

# Why do objects fall to the ground? - experimenting with gravity

<b>1</b>	<p><b>Overall aims:</b></p> <ul style="list-style-type: none"> <li>• Developing cognitive curiosity</li> <li>• Building knowledge of gravity through experimentation</li> <li>• Developing the ability to understand and predict human activities</li> <li>• Developing fine motor skills through the use of origami</li> </ul>
<b>2</b>	<p><b>Vocabulary - keywords</b></p> <p>The force of gravity, mass,</p>
<b>3</b>	<p><b>Sustainable abilities developed</b></p> <ul style="list-style-type: none"> <li>• System thinking competency</li> <li>• Integrated problem solving competency</li> <li>• Strategic competency</li> </ul>
<b>4</b>	<p><b>Pillars of sustainability included</b></p> <ul style="list-style-type: none"> <li>• ecological</li> </ul>
<b>5</b>	<p><b>STEAM domains</b></p> <p>S, E, M</p>



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### Teaching methodologies/activity outline

#### Introduction

Looking for treasures in the kindergarten garden - children in small groups are looking for: twigs, leaves, stones, seeds, feathers, empty snail shells (each group brings two pieces of found treasures). The teacher also prepares other treasures: sheets of paper, safety pins, paper clips, a rubber band, a cork, a plastic lid.

They put all the children's treasures in one place. They sit in a circle.

#### Problem situation

The teacher says:

- Close your eyes and imagine a leaf falling to the ground? What is its falling path? Show me.
- Now show me the stone falling track?
- We have various treasures in front of us. Some of them are similar in shape, size and mass.
- Let's try to organize them, arrange them in pairs.
- Which of them do you think will fall to the ground faster?

#### Experiment - Verification of hypotheses.

- The child picks up two similar objects (of the same mass and similar shape) and drops them at the same time and observes, eg. two the same twigs, leaves, pebbles, seeds, for example, maple... and a safety pin and a paper clip; rubber band and bottle stopper.
- Two items of different mass but similar shape: a pine cone and a stone, a sheet of paper and a plastic lid.
- Objects of the same weight but different shapes: 2 sheets of paper - one crushed into a ball.

The teacher asks: Do these pages have the same weight? He asks one child to stand up straight and then sit down bent over - and asks: has his weight changed? Observation of the cards. What fell faster?

#### Summary - questions:

Why do objects fall to the ground? Why do they have a different track? Why do some fall faster and some fall slower?

#### Conclusions

All objects fall to the ground due to the force of gravity. But not all items fall at the same time.



	<p><b>Final part</b></p> <p>Construction game - Making a parachute from plastic bags with a pebble, chestnut. What to do so that the pebble, chestnut does not fall to the ground so quickly?</p>
<b>7</b>	<p><b>Expected learning outcomes</b></p> <p><b>The child will be able to:</b></p> <ul style="list-style-type: none"> <li>• Draw a track of falling objects</li> <li>• Explain why items are falling down</li> <li>• Participate in experiments</li> <li>• Make a simple parachute with plastic bag and a chestnut/ pebble</li> </ul>
<b>8</b>	<p><b>Assessment</b></p> <p><b>Conversation</b></p> <p>Which items were falling faster? Why do objects fall to the ground? How do humans use air resistance?</p>
<b>9</b>	<p><b>Equipment and materials to be used in learning unit (tools, ingredients etc)</b></p> <ul style="list-style-type: none"> <li>• Treasures collected by children: twigs, leaves, pebbles, seeds, e.g. maple</li> <li>• Man-made treasures: safety pin and paperclip; eraser and bottle stopper,</li> <li>• Plastic bags, string, stones, chestnuts</li> </ul>
<b>10</b>	<p><b>Kind of setting - lab, kitchen, outdoor etc.</b></p> <p>Outdoor environment/ classroom garden</p>
<b>11</b>	<p><b>References - source:</b></p> <p><a href="https://wklasie.uniwersytetdzieci.pl/scenariusz/dlaczego-jablko-spada">https://wklasie.uniwersytetdzieci.pl/scenariusz/dlaczego-jablko-spada</a>  <a href="https://www.youtube.com/watch?v=0hKame4B8Wo">https://www.youtube.com/watch?v=0hKame4B8Wo</a>  <a href="https://www.youtube.com/watch?v=C8ykHc9ABoo">https://www.youtube.com/watch?v=C8ykHc9ABoo</a></p>

