Hereinafter abbreviated as "Curriculum, General Studies."
[14] See Curriculum, General Studies, p. 190.

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[15] See ibid., p. 187.
[16] See ibid., p. 192.

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thinking. However, not all phases of the process are carried out by the students themselves in this lesson. The real-world problem of air pollution and the associated research questions are provided by the teacher. However, during the first lesson, the class has the opportunity to formulate hypotheses and make assumptions about what air quality is like in different locations. The subsequent step of designing and conducting an investigation is partially carried out by the students themselves. The OpenSenseMap is provided to the students, so they do not collect the data themselves. However, they read and process the data independently. The students interpret their results in relation to the research question and draw conclusions on how air quality can be improved. In the final lesson, the children are also expected to present their results. In addition to this approach, the problem-based learning has been incorporated into the design of the lesson series. The focus here is on investigating and solving a real-world problem. In this unit, students explore the issue of air pollution and develop potential solutions. It is important to note, however, that there is no definitive solution at the end of the unit. During the unit, the children can work independently to some extent, for example when creating a product that communicates measures for better air quality. This is also an aspect of problem-based learning. Furthermore, solutions are frequently exchanged. At the end of each lesson, there is a review session where different ideas can be presented. During the final lesson, the museum tour, this aspect is particularly prominent. A third approach found in the lesson unit is project-based learning. This approach aligns with the second half of the fourth lesson and the entire fifth lesson, where the children are tasked with creating a product to present possible measures for improving air quality. The focus of this lesson is on an engaging project—the creation of the product—which motivates the children to organize their work and manage their time effectively. The children have complete freedom in designing their products. They can work in written, oral, visual, or multimedia formats. Various materials are provided for this purpose. Additionally, the project is carried out through group work. The students conduct research and solve the task using appropriate resources. These are all aspects of project-based learning. In addition to this approach, collaborative learning has also been incorporated into the design of the lesson unit. The children must work in groups on several occasions and communicate their ideas and concepts. Furthermore, various opinions and suggestions are gathered and discussed in a whole-class setting, thereby strengthening the class's learning community. Especially during the final lessons of the unit, the students must work together to create a product and design a poster. In doing so, they learn to compromise and accept all opinions.

Critical thinking is a cross-disciplinary skill that is relevant to STEAM education and has been incorporated into the design of this lesson series. Students are regularly asked to share their own ideas and are encouraged to discuss the ideas of others. This skill is particularly important during the reflection at the end of each lesson, as students consider what has been discovered and whether there are any other aspects that have not yet been considered. Children should not simply accept everything they are told. Instead, they should form their own opinions and question statements and findings. Furthermore, the lesson series promotes the children's problem-solving skills. Especially in Lesson 5, they must develop their own ideas, select materials and tools themselves, and create a product that meets the requirements. Through the implementation of collaborative learning, it has already become clear that teamwork skills are also fostered in this lesson unit. Furthermore, a sense of responsibility is cultivated, as the unit addresses a social issue and, by the end of the unit, it should be clear to the children why it is important to pay attention to air quality and take measures seriously. The competency of

inventiveness and ingenuity is also relevant, as the children are repeatedly encouraged to gather their own ideas and create a creative product to illustrate the measures. Furthermore, communication skills are important for group work as well as for discussion in the plenary session. At the same time, this competency is further fostered through the many opportunities for speaking and exchanging ideas.
Overall, it is clear that several STEAM theories and principles, as well as cross-curricular competencies, have been incorporated into the design of the lesson and are evident throughout the lesson.

Educational Scenario planification

Lesson plan

	Lesson Description	Description of the activity	Material	Social form	Time
Lesson 1	Introduction: Announcing the title and explaining the project Watch video	Clean Air as a Shared Responsibility – How clean is the air we breathe? What can we do to combat air pollution? Video: What is air?	Title card https://www.youtube.com/watch?v=DIGvuZBrOb4 (starting at 1:53)	Cinema seat	10 min
	Phase 1: The teacher asks the question: “Where is the air clean, and where is it dirtier?” Brainstorming and presentation Thumb vote	Pair work: 1–2 ideas are noted down Plenary session: 3–4 ideas are presented Plenary session, show of hands: Thumbs up: rural areas; thumbs down: urban areas; thumbs to the side: both equally -> Teacher records the majority as the class hypothesis on the flip (STEAM corner)	Worksheet 1	Pair work, plenary session	15 min
	2nd work phase: Mind map comparing city and countryside	Students create a mind map comparing the city and the countryside	Worksheet 2 (DIN A3)	Group work (3–4 students)	23 min
	Backup and Reflection:	1–2 groups present their mind maps	Worksheet 2 (DIN A3)	Plenary session	12 min

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	Presentation of the mind map Question from the teacher: “Which factors have a positive impact on air quality, and which have a negative impact?”	Students make predictions; the teacher writes these down on a flipchart and hangs it in the STEAM corner of the classroom.			
Lesson 2	Introduction: Introduction to the OpenSense-Map Website	Explanation of what the website shows, how it works, and how to use it with the help of the whiteboard		Cinema seat	15 min
	Phase 1: Exploring OpenSenseMap	Independent exploration of the map Research assignment: Explore from in two areas: Münster (city) and Recke (rural area)	Worksheet 3	Partner work	15 min
	Phase 2: Comparison of two specific locations, entry into a table	The locations Münster (Piusallee) and Recke (Vogteistraße) are examined. Data from the last seven days is entered into the table for both locations.	Worksheet 3	Partner work	20 min
	Verification and Reflection: Discuss and compare the values obtained Evaluating the OpenSense Map	Teacher asks: What do you think of the map, and how did you find working with it?	Worksheet 3	Plenary session	10 min
Lesson	Introduction: Explanation of the principle of the mean values	The teacher explains the procedure and works through examples together with the students		Cinema seat	15 min

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	Work phase:	Calculate the mean values for the particular	Worksheet 4	Individual work	20 min

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		matter levels in Münster and Recke			
	Backup and reflection: Discussing the results	The teacher asks the question: “What does the number tell us about the week? Which location has better air quality?”	Worksheet 4	Plenary session	10 min
Lesson 4	Introduction: Introduction to the bar chart, creating a vocabulary bank	The teacher posts a bar chart on the whiteboard. The students are tasked with labeling the bar chart. The students must place the magnetic cards in the correct spots on the bar chart. The teacher keeps track of and these are allowed to come to the front to place the cards correctly. The language bank is distributed.	Bar chart and magnetic cards Worksheet 5	Cinema seat	10 min
	Phase 1: Labeling, creation, and description of a bar chart	Create a bar chart showing the mean values for Münster and Recke.	Worksheet 6, 7	Individual work	20 min
	Interim review and reflection: Discuss the results	A child shows their worksheet. A child describes the chart. The teacher asks: “What do the two columns?”	Worksheet 6, 7	Plenary session	7 min
	Phase 2: Brainstorming ideas and measures to improve air quality	The teacher announces and explains the new task and distributes worksheets Group work (3–4 students)	Worksheet 8	Plenary session, group work	15 min

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	Wrap-up and reflection: Discussing the ideas	Students present their ideas and the teacher collects them on the flipchart (STEAM corner). The teacher provides a preview of the next lesson.	Worksheet 8	Plenary session	8 min

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Lesson 5	Introduction: Explanation of pr oject and brainst orming	The teacher explains the project (students are to create a product that presents the collected measures) and suggests ideas for implementation. The teacher collects these on a flipchart. (e.g., model project, role-play/play, songs, audio plays, letters, learning stations)	Students are provided with plenty of materials (e.g., craft supplies, iPads, …)	Plenary session	15 min
	Work phase: Product creation	Groups create a product and prepare it so that they can present it later (role-plays and skits are recorded on video). The students have complete freedom in the implementation.		Group work (3-4 children)	40 min
	Wrap-up and reflection	Presentation of the projects takes place in the final session Teacher asks: “How did you get along?” “Was it fun?” (Thumbs-up method) Overview of the last two lessons			5 min
Lesson 6	Introduction: Discussion of the rules for creating a poster, brainstorming ideas for the poster	Class discussion Distribution of the worksheet (rules and possible ideas are included there)	Worksheet 9	Cinema seat	15 min

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	Activity phase: Brainstorming and poster creation	The groups collect ideas for the joint poster. They create a large poster that includes all previously developed materials (diagrams, calculations, photos, their own measures). Students may use the iPad.	Worksheet 9	Group work (groups from Units Four and Five)	40 min

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	Wrap-up and reflection	Presentation of the products takes place in the final unit Teacher asks: “How did you get along?” “Was it fun?” (Thumbs-up method) Preview of the final class			5 min
Lesson 7	Introduction: Explanation of the museum tour itinerary	The teacher explains the museum tour: The group should split up; one half stays with their own poster and presents it to the other children, while the other half looks at the other posters. Halfway throug h the time, the groups switch. The teacher distributes the posters around the classroom in advance	If necessary: Provide iPads	Cinema seat	10 min
	Activity phase: Museum tour	Implementation of museum tour			30 min

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	nsuring and Refl ection : Reflection of the museum tour Recap of the beginning of the series Concludin g discussion Closing remarks for the lesson series	Teacher asks: How did you get along? Which ideas did you think were great? What could be improved? The assumptions developed and the class hypothesis (Unit 1) are revisited and discussed. Discussion: What specific actions can we take? Why is it important to have clean air? Did you enjoy the lesson series? (Thumbs-up method) Posters are hung in the STEAM corner.		Plenary session	20 min

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Timing

The lesson plan consists of a total of seven periods, each lasting either 45 or 60 minutes. The first period lasts 60 minutes and is dedicated to social studies. Here, the focus is on the STEAM disciplines of science and the arts. The next three periods, on the other hand, are dedicated to mathematics and also last 60 minutes each. Lesson 3 is an exception, as it lasts only 45 minutes. The fourth lesson can alternatively be assigned to general studies, since the lesson is divided into two parts and would thus fit into both subjects. Depending on the schedule, a decision can be made as to which subject the lesson will actually be taught in. The first part of the period focuses on the STEAM discipline of Mathematics, and the second part on Science. Period 2 covers three areas: Mathematics, Technology, and Science, while the third period focuses exclusively on Mathematics. The fifth period lasts 60 minutes and is allocated to German. Engineering and Arts are the STEAM disciplines addressed in this period. Lesson 6 can be conducted as general studies and covers the areas of Arts, Science, and Mathematics. As with the previous lesson, 60 minutes are scheduled for this lesson. The final Lesson 7 is assigned to the subject of German and once again combines the STEAM disciplines of Arts, Science, and Mathematics. In total, two to three hours are thus allocated to the subjects of Mathematics and General Studies, and two hours to the subject of German.

1. Unit: General Studies (Science, Arts)
2. Unit: Mathematics (Mathematics, Technology, Science)
3. Unit: Mathematics
4. Unit: Mathematics, General Studies (Mathematics, Science)
5. Unit: German (Engineering, Arts)
6. Unit: General Studies (possibly Art) (Arts, Science, Mathematics)
7. Unit: German (Arts, Science, Mathematics)

Teaching and Learning Materials

In the first lesson, the video “What is Air?” by Woozle Goozle is required. The video should be projected onto the wall using a projector. Additionally, the title card is needed to introduce the lesson series. This is first hung on the blackboard and, at the end of the lesson, moved to the STEAM corner—a designated area in the classroom where all collaboratively created materials are displayed. The STEAM corner is marked by a sign. Two worksheets are also needed. On the first worksheet, students write down their initial guesses regarding two questions: “Where is the air clean?” and “Where is the air dirty?” The second worksheet is a mind map of urban and rural characteristics that needs to be completed.
iPads are needed for the second period. Two students share one iPad. The digital tool “OpenSenseMap” is explained to the students on the whiteboard. The third worksheet is also needed. The worksheet contains a table in which the particulate matter levels for the past seven days in Münster and Recke are to be entered.

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In the third period, the whiteboard is needed to start the lesson. The teacher explains the concept of the average on the whiteboard and works through examples with the

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students. During the activity phase, the fourth worksheet is needed. A note box on the worksheet explains the calculation of the mean once again. On the worksheet, students are to calculate the mean for the particulate matter levels over the last 7 days in Münster and Recke and then interpret the results in a text box.
In the fourth lesson, materials are needed for the vocabulary bank for the bar chart (bar chart, magnetic cards for labeling). The materials are attached to the whiteboard. The fifth worksheet contains the vocabulary bank as well as phrasing aids for describing a bar chart. This serves as a guide for the students to help them complete the sixth and seventh worksheets. On the sixth worksheet, the children must first label the bar chart and then draw the bars for the calculated averages of Münster and Recke. The seventh worksheet is used to describe the bar chart and to apply the vocabulary list (Worksheet 5). On the final worksheet of the lesson, the children must note down possible actions that could improve air quality. These are recorded by the teacher on the flipchart at the end and then posted in the STEAM corner.
In the fifth lesson, the flipchart is first needed for the brainstorming session. Afterward, the students are provided with craft supplies and iPads to develop their own products.
In the sixth period, students will need the ninth worksheet, which includes guidelines for creating a poster as well as possible ideas for its design. There is also a space where groups can write down their own ideas. Craft supplies, iPads, and a printer for printing images are needed to create the posters. In the final lesson, the posters created will be needed for the museum tour. In addition, students will need the class hypothesis and the predictions noted on the flipchart from the first lesson to compare them with their current thoughts.

Assessment

First, the learning objectives to be achieved are assessed through ongoing monitoring of learning progress. Key elements of this assessment are the final product and the project poster. The final product serves as evidence of the practical application of the learning content. This assessment determines whether the children can transfer and creatively apply the learning content. In addition, the teacher can use the poster to verify whether the previously developed materials, such as the diagram or the calculation of the mean values, are factually correct. Using a pre-prepared checklist, the teacher can scrutinize the posters. Furthermore, the museum tour in the final lesson serves as an assessment of the communicative learning objectives. The teacher can assess the knowledge acquired and the students' communication skills while the children present their posters. In the concluding discussion, the teacher checks whether the children can now discuss the hypothesis from the beginning of the unit in a factually sound manner.
In addition, the learning objectives can be assessed using a short test administered after the lesson. The test is distributed to the children in paper form and is intended to be completed individually. The test may include questions on content-related aspects, such as naming specific measures against air pollution. In addition, mastery of mathematical procedures, such as calculating a mean and creating a bar graph, can be assessed. The children should be given sufficient time to complete the test.

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The test provides the teacher with additional feedback on the students and their level of learning.

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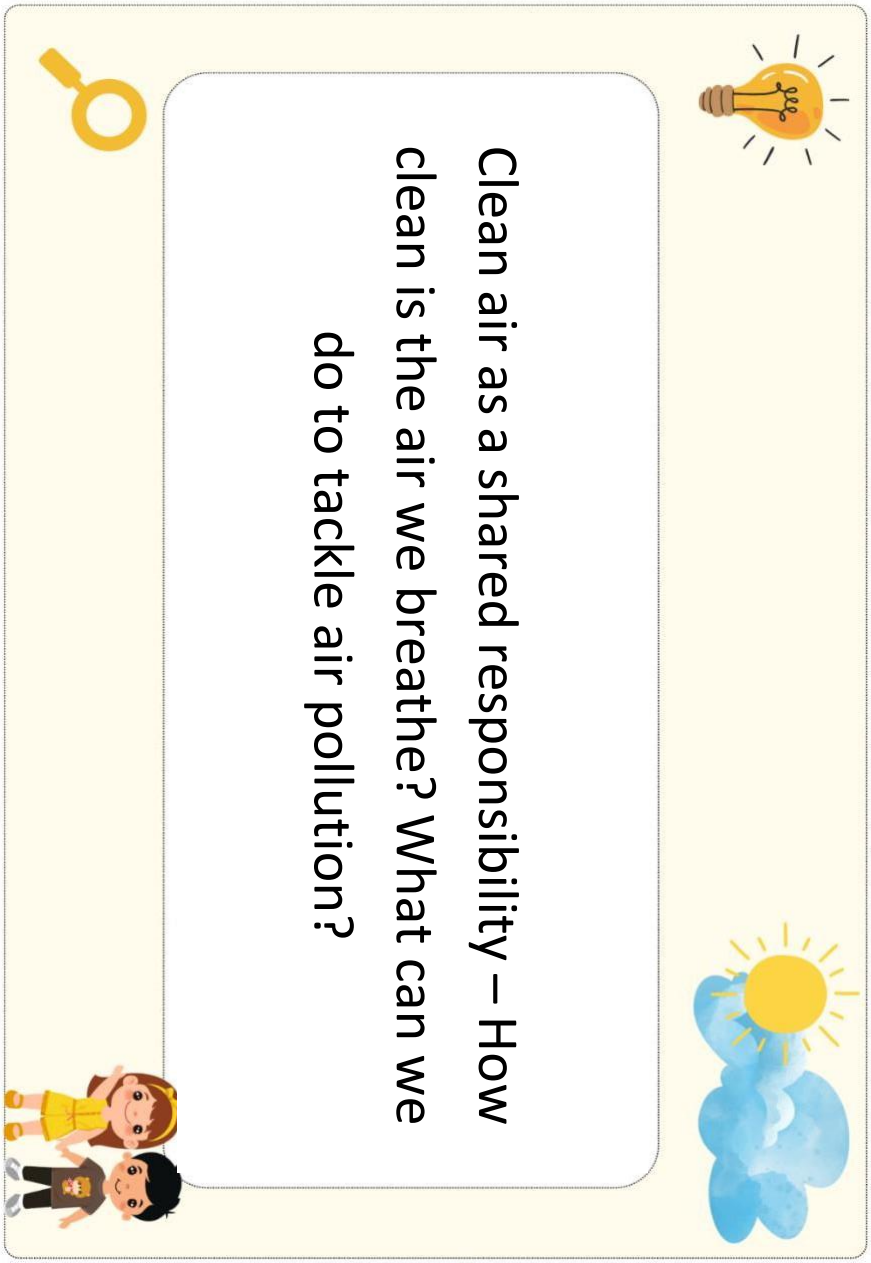
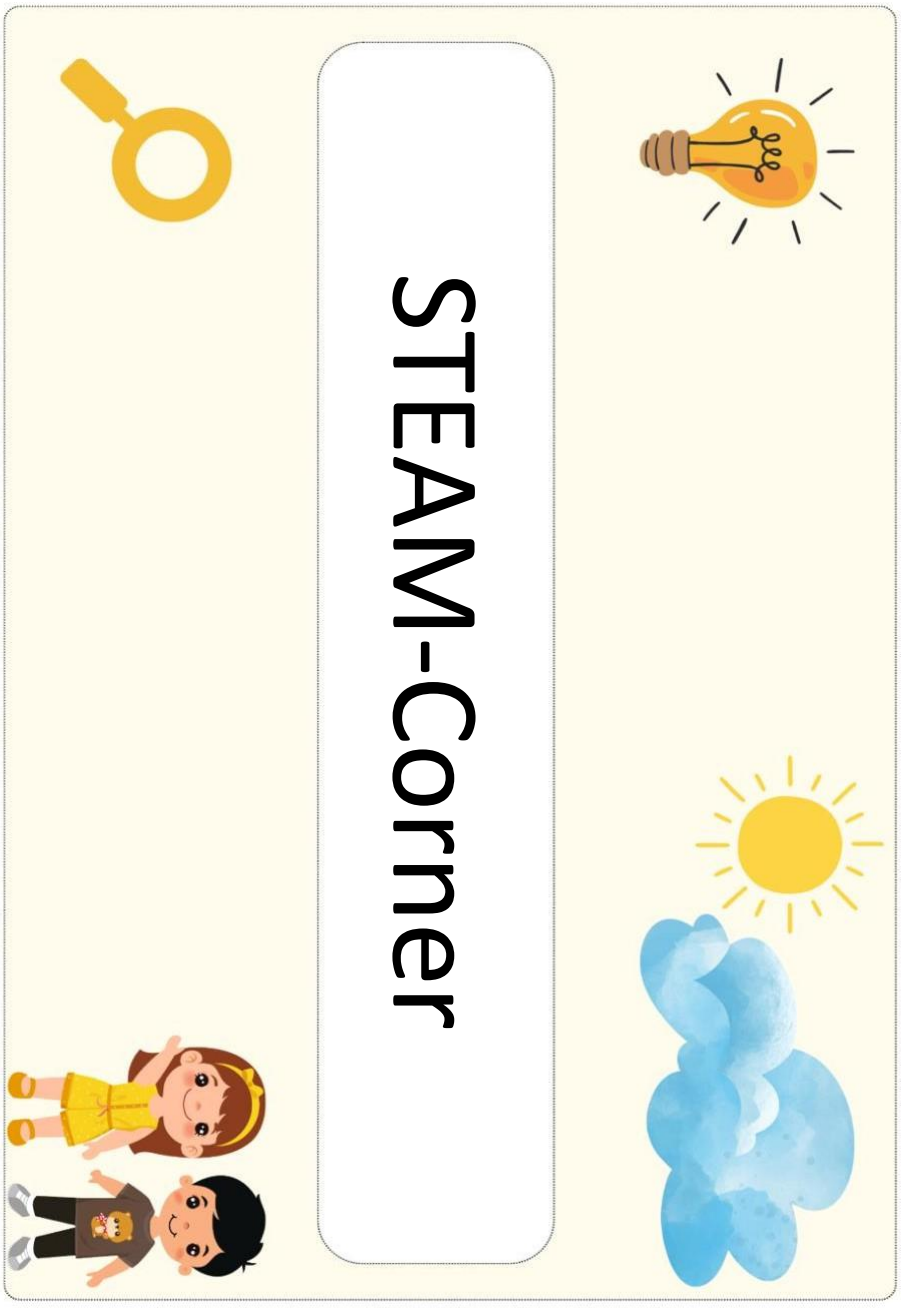
Annex

Title page for the introduction to the series of lessons:



Card for the STEAM corner in the classroom:



Worksheet 1:

First assumptions

Name:

Where is the air clean?

- .....
- .....
- .....
- .....
- .....
- .....

Where is the air polluted?

- .....
- .....
- .....
- .....
- .....
- .....

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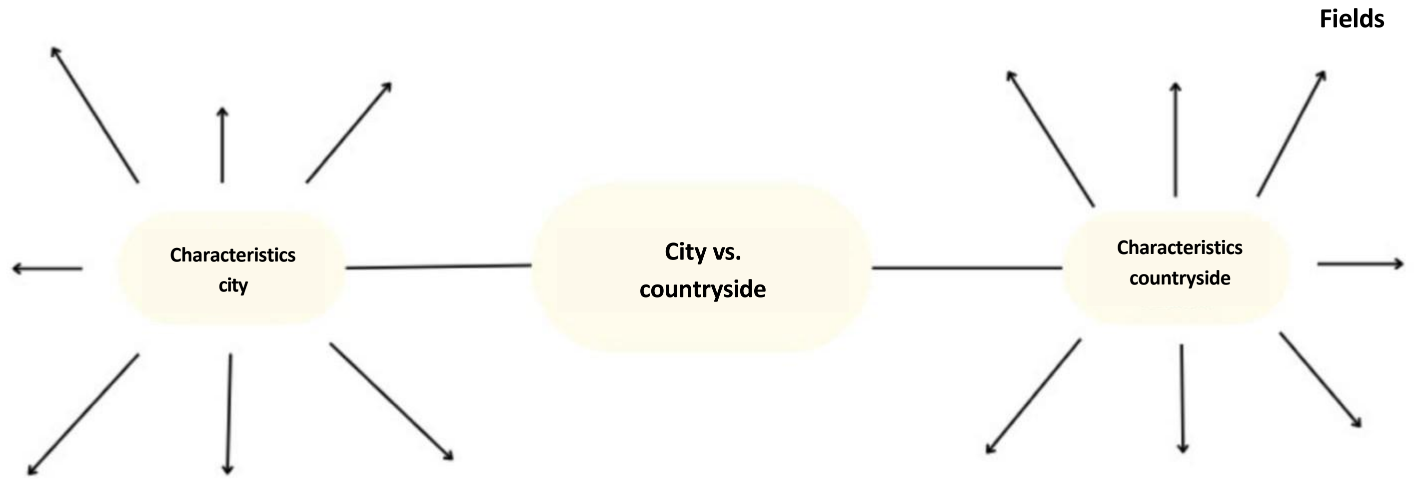
Worksheet 2:

Our air – city vs. countryside

Name:

Task: Complete the mind map. You can draw pictures too.



Worksheet 3:

Researcher table

Name:

Particulate matter check in Münster and Recke: Enter the data from OpenSenseMap into the table.

Day of the week	Date	Münster PM2.5 in µg/m³	Recke PM2.5 in µg/m³