

A sunshade for the polar bear - a pedagogical programme on climate change (grade of age about 5-7 years)

Grade: pre-school / 1st / 2nd grade (5-7 years)

Relation to curriculum: The task of the lessons in general knowledge in grade 1-2 is to give the pupils orientation and help to find out, to get to know and to form their own reality of life. At the same time these lessons give the basis for secondary learning which supports the pupils' interest in the different kinds of general knowledge. Among others the main subjects nature and life, technique and working world, space and environment, man and community, time and culture are dealt with. The programme "A sunshade for the polar bear" takes up the fields "nature and life" as well as "man and community", in which plants and animals are observed in their habitats and then described, so that respect and responsibility against animals and plants can be developed (c.f. Richtlinien Grundschule NRW Sachunterricht = guidelines for primary schools in NRW, general knowledge)

Duration: 2 h (alternative: with some modifications teachers can use sequences in a school hour)

Keywords: climate change, biodiversity, renewable energy, energy use and supply; human-made influences, melting of the polar icecaps, polar bears, polar region, search for food, pressure of hunting

Content with theoretical background:

Polar bears spend the long wintertime in the pack ice, from where they go hunting for prey: different species of polar sea seals, smaller whales and fish.

Only in summer, when the ice is melting, they stay on dry land, where they have to endure long periods of hunger. If the Arctic remains free of ice, the polar bear will lose its fundamental basis of life. A later freezing of the sea in autumn and an early breaking up in spring shorten the period of hunting so that the polar bear has to fast for a longer time. The females who are in a bad state of health have less and smaller descendants whose chance of survival will be small. The death-rate will rise.

The pedagogical programme "A sunshade for the polar bear" shows this phenomenon in a child-orientated way. The central figure, the little polar bear, is sweating, and the ice he loves so much doesn't freeze properly. Life has become very difficult at the North Pole, and so the polar bear made the long way from there to the children in order to get help. The children learn many exciting details from the life of the little polar bear by playing games and listening to stories. They become animal- and climate conservationists.

Educational objective:

- The children are to learn about the way of life of polar bears and about the climate of the northern polar regions.

- The children are to learn the correlation between human-made influences and the climate warming.
- The children are to understand the effects of the climate change on the biodiversity.
- The children are to develop ideas concerning their own actions: „I myself“ can change and bring about something.

Learning ambiance:

- The Children look and act like a polar bear.
- The leaders supplied with nameplates and working dresses help the participants to orientate themselves before the programme begins, thus giving the feeling to be in good keeping.
- in- and outdoor activities

Material:

- polar bear hand puppet (e.g. www.folkmanis.com)
- crepe tape, marker
- questions for true-false-game
- Hula-Hoop
- black-grey blanket
- pieces of ice floe (made of cardboard or thin wood)
- the earlier years and today-cards
- poster power station, coal (if available)
- polar bear costumes (if available)
- ice cubes
- melting machine for ice cubes
- sunshade (umbrella)
- electrical devices: e.g. hair-dryer, kettle, lamp, radio recorder, ventilator etc.
- decoration „Rescuer of the polar bear“

Things to be done before the event:

- hide the polar bear
- make ice cubes and keep melting machine ready
- coal/ powerstation poster
- hide „today“ cards
- keep polar bear costumes (if available) ready
- keep Hula-Hoop and pieces of ice floe ready

Plan of course (structure):

In the following the course of the programme for a group of up to 15 children is described. As there is no problem to get double the materials, we give the advice, if there is a larger group, to do the program at the same time in another room and with another leader after the common welcoming and the receipt game.

Time	group 1 (8-15 children)	group 2 (8-15 children)
20 ‘	Welcoming and receipt game	Welcoming and receipt game
10 ‘	search for the polar bear	search for the polar bear
15 ‘	game „seal hunting“ or „How far did the ice melt?“	game „seal hunting“ or „How far did the ice melt?“
10 ‘	Way of looking at the problem: story of	Way of looking at the problem: story

	the polar bear	of the polar bear
10 ‘	game: melting of the ice floe	game: melting of the ice floe
20 ‘	discussion with the polar bear, comparison „life during the earlier years and today“, game: the earlier years and today	discussion with the polar bear, comparison „life during the earlier years and today“, game: the earlier years and today
20 ‘	subject consumption of energy and power generation, poster: power station	subject consumption of energy and power generation, poster: power station
10 ‘	game: We help the polar bear.	game: We help the polar bear.
5 ‘	The polar bear says thank you and goodbye.	The polar bear says thank you and goodbye.

Review of the programme:

time	contents / course	material
5 ‘	Welcoming. The children get nameplates (the easiest way: on crepe tape) First discussion about the subject: Do you know polar bears, where they live and what they need for a living? (enclosure 1)	crepe tape, marker
15’	Game: polar bears and seals: (enclosure 2) The leader draws a line and divides the children into 2 groups. The children stand at the line facing each other. In one group there are the polar bears, in the other one the seals. When the leader claims something which is right, the polar bears hunt the seals; is it wrong it is topsy-turvy, and the seals hunt the polar bears. Per round the polar bears or seals caught are counted. The hunting lasts until the leader stops it. It is advisable to do a test round.	questions to read out
10 ‘	Search for the polar bear: The leader asks the children to search together with him for one of the animals getting rarer and rarer. After a while they find the polar bear hiding under a sunshade.	hand puppet polar bear (or something like that), sunshade
15 ‘	Because the little polar bear has been waiting for the children a long time, he is very hungry. So he must eat something before he can tell why he is there! Game: hunting at the ice hole (indoors): One child plays the role of the polar bear (costume), all the other children are the seals. The seals are lying on the floor in a distance of 10 meters to the polar bear. They must try to reach the saving ice hole (hula-hoop) before they are eaten up (touched at the hand) by the polar bear. They are only allowed to crawl on the floor with crossed hands. It is sufficient to touch the ice hole with one hand. The polar bear must hunt on all fours holding one hand to his nose. (info: Because of its fair skin the polar bear is well adapted to its surroundings; because of this good camouflage it is difficult for the animals under water which it wants to hunt to see the polar bear. To hide the only indication of its being there, the black muzzle, the polar bear early learns to cover it with its fair-	Hula-Hoop polar bear costume

	<p>haired paw thus optimizing the hunting success.) The one who is eaten up by the polar bear will be a polar bear himself in the next round and is allowed to dress up etc.</p> <p>Or alternatively: How far did the ice melt? (outdoors) A finishing-line is drawn (behind it is the saving ice hole). One child plays the polar bear, the other children the seals. The seals run after the polar bear and ask him: "How far did the ice melt?" The polar bear answers e.g.: „Very far / very much / so far that I cannot reach you...".</p> <p>The game is repeated, the seals go on running after the polar bear, asking him about the situation of the ice, until he roars: "So little that I can eat you!", then he turns around and tries to catch a seal. They try to escape behind the line (ice hole). The one who is caught will be a polar bear himself in the next round.</p>	
10 ‘	<p>The little polar bear explains his problem (The leader speaks with the glove puppet or for the polar bear): The polar bear tells why he has always got a sunshade since a while: For a couple of years ago the ice at the North Pole has been melting more and more and earlier in the year. (Therefore he tries to protect himself and the ice against the sun. He notices, however, that he has no success). Thus he and his parents have got less time to hunt and to get a protecting layer of fat. But they need this thick layer of fat to come through the time of summer when there is hardly food. In former times his parents and grandparents were much fatter. To better imagine the melting of the ice the children play the melting of the ice floe. (cf. enclosure 3)</p>	
10 ‘	<p>Game: melting of the ice floe All children are dressed in polar bear costumes (if available) and stand on an area out of many ice floes. The polar bear explains that they are on pack ice – a joined area of ice. This ice, the polar bear says, has become lesser and lesser for about 20 years, because the temperature is rising more and more because of the climate change. He wants to play a game together with them so that they better understand.</p> <p>The polar bear begins e.g. in the year 1987, all floes are lying out. Now he tells how time goes by, and takes, in intervals, 1-3 floes under the children's feet away. The children must move closer together and finally must hold each other, so that nobody "falls" into the water.</p> <p>After that the pressure of competition which the polar bears have to endure is compared to the changes during the game. The children understand that the narrowness can lead to disadvantages and problems</p>	ice floes (made of cardboard or thin wood); polar bear costumes (if available)
20 ‘	<p>Leader and children think together about the cause of the melting of the ice.</p> <p>Polar bear: „I don't do anything other than before. My grandparents already used to live like I do! What could be the reason for my ice melting more and more? It is you, perhaps, who live another way of life than your grandparents did?"</p> <p>Game: „the earlier years and today“ (enclosure 4) The „today-cards“ have been hidden in the room before. The „earlier years-cards“ are lying uncovered on the floor. One “earlier</p>	„the earlier years and today-cards“

	<p>years-card" is taken up and the fitting today-card must be looked for in the room. When it has been found a new one is taken etc. After that the pairs are shown and explained. Together the children are looking for more examples of "in the earlier years and today": refrigerator – cellar, bike – motorbike, television – books / newspaper, computer – playing...,</p>	
20 ‘	<p>It becomes clear that the children consume more energy than their grandparents and great-grandparents did. But how is energy generated? With the help of the poster of the power station(short) (enclosure 5) the children learn that for the most part energy is generated by burning fossil energy sources which releases a lot of climate damaging CO₂ (important! Go into the smoke of the power station on the poster).</p> <p>Idea of game in order to illustrate: A black-grey blanket is laid as tightly as possible over the children sitting on the floor. The blanket symbolizes the emission of CO₂ / smoke of the power stations and the warming of the climate following from it. Under the blanket the temperature rises very quickly! The little polar bear is shocked. Are there no other possibilities? The children are to find out which devices consume more energy and which less. They experiment with the energy meters and try to grade the consumption of the devices into an ascending order. The period of time for this test is given by the machine for melting ice (cf. picture enclosure 6). After the ice is melted the time of experimenting is over.</p>	<p>poster power station, coal, black-grey blanket</p> <p>about 4 electrical devices out of the children's surroundings, 2-4 energy meters 1 ice cube machine for melting ice cubes</p>
10 ‘	<p>After the ice is melted, it is, of course, much too late for the polar bear. Therefore we must together stop the melting of the ice by saving energy. The polar bear and the children work out tips for saving energy in order to help the polar bears at the North Pole (enclosure 7). Some examples:</p> <ul style="list-style-type: none"> - shut the window as long as the heating is running - turn off the water while brushing your teeth - switch off the lights when nobody is in the room... 	
5 ‘	<p>The polar bear thanks the children for their help. In grateful recognition the children get the decoration „rescuer of the polar bear“ (enclosure 8) to put on. The polar bear says goodbye with a goodbye-game and walks back to the North Pole.</p> <p>The fastest goodbye-game of the world: The children form a circle. Each child holds his hands (the palms pointing to the circle) down. Now each child lays his right hand over the left hand of the neighbouring child. The leader begins to clap with his right hand on the neighbouring child's right hand, looking at the child and saying "goodbye!". The next child does the same and so on. Because this is to be the fastest goodbye-game of the world, the second round can be timed.</p>	<p>decoration „rescuer of the polar bear“</p>