

Content

- Red wood ants
- Experiments with air

Target group

- Children ages 8 to 12
- Level: A1+/A2

Language goals

The children will be able to

- Understand a short (technical) film
- Find precise information in a text
- Expand their passive and active vocabulary
- Understand technical terminology in context
- Understand and answer simple thematic questions
- Formulate their ideas/opinions using simple language
- Use and develop learning strategies (use pictures as a learning tool, take notes, make conjectures, reconstruct processes, correctly spell words)
- Memorize short texts
- Read a text and then convey it with drawings
- Classify information as correct or incorrect
- Carry out experiments, make observations, draw conclusions
- Understand and follow instructions
- Understand game instructions and actively take part in a game

Word bank

Wald (forest), *Waldameise* (red wood ant), *Ameisenhaufen* (anthill), *Lieblingsspeise* (favorite food), *Insekten* (insects), *Blütennektar* (flower nectar), *Baum* (tree), *auf hohe Bäume klettern* (climb up high trees), *Feind* (enemy), *Specht* (woodpecker), *überleben* (to survive), *Hochhaus* (high-rise building), *von einem Hochhaus stürzen* (to fall from a high-rise building), *leicht* (light), *schwer* (heavy), *schnell* (fast), *langsam* (slow), *Luft* (air), *bremsen* (to slow down), *Experiment* (experiment)

Materials

- Laptop and projector
- Audio speakers
- Blackboard and chalk/whiteboard and markers
- Magnets/blu-tack
- Large sheets of white paper
- Colored pencils/crayons
- Sheet of standard letter paper
- Glove
- Rock
- Precision scale
- Large, stable piece of cardboard
- Students' portfolios

Materials for printing and/or copying

- *Red wood ant* (Waldameise) profile
- *Red wood ants - true or false?* (Waldameisen – richtig oder falsch?) quiz sheet
- *True* (richtig) and *false* (falsch) word cards
- *Red wood ants* (Waldameisen) sentence slips

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| 4 | <p>Instructor asks the children to memorize the sentences. After they have had a chance to do this, the children turn the profile face down and recite the text as a group. If a student is interested, he or she can try to recite it alone.</p> | <p><i>Red wood ant profile</i></p> |
| 5 | <p>Instructor divides the children into groups. Each group is given a large sheet of white paper and colored pencils/crayons. They are instructed to draw a picture to go with the profile and to write the sentences next to the appropriate part of the picture. They hang the finished pictures on the wall and admire them.</p> | <p>Large sheets of white paper; Colored pencils/crayons; Magnets/blu-tack</p> |
| 6 | <p>Instructor takes out the <i>Red wood ants - true or false?</i> question sheet and asks the children to gather in the middle of the classroom.</p> <p>Instructor explains that he or she will read out interesting information about red wood ants. The children should decide whether the information is true or false. If they think something is true, they should go to the section of the room marked by the word card "true" (richtig) and if they think it is false, they should go to the section marked by the word card "false" (falsch). After each question, the instructor hangs the correct information on the board/wall on a slip of paper so the children can find out if they were correct.</p> <p>Note: The last sentence slip is not hung on the board yet. This question should remain open for the time being. See step 7.</p> | <p><i>Red wood ants - true or false?</i> question sheet; <i>Red wood ants</i> sentence slips; <i>True</i> and <i>false</i> word cards; Magnets/blu-tack</p> |
| 7 | <p>The last fact is as follows: <i>Ants can survive falling out of a high-rise building.</i></p> <p>For this, the instructor does not hang a slip of paper with the correct answer on the board/wall. Instead he or she invites the children to do an experiment that will help them make their decisions.</p> | |
| 8 | <p>Instructor reminds the children of the sentence in the ant profile: <i>An ant weighs only a few milligrams. So ants are very light. This is very important for our experiment.</i></p> <p>For the experiment, the instructor brings out a piece of standard letter paper, a rock, a glove and a precision scale. He or she asks the children to weigh the three objects and writes the results on the board. Then the instructor places three chairs at the front of the classroom and asks three children to stand on the chairs. One child is given the sheet of paper, another is given the rock and the third is given the glove. They are instructed to drop the objects from the same height on the instructor's command.</p> <p>Before they do this, the instructor asks the children to guess which object will reach the floor first. Then the objects are dropped.</p> | <p>Sheet of standard letter paper; Rock; Glove; Precision scale; Blackboard and chalk/ whiteboard and markers</p> |

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| | <p>The children observe the order in which the objects hit the floor. They compare the results to their guesses and record this on the board.</p> <p>Note: If the children have not yet learned units of weight, they can use the scale to determine what is <i>light, lighter, lightest</i> or <i>heavy, heavier, heaviest</i>.</p> | |
| 9 | <p>The instructor encourages the children to think about the connection between weight and fall velocity: <i>The lightest object lands last and the heaviest lands first. This means: Since ants are even lighter than paper, they fall even more slowly. They land very softly and survive the fall.</i></p> | |
| 10 | <p>Instructor hangs the final sentence slip on the wall/board: <i>Ants can survive falling out of a high-rise building.</i></p> <p>Instructor hands out the <i>Red wood ants (Waldameise)</i> answer sheet to the children. The children read the answers and ask questions if anything is still unclear.</p> | <p><i>Red wood ants (Waldameise)</i> answer sheet; Magnets/blu-tack</p> |
| During the lecture/film | | |
| Step | Content | Materials |
| 11 | <p>To check their conclusion from the experiment the instructor shows the children the film again in full (Minute: 1:20 - 5:49).</p> | <p>Laptop and projector; Audio speakers</p> |
| After the lecture/film | | |
| Step | Content | Materials |
| 12 | <p>Instructor draws the children's attention to the conclusion in the film: <i>Air slows the ants' fall.</i></p> <p>He or she invites the children to do their own discoveries with this phenomenon that air exerts a force on objects and slows them down.</p> <p>The instructor asks two children to hold a large piece of cardboard horizontally and start running. They notice that they can move easily.</p> <p>Then they are instructed to hold the cardboard vertically and try to run. After a few steps it becomes clear: the air resistance makes running hard.</p> <p>The children carry out the experiment in pairs.</p> | <p>Large, stable piece of cardboard</p> |

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| | <p>In order to better understand the phenomenon that air can slow things down, the instructor shows the children the following web page (<i>please note: this webpage is in German</i>): http://www.meine-forscherwelt.de/text/luft-bremst/ The instructor and the children interpret the information together.</p> <p>Galileo Galilei also did thinking about this 400 years ago. The instructor and the children discuss the information on the following web page (<i>please note: this webpage is in German</i>): https://goo.gl/DYVWii</p> | <p>large, stable piece of cardboard; Laptop and projector;</p> |
| 13 | <p>Instructor and children come to the conclusion together: <i>Ants can survive long falls. They are light, and the air brakes them and provides resistance for them, more so than if they were heavy like a rock.</i></p> | |
| 14 | <p>Instructor projects the word bank on the wall/board. The children copy down the words into the boxes on the backs of the ants on their word bank sheets.</p> | <p>Laptop and projector; <i>Falling Ants (Ameisensturz)</i> word bank; My word bank sheet <i>Falling Ants (Ameisensturz)</i></p> |
| 15 | <p>Instructor and children end the unit with a reflection round, in which they discuss what they have learned. Each child then fills out the <i>Now I know (Ich kann schon)</i> questionnaire to find out whether they have achieved the learning objectives. Instructor also gives feedback on student performance.</p> <p>Note: Instructor tells the children that they should be careful not to repeat the experiment with the ants in the film. Instead, they should remember that ants and ant hills are important parts of a forest and should be protected. This discussion can also serve as a bridge to the literature project on the poem "Ein Riese warf einen Stein" by Joseph Guggenmos.</p> | <p><i>Now I know (Ich kann schon)</i> questionnaire</p> |
| 16 | <p>The children hold onto the following in their portfolios:</p> <ul style="list-style-type: none"> - <i>Red wood ant (Waldameise)</i> profile - <i>Falling ants (Ameisensturz)</i> answer sheet - My word bank sheet <i>Falling Ants (Ameisensturz)</i> - <i>Now I know (Ich kann schon)</i> questionnaire | <p><i>Now I know (Ich kann schon)</i> questionnaire</p> |

Further ideas for subject matter or CLIL teaching (natural sciences, biology, physics):

- Literature projects:
 - Study Joseph Guggenmos' "Ein Riese warf einen Stein"
 - Stage La Fontaine: The Grasshopper and the Ant
 - Collect and recite ant poems
<http://www.natwiss.ph-karlsruhe.de/BIO/medien/wegameise/gedichte.html>
- Art projects:
<http://www.ameisenstrasse.ch>
<https://goo.gl/dAsD9b>
- Observe and feed ants:
<http://www.labbe.de/zzebra/index.asp?themaId=546&titelId=766>
- Bake an ant cake
<https://www.gutekueche.at/ameisenkuchen-rezept-3732>
- Interesting facts - Poster presentation or PowerPoint presentation with interesting information about ants:
<http://www.natwiss.ph-karlsruhe.de/BIO/medien/wegameise/index.html>
<http://naturdetektive.bfn.de/lexikon/tiere/insekten-spinnen/waldameisen.html>

Suggestion for the children at the end of the learning scenario

At the very end, the children gather around a computer or the instructor projects a computer desktop onto a screen. They look at the home page of the German Digital Kinderuniversity together. The instructor explains to the children that they now have completed the *Falling Ants* (Ameisensturz) lecture in the *Nature* faculty together and draws their attention to the fact that there are many more interesting lectures in this faculty and in the *Technology* and *Humankind* faculties.

The instructor and the children click together on the At Home link and discover how the website works. As an example, the instructor logs in and goes to the lecture that they just worked through.

The instructor shows the children that the lecture begins with an introduction by Professor Einstein and Ms. Schlau and that their work is supported by Jowo and Christoph, the field researcher. Professor Einstein and Ms. Schlau also wrap up all the lectures and thereby frame the work on each theme.

The instructor explains to the children that they can re-watch the film at home and can even set the subtitles to German or English. That way, they can "catch" key words while watching and use these to collect points and solve three exercises and a bonus exercise on the film. The children can also get help from their parents or grandparents, from registering to solving the exercises. The whole family can have fun learning and everyone gradually becomes a professor at the Kinderuni.