

R4.1. DataScEd4CiEn STEAM Scenario Template

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Introduction

Title

Our Class in Motion – How Active Are We in Our Daily School Life?

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Summary of the scenario

In everyday life, students are becoming increasingly less active. School hours, in particular, are often characterized by prolonged sitting. Lack of physical activity, deficits in coordination and physical fitness, as well as obesity are on the rise in today's society, especially among children. However, schools in particular can make an important contribution by consciously integrating physical activity into the classroom.

Our lesson series focuses on the children's everyday lives and links physical activity, mathematical skills, and health. Healthy and mindful eating therefore also play a role. Through hands-on experience, measurement, and analysis—in the form of diagrams based on movement data—students develop an awareness of their own physical activity habits, learn to critically reflect on them, and identify solutions for incorporating more physical activity into their daily school routine.

Age of the students

This lesson is designed for third-grade students. The students already possess basic mathematical skills, including counting, measuring, and representing data. They are also able to formulate simple questions and compare results. Digital media, such as a stopwatch or an iPad, can be used in an age-appropriate manner. Topics related to health and nutrition have already been covered in social studies and serve as points of connection.

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

Subjects and topics

A lack of physical activity is increasingly becoming a societal challenge for children. Physical activity is considered essential for health, well-being, and equal participation. Not all children have equal access to opportunities for physical activity outside of school. Therefore, it is the school’s responsibility to promote social equity by serving as a balancing force. By involving students in the design of shared physical activity programs for the classroom, social engagement is fostered, as children actively participate in shaping these programs and take responsibility for themselves and the community. Transdisciplinarity contributes to problem-solving. A lack of physical activity in everyday school life cannot be addressed by a single subject alone, but rather through the interplay of mathematics (data collection, analysis), physical education (physical activity experiences), social studies (health, nutrition), computer science (digital measurement tools), and art (poster design). This creates a sustainable learning process in which students recognize that societal challenges require multiple areas of knowledge and that collective action is necessary.

Real-life questions

We are examining, on the one hand, the question: “How much do we really move in our daily school life?” and, on the other hand, the question: “What opportunities for physical activity can be created during class to enable greater activity?”

Objectives for the scenario

Mathematics (Focus: Data and Frequencies)

The students

- collect physical activity data from their immediate environment by counting and measuring their own time spent moving
- present this data in charts and tables
- analyze their data and compare their results
- use their representations to make and justify statements about their physical activity
- present data and frequencies in diagrams and tables, including using digital math tools

Social Studies (Focus: Body, Senses, Nutrition, and Health)

The Students

- can describe different dietary habits and their consequences
- explain the principles of healthy eating and a healthy lifestyle (physical activity)
- formulate rules and tips for a healthy lifestyle

Physical Education

The Students

- work together to develop physical activity options and breaks for movement

Art

The students

- design eye-catching posters on the rules for healthy eating and ideas for physical activity

Skills and competencies

Mathematics:

Students collect data from their immediate surroundings and present it in charts and tables (p. cc). Students extract data from charts and use it to answer math-related questions (p. cc).

Activity 1: In small groups, students use a stopwatch to measure the amount of time they spend being physically active during class and recess. The times are recorded in a table. Afterward, all the class data is compiled together.

Activity 2: The students create bar charts from the collected data and answer questions about them.

Activity 3: Students examine a class chart of the collected activity data and consider which activity period was most effective and how significant the difference is between class time and recess. (Physical Education)

Social Studies:

Students explore and describe different eating habits and their consequences (p. 44). Students explain the principles of personal hygiene, healthy eating, and a healthy lifestyle. They formulate rules and tips for a healthy lifestyle.

Activity 1: The food pyramid is examined together. The children categorize typical foods from their daily lives. Through discussion, they clarify which foods should be eaten frequently and which rarely. (Physical Education)

Activity 2: We discuss the class rules for health in small groups. The rules are collected and posted as a poster in the classroom. Afterward, the connection to physical activity is established (Art + Physical Education)

Teaching approaches and learning strategies/theories

Since the children independently collect, process, and analyze data, inquiry-based learning takes place. They conduct an investigation. They reflect on their findings and draw conclusions. Project-based learning occurs because the children solve and investigate a real, realistic, and complex problem. The focus is on the project, which motivates the learners. The students also learn individually to some extent by working on worksheets. In terms of cross-curricular competencies, critical thinking is addressed because the children often reflect on their work. The children learn to take responsibility for their physical well-being, particularly through healthy eating and exercise. Additionally, students are encouraged to come up with their own ways to incorporate more physical activity into their school day, thereby developing creativity and ingenuity. The

Communication skills are also developed, as the children interact with one another in a group setting and discuss their solutions.

Educational Scenario planification

Lesson plan

	Lesson Description	Description of the activity	Material	Social form	Time
Lesson 1	Introduction	An informative explanatory video by Checker Tobi on the topic of nutrition and exercise is shown to the class. The video addresses physical inactivity, obesity, and unhealthy nutrition among adolescents. The following is discussed in the plenary session: What thoughts come to mind when watching the video? What do you think our new topic could be? Which consequences will result Video?	https://youtu.be/fnLi4mzFu6M?feature=shared	plenary session	

	Assignment	The children discuss in small groups how much they exercise. They should talk about hobbies, etc. The students estimate how much time they spend moving around during school hours and write it down.	Worksheet 1	Group work	
	Outlook	The assignment for the next day is discussed, which will be important during the next class. The children are to use a stopwatch to measure the amount of time they spend moving throughout the school day. The time is counted from the moment they get up, until they sit down again The students receive a pre-made table in which they enter exactly which class period they were active, how they moved, and how long they.	Worksheet 1		
Lesson 2	Introduction	We start with a feel-good workout (Fitness for kids)	https://youtu.be/DK4kPqfdF2c?feature=shared		
	Reflection on the work assignment (Measure the movement time measured with a stopwatch)	The children are asked in a group discussion how measuring the movement time with the stopwatch went, whether and, as well as, liked it.			

	Work Phase 1	The children work on a worksheet where they plot their collected data	Worksheet 2		
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		in a bar chart, answer questions about it in the next step, and finally compare their estimated time with the actual time. This is done individually.			
	Reflection	In a group discussion, individual children present their results from the worksheet. Each child writes a note with the total exercise time and the child's name and hands it to the teacher.			

Lesson 3	Activity Phase 2	Before the lesson, the teacher has drawn a bar graph on the board. It shows the total movement times for each child. Questions: What do you notice? Did you think you'd be moving more or less at school? We'll draw conclusions as a group that we need more physical activity (we assume this will make the lack of physical activity clearly). We discuss with the children that in addition to the ample time for physical activity during breaks, there should also be more movement in class during xml-ph-0001@deepl.internal in xml-ph-0002@deepl.internal class xml-ph-0003@deepl.internal			
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	Physical Activity Break	In plenary session take a break to move around so that they can move and continue working	https://youtu.be/5HB8gjcPleI?feature=shared	Plenary session	
	Work Phase 3	The children create a poster about movement breaks during class, which to more movement in everyday school life.			
Lesson 4	Introduction	The teacher explains how the food pyramid is structured and hangs pictures of the pyramid and the food and drinks on the board.			
	Activity Phase 4	In small groups, the children are given the blank pyramid along with the terms on a worksheet. The children match the terms.	Worksheet 3		
	Discussion of the results	A large poster is created on the board, which is then hung up in the classroom. Here, the children are to stick the pictures of food and drink into the appropriate boxes	Board display		
	Reflection of the entire lesson unit	Conclusion we want to draw: Exercise and nutrition go hand in hand. Those who exercise regularly and eat a balanced diet stay healthy, feel good, and have more energy for the school day.	Chart		

Timing

Lesson 1 is assigned to the subject of general studies. It therefore lasts 45 minutes. The

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second and third lessons are primarily assigned to the subject of mathematics, totaling S0

minutes. At the end of the third lesson, the subject of art is covered for approximately 20 minutes. The final lesson is again assigned to the subject of social studies for 45 minutes. During the recess periods, the subject of physical education is incorporated for a total of approximately 20 minutes.

Teaching and Learning Materials

In the first lesson, a video by Checker Tobi on the topics of obesity, unhealthy eating, and lack of physical activity is watched. To time the physical activity periods, each child needs a stopwatch. In addition, each child receives a chart to record the physical activity times and activities (Worksheet 1). The estimated and actual physical activity times are also noted on this worksheet. In the second lesson, a “good mood workout” is conducted with the students at the beginning. Afterward, they work on a worksheet where the children create a bar chart of their own physical activity time during the school day, answer questions about it, and compare the estimated physical activity time with the actual physical activity time. In the third lesson, the teacher creates a bar chart showing the physical activity times for each individual child. Afterward, a physical activity break is conducted using a video. In the final lesson, an image of the empty food pyramid is needed, along with the terms (food and drink) to be assigned. The conclusion is accompanied by a diagram.

Assessment

The results will be assessed through a test. Possible questions:

- Name two rules for a healthy diet.
- What physical activities can you do in class?
- Why is exercise important?
- What foods should you eat every day?
- Which foods are extras?

Students are given a table showing the number of steps taken during a typical school day and must apply the skills they have learned to this new context and create charts.

Annex