

# The Four Elements - Fire, Water, Earth, Air

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Methodical handbook for teachers





The methodical handbook completed within the framework of European Lifelong Learning programme Comenius “Outdoor Education focusing on science and technology” is a tool for teachers of participating institutions and is meant to carry out teaching and educational work in natural and environmental subjects.

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Swedish preschool Tunet Förskolan teachers

Latvian preschool Valmieras pilsetas 3. primsskolas izglītibas iestāde „Spriditis“ teachers

Swedish preschool Näckrosen Förskolan teachers

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# Introduction

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In the years 2012-2014, in the framework of European Lifelong Learning programme there was conducted a joint project „Outdoor education focusing on science and technology.“ The participants in the project were: Swedish preschools Näckrosen Förskolan and Tunet Förskolan, Latvian preschool Valmiera 3rd preschool educational institution „Sprīdītis“ Latvia and Estonian preschool Kröll from Viljandi. The project was coordinated by the Swedish preschool Tunet Förskolan.

## The aims of the project were:

- to raise children's interest in natural sciences and technology through outdoor learning activities;
- to exchange experiences, introduce/get familiar with different outdoor learning practical and theoretical methods;
- to supplement children's knowledge and skills through the project,
- which would help them understand the surrounding world;
- through experience get inspiration and knowledge to carry out outdoor learning activities and increase cooperation between nursery schools in different countries;
- compose a methodical handbook (from successful methods)

It came out during the course of the project that Swedish, Latvian and Estonian preschools have similar system, but differ in teaching methods and carrying out activities.

## ○ Latvian preschool's opinion of similarities and differences

Traditionally the purpose of the preschool education in Latvia has had an educational meaning, as well as it has had an importance for child development. If we compare the preschool educational institutions nowadays with kindergartens 15 years ago remarkable changes can be observed. We aim at interactive teaching so that to help children acquire a thirst for knowledge and develop their ability to adjust to the things and happenings around them. Teachers, taking into account the preschool educational institution curriculum, plan integrated activities for every day; however children inquire the world around them with all their senses in various ways. In order to be able to think and reason, child has to feel safe. Our pedagogues learn themselves and teach children how to cooperate, be next to one another, notice each child as an individual, as well as a part of the whole group by keeping a balance between the needs of individuals and the needs of the whole group. Preschool education in Latvia is an integral part of the general education law and there are no strict borders between development and teaching.

- **Swedish preschools' opinions of similarities and differences**

- Tunet: Similarities between the countries is that the indoor activities is also brought outdoor. The difference is that we use the outdoor environment as a tool, independent of the ages of the children and the weather conditions.
- Other differences is that Pre-school Tunet has an outdoor profile, which means that we go outdoors at least once a day and have activities with the children of all ages between 1 to 5 years.

Since the learning process differs across countries, we were able to enrich our everyday work with ideas from other countries

- **Estonian preschool's opinion of similarities and differences**

The Estonian team think the biggest difference is that while Estonian and Latvian preschools have the same system and are administrated by the Ministry of Education and Science, in Sweden preschools are called „preschools“ and they are administered by The Department Of Education. It can also be brought out that while in Swedish nursery schools the learning process is more documented and valued, then Estonian and Latvian preschools are more oriented to learning results and preparing for school.



# Short introductions of preschools in partner countries

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## Valmiera 3rd preschool educational institution „Sprīdītis” Latvia

Preschool educational institution “Sprīdītis” is located in a city Valmiera, in a rather quiet area and is surrounded by apartments houses. It is not that far away from a forest that provides children with both - fresh air and an opportunity to explore the nature.

The building was built in 1979 based on a standard design and aimed for 12 groups of children, however in 2010 with a help of European Regional Development fund and financial support from the Valmiera local government the institution was reconstructed and renovated.



We are up-to-date preschool educational institution and we search for and use many-sided opportunities in order to promote children's development. We serve as guides and supporters promoting children's communication skills and language development, cognitive interests and explorative activity. Our motto is:

*„Children are like flowers in the world's garden that are entrusted to us but... who develop by the rules only known by themselves.”*

One of our main objectives is to promote children's development and education by the use of creative and innovative methods; by planning and implementing integrated, individualized learning processes. Our teachers not only promote children's development but they themselves continue to acquire knowledge.

Currently there are 248 children that attend the preschool educational institution “Sprīdītis” and there are 24 technical and 41 pedagogical employees working within the institution. There are 11 groups of children within the institution, as well as two educational programs are being carried out.

- Preschool education program – 9 groups.
- Preschool special education program for children with difficulties in language development – two groups.

The children from "Sprīdītis" are provided with extra opportunities:

- Children can acquire basic skills for floorball and Nordic walking;
- in the center for senses "Sprīdītis' path" generally develop all their senses;



- together with parents attend psychologist for consultation if necessary.

We also offer some educational activities for various interests:

- English.
- Rhythmic.
- Dance sport.

There are two structural units within the building.

- Valmiera language therapy center.
  - They consult and practice speech therapy for children from Vidzeme district.
- Children's play and development center.
  - Supports families by offering them to look after their children up to 4 hours a day.

The paintwork of the rooms and their layout induce pleasant emotions. The environment of the rooms, toys and games promote children to develop their self-dependency and creativity and provide teachers with opportunities to organize interesting and exciting activities.



Advanced playgrounds not only cause joy because of the appearance but they promote children's physical, psychological and social development.



We organize educational and fun after school events that are attended by both children and their parents.



Within the territory of the institution we plan to set up "Sprīdītis path for senses" so that the children could not only get acquainted with flora and find out the secrets of inanimate nature but also improve their knowledge in language, mathematics etc.; to portray the things they have seen and felt within pictorial activities.



During our participation in the project we learnt about the other countries' experiences in connection with methods for outdoor pedagogy, compared them with methods used by us, evaluated positive sides of our work as well as clarified spheres that are improvable. Each pedagogue gained a valuable experience on how to make learning within the nature as a pleasant and exciting activity.

The pedagogues involved within the project Dace Gailīte, Sarmīte Indriksone, Maija Kesberga, Dzintra Lamaka, Inga Līcīte, Marita Serģe, Sarmīte Markvarste, Linda Mauriņa, Inīta Miglava, Iveta Priķaša, Dana Skērstiņa, Margita Strazdiņa, Liene Šverna un Gunā Vorpa express their thanks to colleagues from Sweden and Estonia for cooperation, involvement and friendliness while introducing with their own preschool education experiences and traditions.

## Tunet Förskolan

Preschool Tunet is a public primary - preschool situated in north of Solna, Järvastaden in an infrastructural area where many new cooperative flats are built. There is a large nature area nearby the primary-preschool. Tunet has approximately 75 children between the ages of 1-5 years. We have four departments that are age divided.

In Solna there are 36 public primary - preschools and 27 independent primary-preschools. We offer our children opportunities to have most of their indoor activities including physical activities outdoors in the nearby surroundings. During our activities and in the way we proceed our work, we include mathematics in everything we do.



The departments for the older children are working with nature screens in the forest nearby our preschool. We use these screens for different forms of discussions, for example what happened to the fruit leftovers that we left behind from another time? We also use the screens as a place to compare the geometrical forms that's similar to nature. For example, they search for leaves that has the same geometrical form as a circle. This way of proceeding our

activities also includes mathematics in everything we do outdoors. The children use the screens as a gathering place to initiate their activities.

One of our many experiments was when the children from ages 3-5 did a science experiment using loupes as a tool to accomplish their activities. We have many activities in the forests nearby, for instance, our older children has built a tree house in the forest. With the children between the ages of 1-3 we have had more of physical activities. We have had long walks with them to our nearby locations such as Överjärva gård, Mulle Meck, the railway station and our recycling center. With the younger children we have worked more with how things are constructed.



We give the children opportunities to have most of their activities outdoors. The children have experimented with water. Some of the experiments we have had are for instance what happens with snow if you take it indoors. We have asked the children the question where do water come from and let them give hypothesis and later on we

have answered these questions together. We have also worked with water in its different forms. What flows in water? What sinks? Scooping and poring etc. We can find the subject Technique in everything we do in our daily activities. For example such a thing as creating candle lanterns from a jar of baby food and then rolling it in sugar and glitter, or making baskets out of milk boxes to use when cleaning our yards.



We are working according to the national curriculum Lpfö-11 and we are especially interested in environment education. We have received several certificates of "Green flag" from the Swedish organization "Håll Sverige Rent" - (Keep Sweden Clean).

Our curriculum tells that we are obliged to offer the children to:

- develop their ability to build, create and design using different materials and techniques,
- develop the ability to discover and use mathematics. In meaningful contexts and situations,
- develop an understanding of their own involvement in the processes of nature science and in simple scientific phenomena, such as knowledge of plants and animals.
- develop their ability to identify technology in everyday life, and explore how simple technology works.
- develop their ability to distinguish, explore, document, put questions about and talk about science.



In our overall work as educators at Tunets preschool in Stockholm Sweden work with the same approach and have the same procedure. Before each activity, we are always prepared at least two weeks earlier. Each and every one of us, the three educators in our department independent of our title as teachers or nannys we plan, prepare and implement all our themes and main activities together as a team and with the children.

The only thing that is controlled more by us adults is what kind of activities we are going to have and how the subdivision of the children groups is.

Our permanent objectives in all activities with all children in all ages 1-5 years are the process development and not the result.

In our department Humlan the children's ages is 1-3 year. Everyone is included irrespective of age in the activities both indoors and outdoors. Our objective as educators is that each child will get the conditions and the interest for nature science and technology.

The children's interests and influence are basically what rules our activities. Within the theme that the children chose last year and have chosen this year we have included the theme "the four elements" in our work.

Examples: In the theme "Vehicles", the children were very interested in fire-trucks. Thereby we planned activities that included the elements fire and water. This year, the children have shown interests for their bodies and senses. Therefore our main theme now is "Our body and senses". That led us to include the elements earth and wind.

## Näckrosen Förskolan



Pre-school Näckrosen is a public pre-school situated in the old part of central City of Solna. Many young people and families choose to live here. It depends on the proximity to good municipal services, transportation, shops and also to a green area with a little lake in the neighborhood.

All pre-schools in Sweden have a National Curriculum to control the content in the activities. In the Swedish National pre-school Curriculum, there are several goals about natural science and technology to be pursued. The Curriculum was altered 2011 and one of the new things was to strengthen the interest and knowledge of natural science and technology.

Näckrosens pre-school has also chosen to work with the philosophy of The Association for the Development of Skiing and Outdoor Life (Friluftsfrämjandet) in Sweden to strive for the goals in the Curriculum. This means that we put an effort into teaching children how to protect nature and environment.

The pre-school has about 150 enrolled children, aged between 1-5 years. The children are divided into 6 different groups. Two of these groups (50 children) are especially engaged in outdoor activities. The children who are specially engaged in outdoor activities sleep outdoors all year around, and eat outdoors as long as they don't need gloves.



We want to make the children aware of science and technology through playing and adventuring in nature. The pre-school of Näckrosen also tries to increase the skills of the teachers on the subject regularly.

The teachers are very active in the different activities. Motor skills, creativity, imagination, concentration, fitness and health will develop better in the outdoor environment.

We want them to discover how people, nature, technology and society interact. We also let them experience science, plants, animals, simple chemical processes and physical phenomena and to develop their ability to build, create and design using various techniques, materials and tools. If children learn about nature, plants, animals and technology when they are young they bring their knowledge with them throughout their lives and it creates a continuing interest to continue research and experiment.

We strongly believe that everything that you can do inside is also possible to implement outside.

As a part of this EU-project the departments involved from Näckrosens pre-school have worked with the theme four elements (Water – Wind- Fire and Earth).

Our main focus during thematic work/projects is the children's learning processes rather than the results of the before mentioned thematic work/project. This way of thinking is applied on all our children, no matter age.



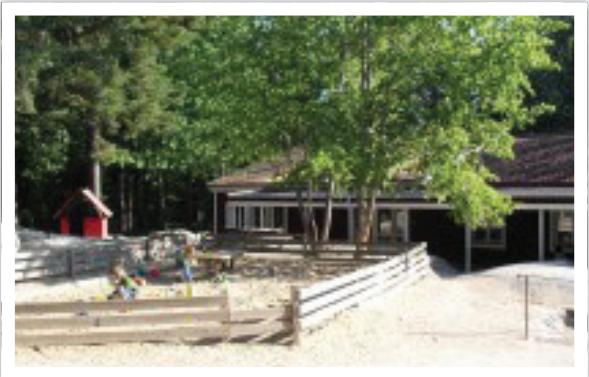
In all our work, we strive to include the children and their interests. Even if the adults have chosen the theme/project, we alter it always so we can encourage the curiousness of the children to stimulate and create an optimal environment for learning processes. We know that when we create the right environment for learning for the children, the possibilities are infinite. A child that is interested and focused will learn much more and quicker.

At Näckrosens pre-school, we work towards the same understanding and perspective on children. We work accordingly to the national curriculum. We are especially interested in the parts about environment and education in nature/nature science. In our themes/projects we try to personalize different objects to create a more playful learning environment for the children. They get to name the forest and similar things, so they can connect to it more easily.

We always introduce our activities to the children a couple days in advance, by theorizing with the children. During the activity, even when we alter it, we try to keep a common thread through it. The common thread is always present during every day activities as well.

We theorized by asking the children different questions and let them think freely and hypothesize about the questions. After this, we try to have an answer for these questions together. After this we try the hypothesis practical. When it comes to younger children, the process is the same, but the order is different. For example:

With younger children, we asked what they thought will happen when we drop this orange into water. Some gave the response that an elephant will come others thought it would bounce, sink or float. Then we dropped an orange into water, and it floated. The follow up question was what happened.



With the older children, we asked the same question. They thought and they gave their own response. Then we discussed together what would happen. And then we test if the

answer is correct by dropping an orange into water.

The walks in nature are a big part in the activities at Näckrosens pre-school. The radius of these walks depends on the children's age and ability.



During one of our excursions in the winter the kids managed to spot some hares. We decided together to try and locate the hares. The children were looking for tracks and found some that we could follow a bit into the woods.

The tracks led us on a fun and challenging trek through woodland, but we did not manage to find where the hares live. However, we found something else. The

children were then able to note that it was a birdhouse, which the birds flew to eat and get some protection from the harsh winter. Being flexible and follow the children's questions and interests is an approach that the staff has.

During our trips to the hill, we take advantage of the children's desire to go. One of the things we're working on, for example, is taking turns and the importance to be gentle with each other on the slopes. Besides, the kids get to their practice motor skills, with exercises that demands maintaining balance and develop body knowledge. They also learn about their own possibilities and limits, for example: how quickly / slowly they dare to go or what happens if they do not pay attention to what happens on the slopes. Many clashes have led to they have learned to be more gentle with each other and themselves.

By networking with pre-schools in other countries, we will get inspiration and more methods to increase our work with outdoor education. We believe that sharing experiences will enrich all participating countries in their understanding of children's learning abilities and outdoor learning.

## Viljandi preschool Kröll



education and outdoor learning. There are 29 members of staff in the preschool. The working environment of the preschool is pleasant and constructive and we have a stable and like-minded team. Our workers are very motivated and creative people who want to work with children.

Our staff can be described with the following words: spirituality, nature, environment, joy of making things with their own hands and creativity. We lay a great emphasis on creating environmental awareness, teaching national traditions, movement and health. The main principles of our learning and educational processes are safety, closeness to nature, integration, perseverance, collaboration, individuality.



The preschool Kröll is located in Estonia in a small town called Viljandi in the town district Paalalinn. The preschool was established on 1 February in 1966. At the moment, there are 6 groups of children, one of which is a day nursery group. The children's ages are between 1.5 and 7 years. In the near distance of the preschool, there are Paala artificial lake and Valuoja valley which are perfect for learning and educational processes through the environment, natural



The learning and educational process is carried out according to The Estonian National Curriculum for Pre-school Child Care Institutions, one aim of which is to raise a person who protects nature, lives in harmony with the environment by saving natural resources.

Therefore, the main direction of our preschool's learning and educational process is being close to nature, developing the mindset of knowing and respecting your home place environment. It is very important to learn outdoors, through which we direct a child to notice the surrounding nature, to search and discover connections between different natural phenomena. We enable the children to perceive the surroundings with different senses and are convinced that the best way to know and understand something is to search and discover it by yourself.

The children's learning is supported by positive emotions and playfulness. Positive emotions and joy of play help to concentrate attention on activities and through this to

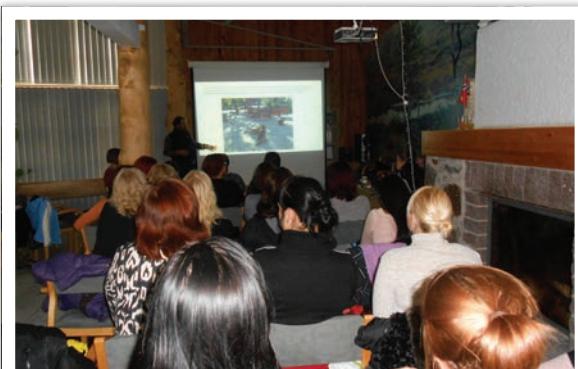
memorize and recall later. We believe that the emotional experience through learning outdoors facilitates the development of personal character traits such as confidence, curiosity, sympathy and independence.

In collaboration with the partner countries we have compiled this methodical handbook, the content of which consists of different natural and environmental activities and ideas carried out by the teachers of the four partner preschools. The activities and ideas were carried out through the four elements – Fire, Water, Air and Earth. The topic of the handbook was chosen at a joint meeting, from different environmental topics that are included in the curricula of the partner preschools.



In the handbook we have tried to concentrate more on the practical side, giving ideas and examples of carrying out outdoor learning activities. The activities have been carried out practically and the whole process has been documented with assessments and results. Jointly, we have found that while dealing with the topics, the process itself is more important than the results.

During the process, there is no guarantee that everything will go as planned and experiences of teaching and learning depend on the interest of children. In the handbook, the differences in handling the topics by partner countries have been brought out, which are quite unique and give additional value to the material. For better illustration and making visible these ideas that we have considered important to share with you, photos have been added to the handbook.



The handbook is meant for teachers of participating institutions as a tool to carry out teaching and educational work in natural and environmental subjects.

We wish all the preschools and teachers a brave start and courage in using new approaches. This handbook is designed to assist in this work.

We are thankful to all the teachers of the partner countries who participated in the project and jointly helped to carry out big and smaller ideas.

Have fun learning outdoors!







## Valmiera 3rd preschool educational institution „Sprīdītis” Latvia





# Natural science as a component of preschool curriculum in Latvia

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The goals and objectives of the preschool curriculum in Latvia are established by the general educational law and Latvian preschool education guidance. Preschool education curriculum is put into practice daily and it is integrated within educational activities in which the content of various subjects is combined in order to advance children's physical, psychological and social development.

The aim of the natural science classes, both – indoors and outdoors is to develop the emotional perception of nature with a help of senses and feelings, to explore the natural objects, as well as to inquire the processes in nature and recognize oneself as a part of the nature.

- We encourage children to observe and sight the succession of the seasons on a day-to-day basis.
- With a help of physical activities we develop children's conception about the diversity of inanimate nature and wildlife.
- We work together and discuss causation of natural phenomena in order to construct the comprehension about the unity of nature.
- We perform practical activities and provoke interest about the role of human within the natural environment.
- We develop insightful and considerate attitude towards natural objects and natural phenomena.

Outdoor pedagogy as a method provides with an opportunity to acquire knowledge basing it on a practical activity. Within our daily work we have realized that any lesson can be conducted outdoors, provided that appropriate methods are used, necessary materials prepared and appropriate area for the implementation of the aim selected.

- Until the age of 3 years children explore the nature – they observe, investigate, imitate, finger, throw things etc.
- 3 and 5 year olds are seekers, who not only find the natural objects but they order, sort, compare and use them creatively. It is an adventure for children to be in the nature. They learn to be careful and considerate towards the natural environment.
- 5 and 7 year olds recognize the natural objects; they explore the objects, as well as the areas around them. At this age the percept about the link between the nature and human develops.

Together with children we find and observe the nearest natural objects. The children utter simple questions that consequently develop their explorative skills. First, we develop sensual conceptions about the objects that are being explored, and then within the lessons in the classrooms, as well as outdoors we do researches where we examine the qualities of selected natural objects. We also encourage children to discuss the problems and express their opinions.



# Earth



In Latvian there are several meanings for the word "earth". Planet Earth - our common home is really interesting and our land Latvia is a very beautiful place. We have broad plains and flat heights, rivers, meadows and woodland; when one looks underfoot, it is possible to notice a flowerbed, lawn, mud paddle, sand and other interesting things. When we go for walks, we observe how varied the surface of the ground is. Very often we notice stones that are part of the ground. The stones are different according to their formation, shape, size and color. Also the sand, tiny and little stones, is part of the ground. Also the soil that is necessary for plants to grow we refer to as earth. Within our researches, we find out that the part of the rich soil is created from tiny pieces of stones and plants. With a help of practical activities, children realize that the soil provides plants with nutrition and water. Humus is a special kind of soil and it is possible to observe its formation at a specific period of time. On a daily basis we observe that the surface of the soil changes in accordance with the succession of the seasons.

- We practically ascertain that the earth or soil is necessary for plants to grow.
- We observe various animals, worms and insects that live in the soil.
- We clarify that animals and humans use soil to build their houses.
- We explore what mineral deposits can be found within the soil.
- We develop insightful attitude towards clean and tidy environment – the earth.
- We develop children's awareness that there are many beautiful places in Latvia that are worth visiting.

The surface of the ground is an inexhaustible and interesting source for children's discoveries. Children from "Spriditis" are active, ready to explore and ready to find out how the earth year by year is being transformed by water, sun and wind. The objective of our activities is to develop children's awareness of the beauty and usefulness of the ground.

# Activity 1

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**Theme:** Land cover.

**Age:** 3-5 year olds.

**Necessary materials:** shovel, bucket, strainers and magnifying glass for each child.

## Objectives:

- Explore different types of land cover – grass, sand and mold.
  - Explore the structure of land cover types.
- 

## The process of the activity:

1. There is a sand as land cover in the sand box. Children are digging and sifting the sand and exploring it with magnifying glass.



2. Sands are light brown.



3. Sands are soft and loose.



4. Sands consists from smaller and bigger stones. There nothing grows in sands.



5. Near the sandbox there is grass.



6. We can see bugs and another creatures in the grass.



7. The roots are in the mold.



8. Very dark ground is in the flowerbed. It is called soil and that is because the plants are growing very well in that. The parts of soil sticks on the shovel.

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### Conclusions:

- There are different land covers.
- Land covers are different by color and structure.
- Plants love to grow in soil.

## Activity 2

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**Theme:** Land fields.

**Age:** 5-7 year olds.

**Necessary materials:** 4 buckets and spades for each child, 4 transparent plastic flowerpots, 4 plastic dishes with hole in the middle, digit set (1. 2. 3. 4.), measuring cup, water, different types of land surface soils – gravel, sand, sludge(sapropel), soil.

### Objectives:

- Get to know different types of naturally occurring land surface soils – appearance, framework, structure.
  - Encourage to evaluate water interaction to stones, sand, sludge and soil.
  - Exercise naming serial numbers and comparing volume proportions.
- 

### The process of the activity:

1. Land under our feet can be solid as well as soft, loose. Land surface can be of different colors and structures, it can be dry or wet. What is the kind of surface here?



2. We're walking on a gravel road. Gravel is light brown, dry and forms solid ground which is easy to walk on. Gravel consists of rough sand and little stones. We collect the stones in the bucket.



3. The coast of the river is covered with almost white subtle sand. It is difficult to walk on such sand because it's very soft, loose and dry. We pour those sand in the bucket.



4. Feet gets stuck by the little rill. The coast is covered with sludge. Sludge black, soft, sticky and very wet. The decayed leaves could be seen in sludge. It is difficult to put sludge in the bucket as it sticks to the spade.



5. The landscaped flowerbed by the kindergarten is dark brown, loose, wet and the beans grow very well there. The kind of land where something grows is called soil. We pour soil in the bucket.

6. Next day observe what happens when water gets on the ground.
7. Put stones, sand, sludge and soil in the transparent flowerpots (bottoms should have openings).
8. Put plastic dishes with holes on transparent buckets.
9. Place prepared flowerpots on dishes.



**10.** Put tags with digit to each bucket (1., 2., 3., 4.).



**11.** Pour same amount (half a liter) of water in each flowerpot and observe how does water reacts in sludge, soil, stones and sand.

- 1. – Sludge absorbs water gradually.
- 2. – Soil absorbs water slowly.
- 3. – Water flows right through the flowerpot of stones.
- 4. – Sand absorbs water quickly.

**12.** After while compare the water amount in buckets.

- The first bucket has the most water – more than it was poured in.
- The second bucket has the least amount of water.
- The third bucket has more water than the second one.
- The fourth bucket has more water than the third one.
- The third bucket has less water than the fourth one. (etc.)

### Conclusions:

- Land surface is covered with different looks and structure of soils.
- Water flows through and absorbs in soil, sand and sludge.
- Stones do not absorb water, water flows right through.
- Sludge has very much water itself thus the first bucket had more water than it was poured in.

# Activity 3

**Theme:** Soil.

**Age:** 5-7 year olds.

**Necessary materials:** seminal of kidney beans, box eith soil, grass, tools to land.

## Objectives:

- Explore the soil practicaly.
- Preparing the land for planting.
- Observe plant growing.

### The process of the activity:



**1.** At first children work inside. They explore the soil:

- soil is soft and loose;
- soil is black;
- soil is wet and sticks on arms;
- soil has smell.



**2.** After that we plant kidney beans. Put the box in light and warm room, watering beans regularly and watching the growth of beans. When it comes warmer we can plant the beans outdoors.



**3.** Finding a place for beans bed:

- there is grass growing;
- the land is hard.



**4.** At frst we dig up the lawn and remove the roots:

- the soil is sowt and loose;
- soil is brown;
- soil is dry and doesn't stick to arms.



**5.** The soil needs to be fertilized to be good for plants.



**6.** Plant the beans into the soil.



7. Watering the plants.



8. Waching the growth of beans.

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### Conclusions:

- The plants are planting into the soil.
- The soil needs to be prepared specially for planting and after that we have to look after the soil and plants.

# Activity 4

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**Theme:** Rocks.

**Age:** 5-7 year olds.

**Necessary materials:** sand, rocks, cement, water, plastic cups.

## Objectives:

- Explore rocks.
  - Explore the properties of cement.
- 

## The process of the activity:



1. Children are exploring gravel with magnifying glass.
  - Gravel consists from sand and rocks.
  - Sands consist from grains of sand which are small rocks.

2. We use sand and cement to built houses. Teacher introduces children with cement. Children explore the structure of building materials with sight and touch.

- Rocks are hard and heavy.
- Sand is loose, grainy and sharp.
- Cement is like flour, it is made in factory.



3. Decided to built stone fence. First fence is built from rocks and sands connected together and water.



4. Next one is made by rocks and cement (with water) connected.



5. Third one is made from rocks, cement, sands and water.



6. After couple of days assess the strength of fences. First one fails, second one breaks but the third one holds together and is very hard.

## Conclusions:

- Rocks and sand are naturally occurring.
- Rocks can not be connected with sands which is mixed with water.
- Rocks can not be connected with cement which is mixed with water.
- Rocks can be connected with sands which is mixed with cement and water.
- Cement is artificial binder.

# Themed activities

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## **“Higher than the ground”**

### **The location of the activity:**

An outdoor area where it is possible to step higher than the ground.

### **The process of the activity:**

The leader of the game stands in front, the rest of the participants stand in a row behind him. The leader moves around the area and demonstrates various body movements (shakes hands, lifts his legs up high etc.), the rest of the players repeat the movements. As soon as the leader screams out – “higher than the ground” each participant tries to find a place where to step higher than the ground. The leader tries to catch children who do not manage to find a place. The child who is caught becomes the new leader of the game.

## **“Jump, rocky!”**

### **The location of the activity:**

A nice place where it is possible to sit down.

### **The process of the activity:**

The leader of the game finds a little stone. Children sit next to each other, put their palms together and hold them in front of themselves. The leader of the game hides the little stone in his palms and puts his palms in all of the children’s palms while secretly gives the stone to one of the children. Children carefully observe who gets the stone. After the leader of the game screams out – “Jump, rocky”, the child who has the stone tries to get on his/her feet but the rest of the participants try to stop him/her. If the child manages to get on his/her feet, he becomes the new leader of the game.



# Light



When we look upwards, we can notice the sky. Together with children we very often observe how the sun in the morning shows up on one side of the sky, shines the whole day and disappears on the other side of the sky. When the sun sets, darkness falls and we turn on an artificial lighting. The light! Without the light we could not see anything and nothing could grow. If there is no light, there is darkness. Also the fire provides us with a light but it is very dangerous. With a help of computer presentations, we introduce children with the good and the bad that can be caused by fire, as well as we teach them how to react in a fire hazard situations. Day by day we develop children's understanding of the significance of light; how important it is within human and animal lives, as well as for plants. The majority of activities take place during the day, however many animals and plants are more active only during the night. Together with children we do researches and make certain that the action of light always follows the same rules.

- We provoke interest in the origin of the light – natural light and artificial light.
- Together with children we observe the location and height of the sun during the various seasons.
- By the observation of day to day phenomenon, we develop an understanding that the light spreads as rays straight in all directions.
- It is interesting for children to observe how behind a non-transparent object where rays of light cannot get through, a dark spot is visible – a shadow that imitates the shape and movement of the object.
- On a sunny day the older children observe the length of the shadow and its change of direction, as well as they exercise to determine directions to North, South, East and West.
- Together we examine the action of a mirror. When the rays of the light reflect from its lustrous surface, it is possible to see a mirror image.
- With a help of practical activities we find out that the mirror not only reflects the light but it also turns the light in another direction and as a consequence we are able to sight "a sun bunny" – moving, bright light on a darker background.
- By observing simple activities, children are able to see that the light seems white but in reality it is a mixture of various colors. The color of light consists of all colors of the rainbow.
- We observe the outdoor plants and do experiments in order to check on the importance of light in their growth and evolution.

There are four different seasons in Latvia. During the winter, when the days are short and the sun is rarely shining, it is a calm period for plants and animals. During the spring, the sun shines longer, days become more longer and the nature awakes. During the summer there is a lot of light and there is a bustle around – animals are active and the plants grow. When the autumn approaches, days become shorter however nights become longer – plants and animals prepare themselves for the winter. During the midsummer when we enjoy the longest day of the year and during the winter solstice when there is the longest night we have a celebration in Latvia. Same as we celebrate the equal length of the day and night during the spring and autumn. Children gradually realize that the light changes not only the world around them but it also influences human feelings and mood because of the lively power that it carries within it.

# Activity 1

---

**Theme:** Shadows.

**Age:** 3-5 year olds.

**Necessary materials:** Sunny weather and snow.

## Objectives:

- Build a picture of the light connection with shadows.
  - Encouraged to explore, recognize and compare shadows on snow.
  - Exercise using concepts – shorter, longer, the same size.
- 

## The process of the activity:



1. Children work in pair. They compare their lengths.



2. Children focus to the shadows in the snow. They compare the length of shadows and the way how moves the shadows.



3. Children are staying in line and are trying to recognize which one of the shadows is his own and his friend's.



4. But why it's impossible to see one shadow? Children are guessing why.



5. Teacher pay attention to the sun:
  - light comes from sun;
  - we can see shadows in sunny weather.



6. Teacher encourages children to catch their shadow in the snow.



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## **Conclusions:**

- At places where there is no light there is shadow.
- We can compare and recognize the shadows.

# Activity 2

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**Theme:** Sundial.

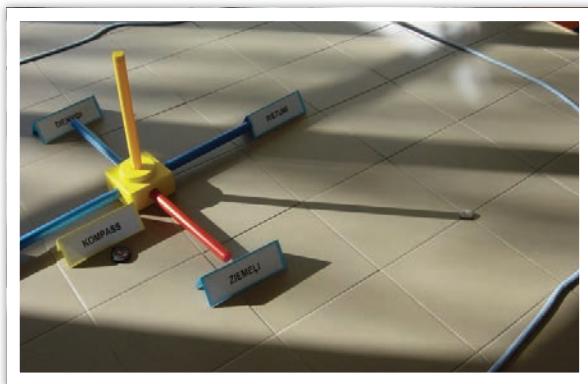
**Age:** 5-7 year olds.

**Necessary materials:** Sunny weather, compass, marks of cardinal points, sticks and stand for making sundial, little stone.

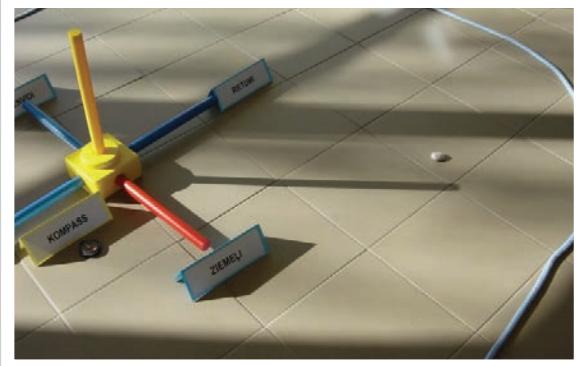
## Objectives:

- Cause interest about importance of compass.
  - Provide insights about casting of shadows.
  - Encourage to determine cardinal points.
  - Cognize the path of the sun.
- 

## The process of the activity:



1. Children get to know compass activity and its importance while observing it and make sundial. Position of shadow is marked with little stone.
  - Sun is the main light source on earth.
  - Light rays cast a shadow encountering obstacles in their way. Shadow is cast on area which is not lit by light rays.
  - Sun rises in the east in the morning and sets in the west in the evening.
  - At noon sun is in the middle of the sky – south.
  - There is the north opposite the south.
  - Where is the sun at the moment?



**2.** After while it is obvious that the sundials shadow has changed its position.

---

### **Conclusions:**

- Compass show cardinal points.
- Shadow is cast in places light cannot reach.
- Position of the sun in the sky changes during day thus making position of the shadow change as well.

# Activity 3

**Theme:** Rainbow.

**Age:** 5-7 year olds.

**Necessary materials:** Projector and photo of rainbow, sunny day, CDs, glass bowl filled with water, desk lamp, toys – paper spinning tops with surface painted in seven colors of rainbow.

## Objectives:

- Update and enrich insights about formation on rainbow.
- Give insights about attributes of light.
- Get to know and exercise to name all colors of the rainbow.

## The process of the activity:



- 1.** Children share their experience about formation of this natural phenomenon while looking at photo of rainbow. Teacher adds and corrects their insights.

- Main light source is the sun.
- Unique coincidence of natural phenomena is required to see the rainbow outdoors.
- Rainbow forms in front of sun on clouds background while it rains.

- 2.** Where else can rainbows be seen? Children observe range of colors on CD.

- Luminous items emits light rays.
- White light splits into colors.





**3.** How can you yourself make a rainbow? Children observe how light flow through a water filled bowl forms a rainbow.

- Desk lamp also emits light although it's much weaker than the light of the sun.
- Light rays are "broken" the moment they go through the water filled bowl – they each change their direction and the rainbow is formed.



**4.** Children observe colors of rainbow and names colors they see on paper toy – spinning top. Rainbow colors overlays each other playing spinning top and the white color is now visible.

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## Conclusions:

- Visible light is white but it's formed of colorful light.
- It is believed that white color is formed of seven colors – red, orange, yellow, green, light blue, dark blue and purple.

# Themed activities

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## "Day and night"

### The location of the activity:

Meadow near the woods.

### The process of the activity:

One of the children - an owl, stands behind a huge tree. The rest of the children - birds, freely find a place within the area. When the teacher says "day", the birds fly and tweet cheerfully but the owl sleeps in its house. When the teacher says "night", birds crouch and sleep in the meadow but the owl goes hunting. If some of the birds move, the owl takes him/her to her house next to the tree. Night and day rotate until a certain number of birds is hunted down; after that a new owl is selected.

## "Blindman's-bluff"

### The location of the activity:

Quite place with a flat surface.

### The process of the activity:

Children join hands and make a circle but the 'blindman' - a child whose eyes are folded with a scarf, is in the middle of the circle. Children move around within the circle and one by one, from time to time clap their hands. The 'blindman' by listening to the sound, tries to catch the child who claps his/her hands. The child who is caught becomes the new 'blindman' and the game continues.

# Air



We constantly look through the air but in reality we do not see the air itself. It is particularly challenging for children to understand that the air is everywhere because a clean air has no color, no smell and no taste. We feel the air when the wind blows in our face. The wind moves objects and we can hear awkward noises. Thanks to the airflow, we are able to feel different smells. Children during the active teaching learn that when they inhale their chests enlarge, but within an exhale they flatten because we breathe the air constantly. In order to expand the children's comprehension about the world, we make outdoor and indoor researches on the action of air.

- During the play time we ascertain that the air is all around us.
- We examine how various objects freely drop through the air.
- We observe the wind and try to understand its origin.
- We do researches in order to draw conclusions about the strength of the wind.
- We discuss and demonstrate how humans use the warm and cold airflow daily.
- We practically research the action of air in the water.
- We motivate children to realize the senses created by the flow of warm and cold air.

In order to develop their comprehension about the causation, the older children are introduced with a globe. The air is all around our planet and protects the earth from the sun rays. Everyone knows that the birds fly and planes aviate in the sky. We encourage children to value and discover their own experiences in connection with the movement of wind in the nature. Latvian folk-tale "Sun, frost and wind" tells about the human wisdom because he chooses wind as his best friend. The warm wind from south lessens the cold created by the frost; however the cold wind from the east protects us from the heat waves. The wind is stronger than the sun and frost. Within our indoor and outdoor activities we not only get to know the air but we also discuss how important it is for us to have a clean and healthy air.

# Activity 1

**Theme:** Wind.

**Age:** 3-5 year olds.

**Necessary materials:** Windy day, cloth tapes attached to wooden stick.

## Objectives:

- Cause the interest of air and its properties.
- Give an idea about the movement of the air.
- Encouraged to feel the strength of wind and the direction of movement.

## The process of the activity:

1. Children get to know compass activity and its importance while observing it and make sundial. Position of shadow is marked with little stone.



2. If they don't move the stick the tapes wave on one direction. Why? The air is moving.



3. Tapes ar moving by wind. Children are watching how the direction of movement and the strenght of wind are changing in different places. Tapes ar waving calm between trees.



**4.** Tapes are waving fats on the bridge. That is because the wind blows harder there.

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### Conclusions:

- Air is all around us.
- Air moves and the wind arises.
- The strength of wind and direction of movement is changing.

# Activity 2

---

**Theme:** The air all around us.

**Age:** 5-7 year olds.

**Necessary materials:** Plastic bags, wind mill, fan.

## Objectives:

- To help children realize the existence of the air.
  - To provoke interest about the origin of the wind.
- 

## The process of the activity:



1. The teacher encourages children to guess what is placed into the plastic bags. Children look closely, guess and feel the bag. There is an air in the bag!

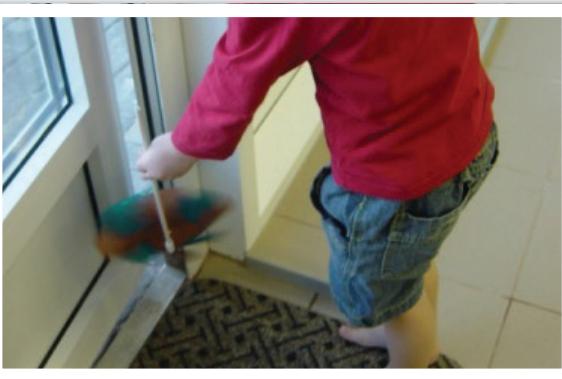


2. It is possible to squeeze out the air from the bag while feeling its flow.





**3.** Children handle the wind mills, inhale deeply through their noses and exhale strongly through their mouths. Why is the wind mill spinning?



**4.** The air moves and creates the wind. The movement of air is better felt and noticed near the door that is half-opened. The warm air flows out of the room but the cool air into the room.



**5.** We play a game "Wind meter!" The child who is blindfolded has to turn in the direction of fan and its created air movement.

## Conclusions:

- We are surrounded by air.
- We breathe the air.
- The movement of air creates wind.
- We are able to feel and hear the wind.

# Activity 3

**Theme:** Strong air.

**Age:** 3-5 year olds.

**Necessary materials:** Balloons, air pump, wooden board.

## Objectives:

- Cause interest about the properties of air.
- To check the force of compressed air practically.

## The process of the activity:



1. Teacher with children fill the balloons with air.
  - Blowing the bubbles.
  - Using the air pump.



2. Ballons are light. When you squeeze the balloon with your leg, they blow up with a noise – the air get out.



**3.** Will the balloon explode if teacher will be standing on the wooden board which is placed onto balloons? Children can practicaly work to be sure about the force of compressed air.

- Wooden board spread out the forces of pressure.
- Balloons deflate but stays with air in balloons.



**4.** How much of children weight balloons can hold?

## Conclusions:

- We can fill balloons with air.
- Air is light.
- Air in the balloon is compressed and the balloon is hard.
- The balloon explodes if you put your leg on it.
- Balloons with air ir them doesn't explode if you stay on the board which is onto balloons.

# Activity 4

**Theme:** Warm air.

**Age:** 5-7 year olds.

**Necessary materials:** Deep snow, air thermometer, stick, tape.

## Objectives:

- Explore the influence of air temperature on snow melting process;
- Note snowmelt on stick with tape.

## The process of the activity:



**1.** Spring sun warms the air. Teacher shows thermometer which shows temperature of air. Snow start to melt if there is more than zero degrees Celsius. Have to insert stick in the deepest snowbank and note the depth of snow on the tape - note.



**2.** Regularly record the depth of snow sticking the tape-note on stick - write the date and air temperature.



**3.** When snow is melted, we can see the influence of air temperature on snow melting process.

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### Conclusions:

- Snow melts as soon as air becomes warmer.
- Snow melted in 9 days.

# Themed activities

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## “Wind”

**The location of the activity:**

Flat area (leeside).

**The process of the activity:**

The participants of the game create a circle by joining hands but facing the outside of the circle. One child with a wind-mill in his hands stays outside the circle. After all the participants utter - “the wind blows”, the child runs around the circle holding the wind-mill in front of himself so that the air spins it. When he/she has run the whole circle, he/she gives the wind-mill to the next child and the game continues.

## “Clouds fly”

**The location of the activity:**

Paved area.

**The process of the activity:**

Each child tears out a shape of a cloud from a paper and by folding another slip of paper makes a fan. Children place their clouds on the pavement and by moving the fan try to lift them and move them until the edge of the area where it “starts to rain”; children applaud. When the rain stops, the activity continues.

# Water



Children are particularly happy to deal with water. With a great interest they observe its various "shapes" in the nature and they ask simple, explorative questions. By the observation of natural phenomena, by asking, listening and watching we together discover – the water can be a liquid and it can move; it can be hard as ice, snow or as white frost; the water can be light as reek, fog or clouds. In order to facilitate children's comprehension about the characteristics and necessity of water in the nature, we do experiments within natural and artificial conditions.

- By practical activities we discover that the water does not have a certain shape; it adjusts the shape of the mug it is poured in.
- We clarify that the water always streams down.
- We observe how the appearance and capacity of water is changed by the ambient air (cold weather, hot weather).
- We observe the desiccation of the water creating invisible steam.
- We teach children that when the water cools it both shrinks and extends and turns into ice.
- We show children the appearance of snowflakes with a help of loupe. Within indoor lessons we show them enlarged images on computer.
- We explore the action of various substances and objects once they are placed in the water.
- With a help of practical activities we learn about the strength of water.
- We facilitate children's comprehension about the necessity of water within the lives of humans, animals and plants.

We observe and explain the natural circulation of water in the nature with a help of modern technologies. The water starts its journey from the sea where it rises as a fog and creates clouds high up in the sky. The clouds pour down when it rains. The water is absorbed by soil, as well as it flows through springs and rivers back to the seas and oceans. We explain to children that oceans and seas are huge water bodies. Interestingly, most part of our planet is covered in the water. That is the reason why we can call it the blue planet.

# Activity 1

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**Theme:** Rain water.

**Age:** 3-5 year olds.

**Necessary materials:** Watering can with water.

## Objectives:

- Cause interest about rain water.
  - Explore the ability of water to soak in an outdoor environment.
- 

## The process of the activity:



1. Children go outside with watering cans.



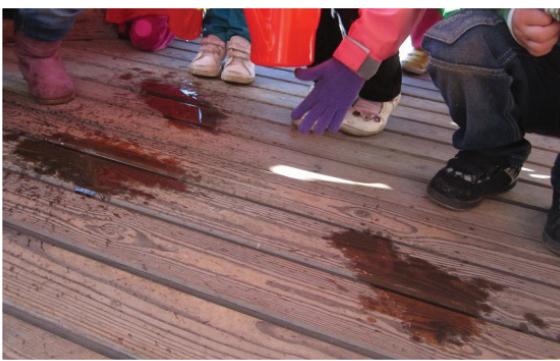
2. In sand box the water soaks into sands and makes them wet.



**3.** The water soaks into the grass slower and the grass become wet.



**4.** The water soaks into hard loan very slow and we can see small puddle for the moment.



**5.** Wooden floor gets wet.



**6.** Water doesn't soak into pavement. On the pavement there ir a puddle.



7. On the slide water acts interesting - it doesn't soak but it flows and makes rain drops.
- 

### Conclusions:

- Water comes down on the ground and makes wet everything.
- Water soaks fast into sands and grass.
- Water soaks slower into wooden floor and land.
- Water doesn't soak into the rock (pavement) and plastic.

# Activity 2

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**Theme:** Frost.

**Age:** 5-7 year olds.

**Necessary materials:** Loupes, paper napkins; a day when there is a frost.

## Objectives:

- To provoke children's interest about the frost and dew.
  - To provoke interest about the sunlight and warmth's influence on those phenomenon.
  - To introduce the children with the aggregation states of water.
- 

## The process of the activity:



**1.** It is cold in the morning and the ground is covered in frost. Children use loupe to observe the grass. The grass is white; each leaf looks as if it is covered with little needles. When touched it feels cold and inflexible. Fingers become wet but the frost disappears.



**2.** After some time the frost covers only the area of grass that is in the shadow; however within the area where the sun shines, dew appears - tiny, little drops of water. The lawn is wet.



**3.** The wet grass is covered with tissue. Also the tissue becomes wet. The frost has changes into the water.



**4.** The wet tissue is placed into a sunny place.



**5.** During the midday the tissue has dried and also the lawn has become dry.

## Conclusions:

- During the cold weather the frost appears – hard pieces of ice.
- The sun melts the frost and dew appears – thin drops of water.
- In warmth water disappears (vapors, dries) – it is invisible.
- The sun provides us with light and warmth.

# Activity 3

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**Theme:** Snow depth.

**Age:** 5-7 year olds.

**Necessary materials:** Snowy day, ruler, string Tray.

## Objectives:

- Cause the interest of snow depth and changes of it.
  - Encouraged to measure with conditional measure.
- 

## The process of the activity:



1. It is snowy day. How deep is snow cover? Children put their arms in snow and try to connect the ground. How deep is it?



2. Better snow cover depth can be measured with a ruler. Snow depth is marked on the branch of bush with a string.



3. To watch changes of snow cover depth we put the tray near the bush.

4. Continue when the snow has fallen. We can not see the string on the brunch but there is a snow on the tray that can be measured with ruler.



### Conclusions:

- Snow depth can be measured.
- Snow depth is different in different places.
- If it is snowing, snow cover becomes thicker.

# Activity 4

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**Theme:** The transformation of water.

**Age:** 5-7 year olds.

**Necessary materials:** See-through buckets, cardboard boxes, water, gouache paints, paintbrush, felt-tipped marker. It must be a cold weather outside.

## Objectives:

- To encourage children to get a third color out of two by mixing them in the water.
  - To improve children's understanding about the influence of air temperature for the change in aggregation states of water.
  - To teach children about the capacity of water and its changes.
  - To clarify the correlation between liquid water and ice once they osculate.
- 

## The process of the activity:



1. Children take two gouache paints, mix them together in the see-through bucket and get a third color. They pour the colored water into the cardboard boxes and observe how much water can actually be poured in a box. The capacity of water in the cardboard box is marked with the felt-tipped marker.



2. On a cold winter day cardboard boxes are left outside on a balcony. The day after children note some changes. The water has frozen and has created ice bricks. The level of ice rises above the level that is marked with felt-tipped marker. There is more ice in the cardboard box than there was the water. Why is that?

3. Children bring the ice bricks to the playground, take them out from the boxes and build an ice house - igloo. Teacher demonstrates how to strengthen the ice bricks with a substance that is made out of snow which is mixed with water.



### Conclusions:

- By mixing two colors into the water another color is created.
- When indoors the water is a liquid and it adjusts the shape of the mug it is poured in.
- There is a limit of capacity of water one can pour into a mug.
- Outdoors in a cold weather the water expands (becomes more) and freezes into ice.
- The ice can be strengthened with water that is mixed with snow.

# Themed activities

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## “Wind”

### The location of the activity:

Paved footpath.

### The process of the activity:

The participants divide themselves within two groups – stones and drops of water. Those children who are “stones”, freely choose a place within the footpath (river) and place their hands on their hips so that to indicate that stones have sharp sides. After the commonly decided signal, children who are the drops of water run and try to pass the stones in zigzag until they reach the other side of the river. When the water has flown away, the drops of water become the stones but stones become the drops of water and the game continues – the river flows to the sea.

## “Clouds fly”

### The location of the activity:

An area outdoors where it is possible to define the borders.

### The process of the activity:

Participants select a leader for the game, someone who will be the frost and will freeze the rest of the children. The participants run away from the frost taking into account the borders of the playground. If the frost manages to catch a child, the child has to stop, stand still with extended arms and legs shoulder width wide. It is possible to unfreeze the frozen child if any of the other children manage to creep between his/her legs. One set of the game continues until the “frost” feels hot. After that a new leader (frost) is chosen and game starts again.

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## Sweden: Tunet Förskolan





# Here are some examples of those activities we have had with the children that included these elements

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Water: The children in connection with the theme "Our body and senses" mixed water with colors and used the yard as a "canvas". We have frozen water to ice in different molds. We have spoken about water, tasted water, sensed water in its different temperatures. We have also put out fire with water.

Earth: The children have planted seeds. We have also "created" a domestic animal. The children have had discussions about what/which kind of animals that live in the earth and what they do there, then the children filled jars with earth placed worms in those jars. Now they feed the worms every once in a while with leaves from the forest.

Tunets preschool has a certification from the organization "Keep Sweden clean", which made us also include our work with the children in the themes "The four elements" and our own theme "Our bodies and senses". Along with the children, we have aroused their interest and curiosity for the nature science by "planting" a board with three different materials fast nailed on our forest yard. Certain materials are good for the nature, others not. In discussions with the children we agreed upon is good and what is less good for the nature and the animals. We will dig up this board when it becomes hotter climates to see what has happened with the material.

Wind: The children have in their theme "Our bodies and senses" filled a jug with water and mixed it with color and soap. When they started blowing

in the mixed water with straws they understood that they can make wind with their own bodies by blowing out from their mouths. They also got to blow up balloons that we had filled with flour. When they released the balloon after, they could see the wind they produced into the balloon when it came out as wind and flower.

Fire: We started a discussion on the basis of the theme vehicles, "what does a fire-truck do?" The children answered a few questions that we asked them to see what they know about fire and the security regarding fire. "Can you touch fire? Is fire dangerous? Who puts out the fire in case of an emergency? How do you put out the fire? Can you put out the fire with anything else than water?"

Their replies became our starting point for the activities that we carried out along with the children.

Certain elements we included in each other through the activities for instance the activity where we experimented with both fire and wind. We had an activity that we used one grill and started a big fire. We poured on various means like: sugar, flour and water. After the children got to guess if these means could put out the fire and what happened when we poured on these means. The children detected that they could not put out the fire only by blowing on it. With this result as a starting point we planned another activity where we with the children experimented with smaller flames that arise from matches, lighters

and by lighting fire on a paper. These flames the children discovered they could put out only by blowing on the fire. During both these activities we as educators had all the time the children's security in focus and therefore we were the only ones who carried out the "dangerous" parts of the experiment.



# Water



## Sensing water

### The process of the activity:

The children got to use their senses to feel and taste hot and cold water. First they drank the cold water, then they touched cold and hot\* water with their hands. (\*Not to hot, otherwise they can burn themselves). Finally they got to stamp in the water with their feet and tell how it felt. We used water from the tap for all activities and buckets for them so they could easily touch and stamp in the water.

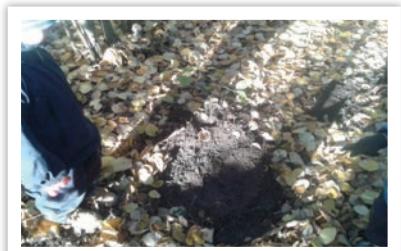




## Burying a plank

### The process of the activity:

We found a plank with the children when we took a walk in the forest. We took this plank with us back to the preschool and collected three different materials to hammer on the plank. Before we started these activities with the children we had discussions with them about what happens to different materials when you throw it in our forest and what their affects are to our nature. The children dug a big hole in our yard. Then we hammered the materials that we collected which was: a fruit, a metal can and a plastic bottle. After we had more discussions about what will happen to these materials when they will be buried in the ground for several months. After we buried the plank with the material upside down so all the material will face down and covered it with earth. This plank will be excavated later in the spring to see what has happened to the materials.



# Ecosystem and wormhouse

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## The process of the activity:

The children went out to the forest with us and collected soil, worms and a plant. They took these materials indoors and placed the soil into two separate recycled jars. They put the worms in one jar, put on the lid and made breathing holes for the worms to breathe. In the other jar they planted the plant and taped around the lid so no air would enter. Before closing the lid we watered the plant and explained for the children that the same water will now give the plant water the whole time. Threw out the hole activities we had current discussions with the children about what will happen to the plant and to the worms.

## The process of the activity:



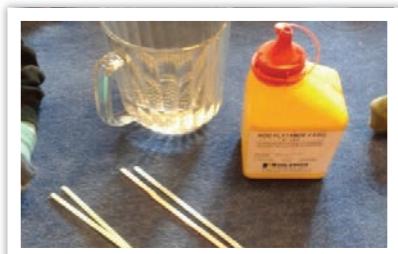
# Wind (Water)



## Blowing into water

### The process of the activity:

The children got to experiment with how their breathing air into water would affect the water. We took a jug and filled it with water. Took out some straws for the children to blow through. We filled the jug with water and let the children blow through the straws to see what happened. Then we put color in the water to see what will happen when the children blew into the water. Finally we put soap into the jug and let the children blow and see what happens.



# Fire



## Starting and putting out fire

### The process of the activity:

We took out a box and filled it with water. We started a small fire by lightning a match and burning a small piece of paper. We talked about fire and had discussions what fire does and how dangerous it is. How to put out fire and who puts out big fires. After we started the small fire the children got to put out the fire in two different ways. Blowing out the fire and dipping the burned paper into the water.



## The process of the activity:

We took the children out to the yard, brought a grill and some cardboard pieces and started a bigger fire. We experimented with the fire by pouring on different ingredients and see how the fire reacted with the ingredients. The ingredients we used was: baking powder, flour, sugar and water. Finally after observing all the reactions we talked about how to put out the fire in different ways the putting water on it. We brought sand from the sandbox and the children put out the fire by pouring sand onto the fire.



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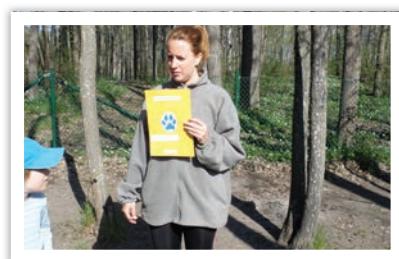
# Nature Project

In the spring of 2014 we started a new nature project that included all four elements. This project started after an experience that some of the preschool teachers have had at the Nature school in Överjärva gård. With the experience that they received from the Nature school, they later on proceeded at our preschool for further learning for the rest of the teachers and children at Tunet. The children got to experience a hiking walk at the preschool where they got to experiment with the four elements. The teachers that were responsible with this project prepared element stations for the children to work with. Here is an example of how we worked with the element Earth.



Water: Sink or float? The children gave hypothesis about which objects will float and which will sink. They tested with stones, leaves etc.

Earth: The children build their own worm houses by gathering soil, leaves and worms from the forest and then they placed it all in steps in a jar and closed it. They were also shown pictures so they could guess which traces belongs to which animal.



Wind: The children got to dip handmade straws in soap and water and blow to see what happens.



Earth: The children made pots out of old milk boxes. Then they chose different seeds to plant in these boxes.



Fire: The children (with close observations of an adult) got to see how fire is made by cartons and matches. And they also got to see how to put out the fire with sand.







## Sweden: Näckrosens Förskola





## Experiment – Wormhouse

### What did we do?

We made an worm terrarium with the children. We decided to do it outdoors. The ages on the children were 1 to 3 years old.

### Our purpose with this activity?

The preschool should strive to give the children the tools needed to understand simplified ecosystems. By making terrarium for worms we could easily show how every aspect of a worms life. Using the terrarium as a tool, we could show the children how the ecosystem works. We also wanted to show the children how to make something creative from materials found outdoors in nature. With the understanding of how the worm fits into the ecosystem, the children are given a tool to put themselves in the context of the ecosystem.

### How did we do this, materials?

*Materials you need: Worms, Soil, fine sand, Leafs a Glass Jar.*

*Experiment Evaluation: Two papers with smiley's on each (a happy and a sad one) pearls, paper and a pen.*

We started of with going out in the forest to collect our material. The children worked in groups to collect the materials. Once the material was collected, we talked about what we had collected. We put in the first layer which is soil. Then we placed the worm in the soil. Afterwards we put on the fine sand and topped it off with the leafs. Then the children watched how the worm would act. Once the leafs were eaten up they gathered new leafs. Once the terrarium was finished we did a reflection/evaluation. Each child got a pearl so they had to explain what they did think about the activity and then they had to add either on the happy ( funny ) or sad ( boring ) smiley paper.

### Pedagogic tutorial:

The use of the terrarium is endless. We talked with the children about what the worm did. With the help of the worms, we were able to show the children why animals are important to the nature. We found some worm droppings in the terrarium. With this we could explain how other animals droppings were natures own fertilizer and how that in its turn became more soil and so on. We showed in very simple terms a comprehensive and complicated ecosystem, which became understandable for the children.



## Science studies, bird food

### What did we do?

We made bird food with our 1-3 year old children from scratch.

### Our purpose with this activity?

Preschools should place great emphasis on environmental and conservation issues. An ecological approach and a positive belief in the future will characterize preschool. Pre-school will contribute to ensuring children acquire a caring attitude to nature and environment and understand their involvement in the natural cycle. The activities will help children understand how daily life and work can be designed so that it contributes to a better environment, both now and in the future.

### How did we do this, materials?

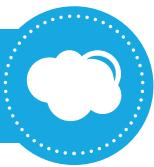
*Materials you need: coconut fat, birdseed , wire, lower plastic cup*

We begin by making the coconut fat softer and then add in sunflower seeds. Then we press/print it together. When we were done we hang up the bird food in the window. Every day we look at the window and bird food, sometimes we caught the birds eating the food we did do to them.

### Pedagogic tutorial:

The teacher tells the children that he was on the course and get the question "why" the teacher replies, " I have been on course to teach me things I can learn you which is great and fun" and then the teacher shows the children her bird food "I want to do it to," says a child! We took out the coconut fat and sunflower seeds together with a screw, plastic glass and wire . " What are you doing now ? " Ask a child " I cut the glasses in half so the birds will be able to reach the food, " explained the teacher . While we prepare , we talk about the birds and one of the children says that we are kind that makes food for them .





## Experiment – the balloon and bottle

### What did we do?

We had experiments outdoors there where we used a bottle of water and balloon. We started by talking about what was in the bottle and how to inflate the balloon as already sat on the bottle. Then the kids got to try to put the bottle in the water and see what happened. After the activity we went inside to have reflections and to evaluate the activity. Did we think it was funny or boring.

### Our purpose with this activity?

Preschool should strive to ensure that children develop their understanding of science and relationships in nature, such as knowledge of plants, animals and simple chemical processes and physical phenomena, preschool should strive to ensure that children develop their ability to identify, explore, document, ask questions about and discuss science,

### How did we do this, materials?

*Materials you need: Experiment: A balloon, plastic bottle, hot water, deep bowl. Evaluation: Two papers with smiley's on each (a happy and a sad one) pearls, paper and a pen.*

We took out all of the materials, gather the children together and showed/talked about the activity. Every child had to try to pull down the bottle with the balloon on top into the water and see what will happen with the balloon. Afterwards we did a reflection/evaluation. Each child got a pearl so they had to explain what they did think about the activity and then they had to add either on the happy (funny) or sad (boring) smiley paper.

### Pedagogic tutorial:

We had more bottles so the kids could see the difference when the bottle was in the hot water and the cold air. Questions we've asked during the activity. What do you need to blow up a balloon? How do we inflate a balloon? Can we do it in another way? What do you think is inside of the bottle/balloon? What happened? How did we blow up the balloon? What do you think happens if you put down the bottle in the hot/cold water?

*Reflection/evaluation: What happened when you put the bottle down into the hot/cold water? What are we doing in this picture? What happened with the experiment?*



## Experiment – the balloon and hot air

### What did we do?

We demonstrated the difference in the density of air, depending on if it is heated or cold. We filled the balloon with hot air from the hair dryer to show how it lifted. We also made an parachute to demonstrate aerodynamic drag, and the principles of physics. The children were of the ages 3 to 5 years old.

### Our purpose with this activity?

The preschool should strive to ensure that each child acquire new ways of understanding the surrounding world and simple chemical processes and physical phenomena. How did we do this, materials?

*Materials you need: A balloon made of tissue paper, hair dryer, plastic bag, string, toy doll.*

*Evaluation: group discussion.*

We started off with a discussion about air and its behavior. How it acts if it's cold or warm. We then started the experiment with blowing hot air into the tissue paper balloon. The children concluded that it lifted up. Then we talked about how this was possible. We ended the experiment with showing aerodynamic drag. We threw the toy doll without parachute, and then we threw it with a parachute. We ended this round with having a discussion about what we had seen.

### Pedagogic tutorial:

In the pre-discussions the children showed difficulty to understand to what we tried to teach them. We realized in a early stage that we needed to show it physically to keep the children's focus. After this experiment we let the children build their own balloons and parachutes. We discovered that when they made their own materials they talked about the physical phenomena that air is.





## Experiment - ice cube & thread

### What did we do?

We had an outdoor science experiment with ice cubes and salt. After the activity we reflect and evaluate the activity we did outside.

### Our purpose with this activity?

Pre-school will strive to ensure that children develop their curiosity and their desire and ability to play and learn. Pre-school will strive to ensure that children develop independence and confidence in their own ability. Pre-school will strive to ensure that children develop their understanding of science as well as its know-how simple chemical processes and physical phenomena

### How did we do this, materials?

*Materials you need: Ice cubes, salt, water, a glass*

We poured ice cubes (that we have done before) in a glass, then we poured the water on the ice cubes, putted a wire on the ice cube and strew salt on it ... The children sat wondering and looked and guessed what will happen when the teacher showed them. And when they saw the result (that the ice got stuck on the wire). Every child had to try it by their own and see if they could troll.

### Pedagogic tutorial:

What is this? What is ice? What did we do so it became ice? What do you think will happen when I pour salt on the string?

What was it that happened? What did we do on the cards? How did we get it on the stuck then?



# Experiment – build an igloo

## What did we do?

We made an igloo with children 4-5 years old.

## Our purpose with this activity?

The preschool should strive to ensure that each child develop their ability to function individually and in a group. The preschool should strive to ensure that each child develop their ability to build, create and construct using different techniques, materials and tools

## How did we do this, materials?

*Materials you need: Snow, waterproof clothes*

We were talking about building something in snow. The weather was too cold for several weeks. It was impossible to make snowballs. Than suddenly the temperature raised to a few minus degrees. That's perfect for creating in snow. We started straight away. We pressed the snow together and rolled snowballs. Fittited it together with more snow.

## Pedagogic tutorial:

You take what you have and build a hut, a little building. You don't need wood, concret, bricks etc.





## Experiment – Volcano

### What did we do?

We built a model volcano from scratch. The children were from the ages 2 to 6 years old. Our purpose with this activity?

The preschool should strive to ensure that each child develop their understanding of space, shapes, location and direction, and the basic properties of sets, quantity, order and number concepts, measurement, and simple chemical processes and physical phenomena.

### How did we do this, materials?

*Materials you need:* A plastic bottle, hot water, deep bowl, flour, baking soda, chicken wire, wood, paper, glue, vinegar, caramel color

*Evaluation:* group discussion and exhibition.

During the experiment with fire, we noticed that the children were very interested in volcanos. So to capitalize their interests we decided to build a volcano together. In an early stage we decided to include all our children in our department. We approached the theme fire from a point of view that hot vs cold and safe vs dangerous. We let the children make their own volcanos from clay, that they had made themselves. Then we went on and mixed baking soda and vinegar to show them the chemical reaction. We talked about that chemical reaction in the bottle is exactly what happens in a real volcano. That the carbon dioxide drives the baking soda out, which happens with the lava in a volcano. The children got to test their own volcanos.



## **How did we do this:**

When we were finished with the small volcanos, we went on to as a department build a big scale volcano. We started off with letting the older children build the frame, and use the plastic bottle with chicken wire. The younger children got to prepare the paper for the papier-mâché. Then we went on to using the paper to form the volcano. When the paper dried, we colored it according to a picture we had found in the library. When we were done, the children got to display it for their parents and other adults on a exhibition. Also during the entire process we discussed the abilities of a volcano with the children.

## **Pedagogic tutorial:**

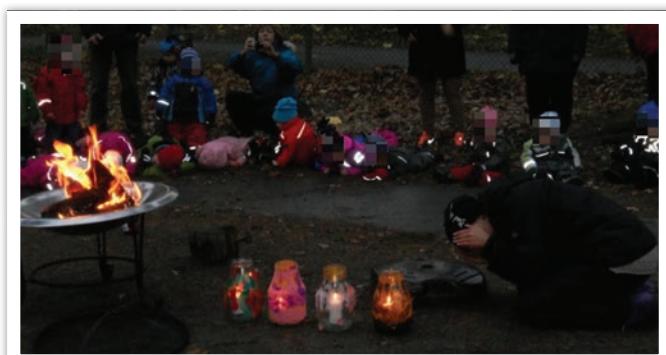
We noticed at an early stage that the children were very interested in fire and volcanos. As learned from our earlier experience from the experiments with air, we decided at an early stage to do a practical experiment, and to include all our children. The volcano project in itself became a textbook example of including the children in our projects and the vibrant learning environment it creates when you as an adult include children. In our discussions with the children we noticed a hunger for more information about volcanos. To keep their interest alive we kept having discussions about volcanos. As the process evolved, so did the children and their interest. We saw during the "free play" that their games were focused around volcanos and fire. And this became a project that the children themselves kept alive for almost 2 months. The exhibition also became an excellent way to show the parents the process in its whole self and the children's "workday" in the preschool.



# Lightning celebration – A Halloween Tradition at Näckrosen's preschool

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At Näckrosen's preschool we have an different way of paying attention to Halloween. We have a lightning celebration. In the afternoon when it gets dark, we go out and eat snacks, this year we got hot dogs. Everywhere around the preschool at the paling it hanged votives that the children had painted all by them self so it would lit up our preschool yard.. When we had eaten our snack the whole pre school had our joint song gathering. And in the middle we had a fireplace and votives. Happy Halloween!









## Estonia: Viljandi preschool Kröll





# Natural science as a component of preschool curriculum in Estonia

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It is known that being in nature and studying outside are both important for the development of a child. A child learns best by doing. The Estonian National Curriculum for Pre-school Child Care Institutions states that it is very important to learn by playing, communicating with companions and other people as well as copying what is happening in the surroundings.

To facilitate a child's learning, it is important that:

- activities are based on the child's interests and are varied;
- a child can act in a versatile environment;
- a child can make feasible choices and act without an adult's directions.

In the Estonian pre-school institution the theme is chosen from the child's everyday life and their surrounding environment, enabling the child to perceive through different senses, at the same time combining different activities. Children are introduced to the nature around their home, changes in the nature, life environment and human impact to the nature through different activities. Combining different learning content and activities, which are presented by topics, general educational principle is followed (*teaching is focused on child's everyday activities, experiences and interests*). Natural science is introduced by learning through themes. (*Estonian National Curriculum for Pre-School Child Care Institutions, 2008*).

**The tasks of teachers are to:**

- teach how to see and feel the surrounding – diversity of flora and fauna, changes in nature, relations between different living organisms, relationship between humans and the nature;
- introduce children to the nature of their home place and other climatic zones.

**Based on the Estonian National Curriculum for Pre-school Child Care Institutions, the following topics are covered:**

- constant change in the nature: seasons and weather changes, effect of light and warmth, importance of water;
- diversity of flora and fauna: animals and birds – their nutrition, plants – their development;
- interactions between living organisms and their relations with non-living nature and environment;
- human and nature.

**4 different important phases can be pointed out while dealing with the topics:**

- the teacher plans what a child should understand about the surrounding environment;

- the teacher finds out children's knowledge (through talking with children, drawing, playing etc.) about the topic;
- the teacher creates situations where a child can think and reflect on the topic;
- the teacher documents children's development to evaluate what they have learned and how they have developed.

At the pre-school age, children gain their first knowledge and skills with the help of adults to cope with the surrounding natural environment. The role of a teacher is to direct children to notice a natural object or phenomenon, whilst constantly creating them opportunities to feel good and helping them get new knowledge. The desire for knowledge and the joy of discovery are necessary attitudes for every child, which will support motivation to learn sciences in the future.





## Introduction to the topic

Dealing with this topic gives children new knowledge about the different forms of the Earth's ground, natural resources inside the Earth, living organisms and their behaviour, the soil's ability to grow very different plants in good conditions, and in relation to this, affect living environment and everyday activities of animals and humans. In addition, we get the initial knowledge about our home planet. The Earth, how seasons come and go and it causes our whole surrounding environment to change four times a year. While handling this topic, it is very important to teach children to protect and respect our home country and act reasonably and sustainably with nature. Learning starts with discovering and it is fun!

### Aims from the frame curriculum of Estonian national pre-school institutions:

- To direct a child to notice and discover the surrounding world and experience it through play and everyday activities.
- To involve a child in planning the activities, to direct a child to make choices and analyse what was done.
- A child is an active participant in learning and educational activities and feels the joy of action.

### Preparation:

- Keeping in mind the aims of the activities, necessary materials are collected and tools are prepared.
- The whole course of actions is planned with the assistant teacher – questions to build the discussion and create interest.

- The tools are located in a way that a child has the possibility to act in a freely chosen group work.

### After having done the activities, a child:

- Gets new knowledge and experiences in the topics of nature and scientific achievements and will experience satisfaction after doing the activities.
- Feels responsibility to a growing plant, sees connections and is able to explain them.
- Can act as a full member in a group work and feels his/her contribution to the group work.



# Activities connected with earth

**Topics:** me and the environment, language and speech, mathematics, movement, art.

## Activity 1

**Theme:** Growing plants from seeds

**Age:** 5-7 years

**Necessary materials:** Seeding pots, different seeds, soil, magnifying glasses, watering can, name tags, highlighters, the Internet.

### Aims:

- A child knows how to use the tools given.
- A child knows which conditions a plant needs for growing.
- A child can discuss why plants grow different

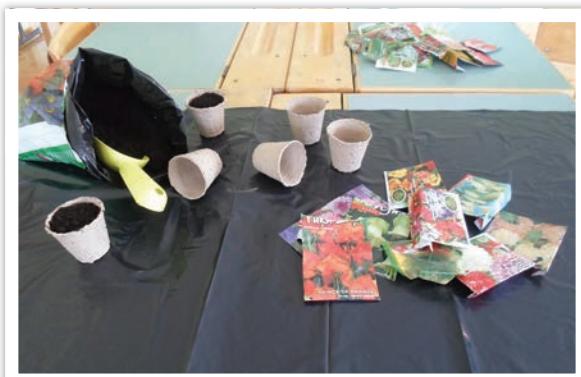
### The process of the activity:

Children listen to the song "Toots' vegetable and flower bed", which talks about seeds sown by different people on the same flower bed. Children have a discussion - why it happened. Conversation about the nutrition in the soil being necessary for the growing plants.

1. Soil – children are looking at soil particles through a magnifying glass.



- 2.** Looking at a photo gallery of plants. Children are looking at pictures on the seed bags and the seeds – what will grow from the seeds? A child chooses a favourable plant's seeds. Children form groups based on the choice of seeds.



- 3.** Children fill the sow pots with soil, sow the seeds and moisten the soil.



- 4.** A child writes his/her name on the name tag and puts the tag in the pot.





5. Conversation/discussion about the sown seeds, plants growing from them, necessary conditions for plant growing.

6. Children watch plants growing and take care of them.



7. Children plant the seedlings in the kindergarten's experimental plant bed.

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## OBSERVATIONS:

**Children listened to the song "Toots' vegetable and flower bed" and expressed their opinions:**

- One has to know before that the plant bed is empty.
- All plants cannot grow together, there is not enough room.
- Only mum and grandma are allowed to sow on the plant beds.
- In our garden, the plan is always made in advance for plant beds.
- It must be discussed where to put what.
- Many flowers can be put, because they are so beautiful.

**Looking at the soil through a magnifying glass. Providing the conversation about the qualities of the soil and possibility of necessary plants growing conditions offered opinions:**

- How beautiful things are grown! (while looking at pictures on the Internet)
- How did all this get into the soil?

- The soil is there where you haven't raked the leaves at all.
- Everyone must drink water, then one does not have to eat so much and can be thin.
- The plants don't have to be thin, they have to grow big and strong.
- But our well in the countryside was totally empty, you were only allowed to take water to cook food.
- The sun gives warmth.
- When the weather is cloudy, it is still lighter than at night.
- It is allowed to use chicken poo as fertiliser as well.

**Opinions that rose while planting the plants on the bed:**

- The smaller ones have to be put further away, otherwise the cresses will grow around them and suffocate them.
- We have to come to watch them in the summer, because in the autumn we will already be in school and there is no more time.

## **Summary:**

A child chose favourable flower seeds, prepared the soil in the pot, sew seeds and marked it with a name tag. Every child took care of their own plants. When the plants were big enough, we planted them together to the kindergarten's experimental flower bed. In the summer, the beauty of the flowers pleased the eyes of the Kröll kindergarten's children and parents.

## Activity 2

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**Theme:** Sedimentation of muddy water

**Age:** 5-7 years

**Necessary materials:** an empty plastic bottle and a shovel or a spoon

**Aims:**

- A child knows that there are particles of different size and weight in the sand and in the dirt.
  - A child observes the sedimentation of particles to the bottom of the vessel and notices changes in a certain period of time.
- 

### The process of the activity:

1. Children put the mixture of sand and dirt in the bottle.



**2.** Children pour the water in the bottle and shake the mixture which will become blurry and opaque.



**3.** Children put the bottle to stand and observe changes happening in the bottle in a certain period of time.



## OBSERVATIONS:

### Children's opinions:

- It is fun to see such mud in the sandbox.
- If dirt is not added, the water will become clear faster.
- Sand cannot swim, but I can stay on the surface in the water.
- Look, look it has already changed transparent!

## **Summary:**

The children learned that if a mixture of sand and dirt is put in the bottle and water is poured on top of it, the mixture will become blurry and opaque. By the end of the activity, the child knew that particles of different size sink to the bottom of the bottle at different speed and sedimentation of the water is a longer process.

# Activity 3

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**Theme:** Designing a sand picture

**Age:** 5-7 years

**Necessary materials:** PVA glue, toned paper, glue brushes, sand

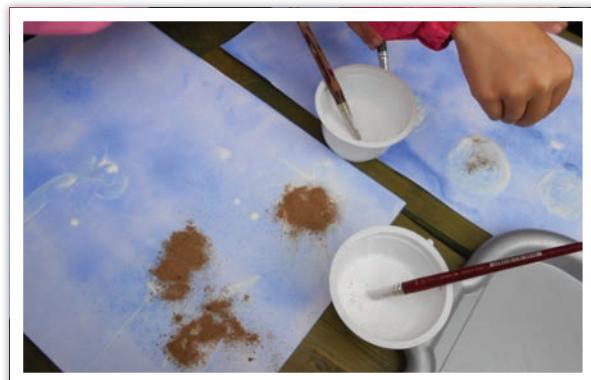
## Aims:

- To give children a chance to feel joy and satisfaction of creating art.
  - A child uses different tools to create a work of art.
  - A child knows how a sand picture is made.
- 

## The process of the activity:

It is possible to create nice pictures from sand and later be framed and put on the wall.

1. Children draw one motif with glue on the paper - a fir tree, snowflakes.



**2.** Then they scatter sand on the gluey drawing, dividing the sand on the paper while doing movements back and forth.



**3.** After a while, children lift the paper up from one corner. The sand sticks on the gluey parts and the rest of the sand falls down. The sand picture is ready!



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## OBSERVATIONS:

### Children's opinions:

- The sand draws the picture!
- The same picture can be made with soil.
- The glue turns brown.
- You can't draw on the sand with paints.

## **Summary:**

The biggest joy comes when drawing and painting offers pleasure to children. At the same time, there are no two drawings that look exactly the same, all the children approach the topic from their own angle. Nice fantastic works of art are made. Acting together taught children the principles of a joint activity. They also learned to consider each other and how to jointly use specific techniques.

# Games

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## „Let's play a nature observer“

### The course of the game:

The players are divided into pairs. Each pair gets a tool to restrict a certain area. The frame will be put down on a freely chosen spot and then looked what is inside the frame. Which plants, leaves and moss can be found there? Are there any moving bugs? Are there rocks, soil or sand? Anything else interesting? The pair agrees what was the nicest discovery and tells it to others.

## „Earth, air, fire, water“

### The course of the game:

All players set themselves inside a circle, in the middle is the game leader who has a ball. The leader throws the ball to somebody and says one of the four words: earth, water, air or fire. If "earth" was said, the player to whom the ball was thrown, has to catch the ball and say a name of an animal that lives on the ground. In case of "water" it has to be a fish and in case of "air" it has to be a bird. While answering, the ball has to be thrown back to the leader. When the leader says "fire", the player has to stay silent and throw the ball back immediately.

## Keywords for handling the topic

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- Sand, gravel and clay.
- Rocks. Estonian national rock limestone.
- Construction materials.
- Homes of animals and birds.
- Landforms.
- Living environment under the ground, on the ground.
- Science and technology.
- Folklore traditions connected with earth.
- Beliefs and rituals.
- Professions connected with earth.
- The circulation of nature
- Effect of the seasons to people and animals.
- Saving and protecting the nature. Contamination.
- Natural resources.
- Dangers in the nature, how to act in a dangerous situation.
- Catastrophes.
- The Earth. Planet Earth among other planets.



# Suggestions and ideas for topic-related activities

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- Stories and poems
- Proverbs, riddles and sayings.
- Games with sand and water.
- Experiments of different materials decomposing in the soil.
- Filtrating dirty water.
- Using a microscope to examine tiny parts of soil and plants.
- Using balances.
- Taking pictures and filming.
- Creating work sheets on a computer.
- Drawing pictures of nature with different tools on various surfaces.
- Handcrafting with natural materials.
- Collages from natural materials.
- Gathering and drying up herbarium plants.
- Handcrafting a volcano.



- Drawing on rocks.
- Playing fantasy and creativity games in the nature.
- Games outside depending on seasons. Searching, movement and learning games.
- Making a group mascot from natural material.
- During the topic-related activities parents' knowledge and help should also be used.
- Finger games and spell poems.

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## Introduction to the topic

While dealing with the topic, children get a chance to practice how to handle fire and learn its good and bad qualities, which cannot be taken for granted as people have continuously abandoned the use of open fire in everyday life.

### **One aim from the Estonian National Curriculum for Pre-school Child Care Institution:**

- to support a child's natural interest in getting knowledge and experience about the surroundings, nature and social phenomena.

### **Preparation:**

- Based on the aims, topic-related materials are reviewed and an action plan is prepared.
- The teacher previously gets familiar with the opportunities of the exterior area and considers the season, the age of children and the topic in the planning process.
- Collaboration with the teacher's assistant – what to talk about, questions, time.
- The teacher prepares the tasks and questions for elaborating conversational topics.
- Thinking through different challenging situations to create interest in the topic.

### **As a result, a child:**

- gets a positive learning experience and experiences the feeling of satisfaction and success;
- can watch and listen, see relations and explain them.

# Activities connected with fire

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**Topics:** Me and the environment, mathematics, art, movement

## Activity 1

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**Theme:** Building a safe open fire

**Age:** 5-7 years

**Necessary materials:** rocks, branches of different length (sticks), silk paper.

**Aims:**

- A child can be active and creative while expressing one's thoughts.
  - A child can creatively use natural material.
  - A child will know where and how to build a safe open fire.
  - A child will know the traditions of the Midsummer's Day (Estonian national holiday).
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### The process of the activity:

1. Children listen to the talk about the Midsummer's Day and Estonian national traditions. There will be questions to the children which would enable them to be creative and develop flexible thinking.
2. Conversation about building a fire and safety.

- 3.** Children look for rocks in the woods and prepare a fire place with the help of a teacher.



- 4.** In the outside territory, children gather branches fallen from trees and jointly set them up for a “fire place.”



- 5.** From the silk paper, pieces are torn and set between the sticks as a flame. While blowing, the paper moves, imitating the movement of a real fire.





- 6.** Every child gets two rocks and children make a circle around the fire. They tap rocks together, reading a spell poem, there will be also creative dancing around the fire.

**THE SPELL POEM:** Oh, our little John - Made a fire between the earth and sky!

.....

### OBSERVATIONS:

The children listened to the talk about the Midsummer's Day traditions, why a fire is made and what you can find in the woods at Midsummer night.

- On the Midsummer' Day fire is made, there will be fireworks, jumping around the fire, playing games, eating chicken wings and chips.
- To have fun.
- Sometimes you can stay up all night.
- On the Midsummer' Day you can look for firewood in the forest to build a fire and the fern blossoms.
- I have found a glow-worm – such a small wormbug whose butt is glowing!

To the teacher's questions like "Where a fire is allowed to be built in the woods?", "Can fire be dangerous?", "How to put off a fire?" children's answers were the following:

- Where there is a circle of rocks.
- You cannot make a fire in a bog!
- Where it is dry. You cannot make a fire near a house.

- The fire is hot, the sparks could go in the eye, clothes can catch fire, there could be a fire.
- Once I burned my finger on the stove.
- You can put off a fire with water.
- You can throw dirt on the fire.
- There must always be someone near the fire! Because then it can be seen when a fire starts and the firemen can be called to help!

The teacher taught the children that a fire must never be left without guard. If you want to go, fire must always be put off. To the questions "If a fire starts, what will you do?" and "What is the emergency telephone number?" children's answers were:

- You have to run fast to mum and dad and shout that there is a fire! Then mum will take the phone and call for help!
- To call help, you have to dial 112.

One bonfire or "test fire" was jointly made. From the territory, rocks were gathered and they were set to circle on dry dirt soil. The children gathered rocks – everyone wanted to show which kind of rocks they found, they were very proud, everyone wanted to set their rock on the circle line first. After setting up the rock circle, the children brought hay, branches, firewood and cones. The children ran to find fire material – everyone showed what they had found. Jointly a test fire was built.

After making the fire place, everyone chanted the spell poem tapping the rhythm, accompanied by a rhythm instrument.

# Activity 2

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**Theme:** Olympic fire and torch

**Age:** 5-7 years

**Necessary materials:** illustrative materials about the Olympic fire and torch, newspapers, colourful maple leaves, a ribbon, wire, tape.

**Aims:**

- A child gets to know the meaning of the Olympic fire and finds out what is a torch.
  - A child learns how to make a torch.
  - A child knows how to pass on a baton.
- 

## The process of the activity:

1. Conversation on the topics of the Olympic Games, the Olympic fire, relay, what is a torch and how to make one.

### Making a torch

2. Children gather many colourful maple leaves.



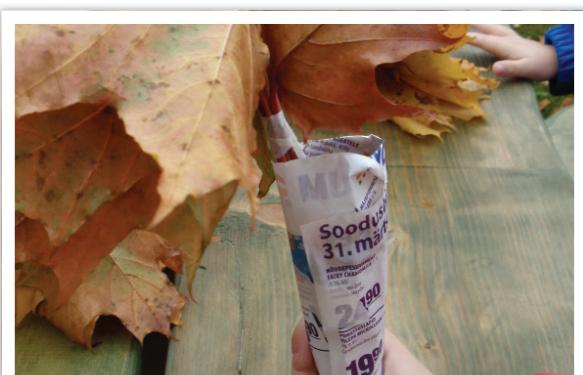


3. Children make a bunch from the leaves and tie it together with a ribbon.

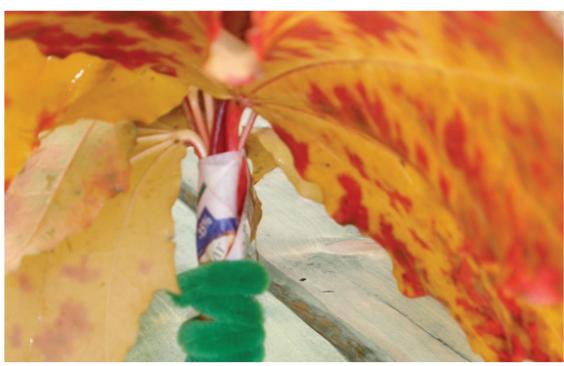
4. Children roll the newspaper to make a tube and tape the sides of the tube.



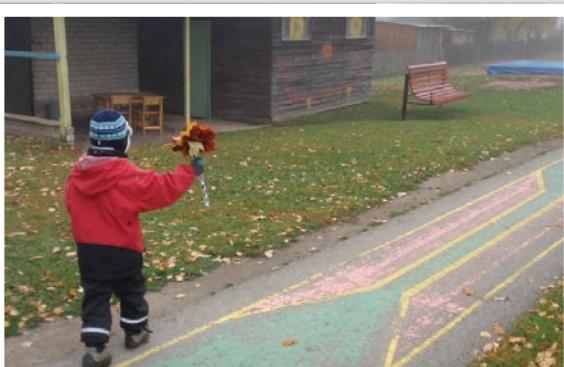
5. Children put the bunch of maple leaves on top of the tube and attach it to the tube from the outside.



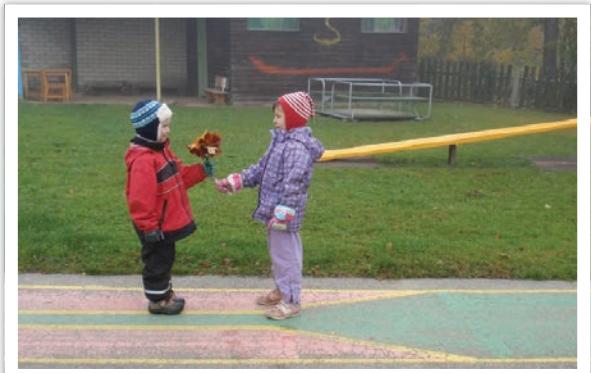
**6.** And the torch is ready!



**7.** Relay “Carrying the Olympic fire”



**8.** The first child starts the run, runs to the next child, passes the torch on, stays standing there and so forth.



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## OBSERVATIONS:

### Children's comments and opinions:

- What they remembered: picture of an ice-skater bringing the fire, carrying the torch, those animals (mascots), we skied and skated, racing on a bike, we sledged, played football, talked about England, ran with the fire, made a torch; one-eyed mascots; the place where the first Olympic games were held and where the athletes ran butt naked; when I came with the "porch" (torch), one-eyed mascots, the Olympic fire, torch.
- A stranger ran by our house once and he wore the clothes of real athlete.
- I have seen football on TV.
- Olympic rings look like the Audi logo!
- You can run in summer. You cannot run on the ice, because you could fall through the ice!

### Summary:

The Olympic topic was very interesting to the children. While handling the topic of fire, it was good to talk the Olympic fire and torch. The new word "torch" excited the children and by the end of the activity a child knew how to pass the baton on while running the relay.

# Activity 3

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**Theme:** Lighting a candle inside a room and outside in a windy weather

**Age:** 5-7 years

**Necessary materials:** matches, candles, candle holder.

## Aims:

- A child knows how a candle lights inside a room and outside and also what a candle flame is like.
  - A child knows the meaning of the words "candle", "candle light" and "matches".
  - A child knows that one cannot play with fire.
- 

## The process of the activity:

1. A short conversation about the danger of fire; explaining the meaning of the words "candle", "candle light", and "matches"; what could happen if a burning candle is left unguarded.
2. The teacher lights one candle inside a room and the other one outside.



3. Children observe and assess how well and on which try the candle lights. If the candles lit differently, the reasons of it were found jointly.

4. Children watch the movement of a burning candle flame (in the wind the flame verges to the side and wobbles, sometimes goes off).



## OBSERVATIONS:

### Children's comments and opinions:

- Inside the room, the candle lit right away.
- Outside, the wind blew the fire of the match off many times.
- Inside the room, the candle burned nicely.
- Outside, the candle went off many times and it had to be lit again.
- A wind shade had to be made to the candle.
- It is dangerous to put the candle outside, because the wind could turn the candle down and a fire could start.
- If the candle is inside a cup, it can be taken to the graveyard.
- Inside, the candle cannot be left burning when you leave, otherwise the curtains will catch fire.

## **Summary:**

When celebrating children's birthdays in the kindergarten and on Christmas we have noticed, that children love to blow the candles off, which in turn could make a child want to light the candles again. Through different activities, we had a great chance to educate the children on the topic of fire. The children learned the pros and cons of fire. Playful learning about fire was very attractive to the children and helped to better understand the connections and explain them.

# Games

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## „Burning/not burning“

### The course of the game:

There are two big signs on the floor - burning and not burning. It has been explained before the game and the children know beforehand what these signs mean. Around these signs, there are many picture cards, lying upside down. The children take turns, taking one card at a time and bring the card to the right sign, according to whether the object in the picture is burning or not. They also have to name what is on the picture. The game ends when all pictures are in their "base."

## „Extinguishing the campfire“

### The course of the game:

One end of a strap is tied around a stick, a post or a tree so loosely that it would turn around the tree. Cones are set near the stick - "the fire". The other end of the strap is tied to a child - "the flame". Other children form a circle around the trajectory of the child who is strapped. When the leader of the game orders, the children try to bring the cones from the "fire". "The flame" tries to catch the children. Who is touched by the "flame", is out of the game. Who gets the biggest amount of cones, wins the game.

## Keywords for handling the topic

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- The essence of fire – warmth, light;
- Usage of fire - heat;
- What damage can fire make – a burning house, forest fire, dry soil fire;
- Fire safety, 112, actions in case of a fire;
- Different fire sources – fire place, chimney, stove;
- Matches;
- Acting in the nature, building a campfire;
- Fire as a symbol – National Song Festival fire, Olympic fire, the Night of Ancient Lights;
- National traditions, gratitude fires – May Eve bonfire, midsummer bonfire, St. George's Night bonfire;
- Fire in the beliefs of the ancestors, lighthouse;
- Winning fire, fireworks;
- Light – candles, flashlight, lamps;
- Magnifying glass;
- Fire mountains or volcanos;
- Grilling – cooking food.



# Suggestions and ideas for topic-related activities

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- A CANDLE – toilet paper tube, colour papers, glue, scissors.
- A FIRE-PLACE – fire source glued on a box etc.
- MODELLING CLAY PICTURE – “Fire-place,” „Fire,” „Fire engine” and so on. – the picture will be covered with PVA glue and left to dry until it dries clear.
- BUILDING WITH MATCHBOXES - „Fire engine,” „Fire-place,” Chimney,” „Stove.”
- GRILL STICKS – pricking leaves on a stick.
- GLASS PAINTING - „Fire.”
- FINGER PAINTING - „Stove.”
- DRAWING WITH PLANTS AND SOIL - „Fuming chimneys.”
- LANTERN OF PUMPKIN – joint activity: emptying the pumpkin and carving a face, putting a burning candle inside.



- RUBBING THINGS TOGETHER – they get warm.
- WARM-COLD – touching different things.
- PUTTING OFF A CANDLE LIGHT – by blowing or with a special candle flame extinguisher.
- LIGHTING A FIRE – using a glass, a pair of glasses, with a magnifying glass, outside, inside.
- Flying a wish lantern.



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## Introduction to the topic

While dealing with the topic, children get a chance to practice how to handle fire and learn its good and bad qualities, which cannot be taken for granted as people have continuously abandoned the use of open fire in everyday life.

Air is all around us. Everyone living on the planet Earth, needs air: humans, animals, birds and plants. Without breathing clean air, nobody can live. For this reason it is very important to pollute air as little as possible. Air does not have shape or smell and it is invisible. We can only feel it when it moves. When telling children about air, its movement and importance to the nature, children can feel the surrounding environment as a whole. It is very important that a child would understand how important clean air is for us, how fascinating the surrounding world is and how useful clean environment is.

While doing the activities, we mostly deal with three aspects of air:

- necessity of air;
- qualities of air;
- movement of air

**The aim from the frame curriculum of Estonian national pre-school institutions:**

- A child applies creatively in his/her actions the experiences, knowledge and impressions from the surrounding world

- A child can understand simpler relations (quantity, cause, result), perceive objects, events and phenomena as a whole.

### Preparation:

- Keeping in mind the aim of the activities, necessary materials are gathered and prepared.
- The action steps are planned with team-mates – questions to build the discussion and create interest.

### After having done the activities, a child:

- Gets to better know part of nature – the air and the wind caused by its movement.
- Will know that the wind moves things that get on its way, makes sounds, can caress, but also pinch.



# Activities connected with air

**Topics:** me and the environment, language and speech, movement, learning outside

## Activity 1

**Theme:** Clouds, vapour, fog

**Age:** 5-7 years

**Necessary materials:** a bottle, hot water, ice cubes, flashlight

### Aims

- A child will learn how clouds, vapour and fog form when warm and cold air get together.

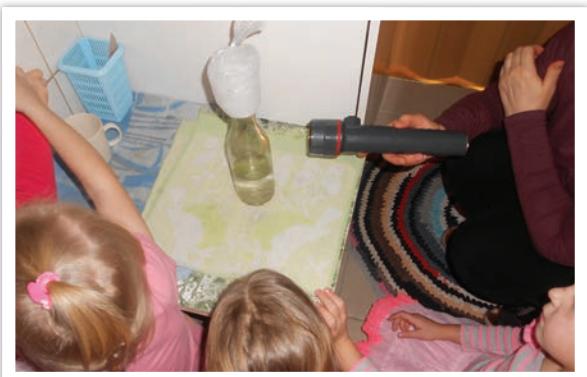
### The process of the activity:

1. Discussion: Clouds form when warm air rises or when warm and cold air get together. Clouds consist of billions of tiny water drops of ice crystals. In the air there is always water. Close to the ground it is usually invisible – air vapour. While rising, the air cools down. The fog is actually a cirrostratus (a cloud) that reaches to the ground.



2. The teacher poured hot water to the bottle and children set ices cubes on the mouth of bottle.

3. A cloud and water vapour formed inside the bottle.



4. Children watched the water vapour in the dark with a flashlight.

## OBSERVATIONS:

- If ice is put on the bottle, the water freezes.
- If hot water is poured into the bottle, it might break.
- In the beginning there was green light inside the bottle (there was a green cloth under the bottle which reflected the colour)
- One could not see the inside of the bottle, because the glass became foggy.

# Activity 2

**Theme:** Swirling worm. Warm air moving up.

**Age:** 5-7 years

**Necessary materials:** paper, scissors, radiator or a burning light bulb, thread, spirals painted as snakes and decorated with patterns on top

**Aims:**

- A child is aware of the air around oneself and the necessity of it.

## The process of the activity:

1. Introductory conversation about the existence of air around us and its necessity.



2. The children cut a spiral from paper, attach a thread to the end of the spiral and hold it above the burning lamp.





**3.** What happens? Rising warm air made the spiral swirl.

## OBSERVATIONS:

- The children discovered that if they twirled holding the spirals, the moving air would interestingly make the spirals swirl.
- An assignment to make at home - the children had to find places where there is also warm air (a chimney, a lamp or a radiator) and make their worm dance.

# Activity 3

**Theme:** Characteristics of air – transparency and mass (shape) which can be weighed

**Age:** 5-7 years

**Necessary materials:** a balloon, a light coat hanger

## Aims:

- A Child understands that air can have a shape.

## The process of the activity:



**1.** Introductory conversation about characteristics of air. The children describe what air is like. Air is a transparent gaseous substance. It has mass and it fills space.



**2.** The teacher blows the balloon, filling it with air.

**3.** Observing and weighing the empty and the air-filled balloon.

---

## OBSERVATIONS:

- Air has mass and inside a balloon it takes the shape of a balloon.
- Air is so light that it does not weigh anything.
- A coat hanger easily lost its balance.
- When it is hot, we can feel the air.
- When you breathe, you can feel warm and cold air when the wind blows.
- How to catch air? – Let's put it inside the jar and close the cover.
- When a person is inside the jar, it can suffocate.
- Inside a house we can feel the air while waving air onto ourselves.

# Activity 4

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**Theme:** Air- discoverers –  
Children search and feel air  
around us.

**Age:** 5-7 years

**Necessary materials:** wind bells,  
a scarf, a balloon, soap bubble  
water, straws, tube cups

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## Aims:

- A child is aware of the air around oneself and its necessity

## The process of the activity:



1. Children found a tree that had a waving blue scarf attached to it.



2. Joint discovering of air. What is air like? The teacher gave true and false statements to the children, joint experimenting and answering.

### **3. Air cannot be felt or touched with a hand.**

Can you take air in your hands? Children tried to catch air with their hands, but when they opened their palms, there was nothing to show. Still, we can catch air inside a balloon. To prove it, we blew up a balloon. We took a deep breath and blew it inside a balloon.



### **4. Air cannot be seen, it is invisible.**

Can you see air around you? Yes, we see how air moves – that is wind. A scarf, tree branches and a flag move in the wind.

#### **Children's comments:**

- wind could fly us away;
- wind broke our greenhouse's glasses;
- it took away our trampoline from the garden;
- electricity went out with a storm;
- swing sets were moving with a strong wind;
- I was scared to go outside;
- It was chilly outside and look, air vapour is coming out of my mouth when I speak.

## **5. Air does not have a smell**

Smell, can you feel it? The smells that air carries, smelling.

**Children's comments:**

- You can smell the wind;
- Smells coming from kitchen, that wind carries to our yard;

## **6. Air does not have a taste.**

Try it with your tongue, can you feel it?

**Children's comments:**

- It tastes like lemonade;
- I can feel a strawberry taste.

## **7. Air movement causes wind, air can be felt when wind blows.**

Can you feel the air moving at the moment? Can you feel the wind? Observing – how tree branches are moving and a scarf is waving in the wind. While waving our hand in front of our face we can also feel the air moving.

## **8. Air carries voices and sounds.**

Let's listen to the sounds that wind brings to us.

**Children's comments:**

- sound of wind bells;
- noise of cars;
- children's voices;
- birds singing.

## **9. Can wind make a sound itself?**

Children could try making sounds blowing into tubes. A couple of children also tried to whistle.

## **10. You can feel air when you deeply inhale and exhale.**

Let's inhale and exhale together. We all together tried to hold our breaths a little bit. When we blow on a hand, cool air can be felt and when we breathe on a hand, warm air can be felt.

**Humans, animals and plants breathe air. In order to breathe, we need clean air.**

## **11. To finish: „Blowing soap bubbles“**

Another option to catch air: inside a soap bubble. Inside a soap bubble, there is only air, which is light and causes the bubble to rise up.



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## **OBSERVATIONS:**

- Children gave many examples of air movement, since we've lately had many autumn storms.
- It had to be explained to children that air just carries scents while moving as wind.
- Children had to be explained that when warm and cold air get together, it causes vapour.

## **Conclusion:**

Children could bring many examples of air movement and we had lately had many autumn storms. The children's comments were that wind could fly us away, it broke a greenhouse's glasses, it took away a trampoline from the garden, electricity went out with a storm, swing sets were moving in a big wind and a child was scared that they would break. We had an opportunity to talk about what causes wind: warm air is moving which is replaced by cold air. Also wind is our helper: for example it helps us to produce electricity. During the experiment, we also had a chance to talk about what causes rain.

# Games

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## „Wind and clouds“

### The course of the game:

Playground is the sky, where children, holding hands in small groups, form “clouds” of different shapes. A “cloud” has to consist of at least 3 players. The “wind” is chosen who starts blowing and chasing “clouds”. The clouds run away from the wind. If the wind gets to a cloud and touches its player, the player will also become the wind. That way the wind becomes continually stronger, getting more blowers. The game is played until there are no more clouds, no more circles of at least three players.

**Rules:** Players who form a cloud are not allowed to let go of each other's hands while running away from the wind. If that happens, the cloud “rains empty” and leaves the game. A player is not allowed to catch the cloud where it left from.

## Keywords for handling the topic

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- Necessity of air
- Characteristics of air
- Wind – air movement
- Safety
- Fantasy – air castles
- Wind energy and wind power, wind mill and wind generator.
- Weather observations, wind direction and speed.
- What causes winds?
- Wind catcher – searching and mapping of draught.
- Water vapour in the air.
- Clouds, fog, dew, frost and hoar.
- Warm and cold air.
- Air pressure.
- Air temperature.



- Measuring air pressure.
- Describing the wind – strong, weak, warm, cold.
- The power of wind – stormy sea, wind on the coast.
- Trees/plants produce oxygen.
- Aircrafts
- Stopper.



## Suggestions and ideas for topic-related activities

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- Making a wind flag.
- Riddles and proverbs about the wind.
- Making a fan – decorating and folding.
- Observing different wind bells.
- Listening wind sounds from a CD.
- Making a windmill.
- Study trip to a sea coast.
- Wind flowers – cut strips from plastic bags using scissors.

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## Introduction to the topic

Discovering the world starts in childhood, the environment surrounding us continuously offers many opportunities for that. Water is necessary for everyday life. Water can also offer mind-blowing experiences. It makes different sounds, reflects the light in many colours. Water has many states. We can feel it best when we go into the nature and experience everything directly. Children at every age are interested in water. Due to its qualities, water is suitable for various activities.

### The aim from the frame curriculum of Estonian national pre-school institutions:

- A child can understand simpler relations (quantity, cause, result), perceive objects, events and phenomena as a whole.
- A child values environment-friendly and environment-saving conception.

### Preparation:

- Before every activity, a teacher supplies the part of the room with necessary materials, ensures the required tools and the surface to work on.
- When teaching about water, a learning corner is very helpful. There the children can act either independently or as a group.
- To draw attention to the liquids that cannot be smelled, touched and tasted; also how to be careful when handling vessels, ice cubes and non-edible substances.

### After having done the activities, a child:

- Will understand how important water is for life on Earth. It is important to keep the water clean and use it sparingly.
- Will get knowledge about the circulation of water in the nature or how the water arrives to us; will acquire knowledge about connections between phenomena and senses the wholeness of environment around us.

# Activities connected with water

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**Topics:** Me and the environment, mathematics, art

## Activity 1

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**Theme:** Floats or sinks?

**Age:** 5-7 years

**Necessary materials:** Natural materials (cones, tree branches, chestnuts, acorns, rocks, tree barks, leaves etc), modelling clay, a bucket full of water, two big bowls – one with the sign “sinks” and other with the sign “floats”; a piece of modelling clay for every child.

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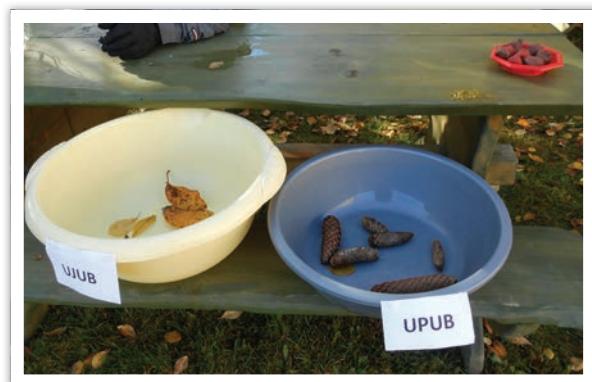
**Aims:**

- A child will find out by trial and error which solid materials float and which sink.
- A child will learn to use the expressions “sink” and “float”.
- A child will find out and describe how natural materials act in the water.

### The process of the activity:

1. A discussion is held why some objects stay on the surface of the water, i.e. float and why some object go down to the bottom of the water, i.e. sink.

**2.** Children search different natural materials from the nature. An observation and a discussion is held, whether the found objects are light or heavy.



**3.** The bowls have words on them – one has “floats” and the other “sinks”.

**4.** Children look at the gathered natural materials, decide which ones sink and which float and put the objects in the bowls accordingly.



5. Children pour water on the objects. It is counted jointly, how many objects are going to the bottom (sinking) and how many are floating.



6. Observing and examining objects in a bowl. Discussion: why some objects stay on the surface (float)? Why some objects go down (sink)?



7. Discussion: Does modelling clay float or sink? Does a piece of modelling clay sink or float?



**8.** What happens if a boat is made from modelling clay? Children make themselves a boat from modelling clay. A rowing boat, the Titanic, a motor boat, a yacht, a pistol boat, etc were put on the water.



**9.** With the boats, children started to rescue the objects that had sank. A boat could not carry all the things and sank with the heavy objects.

## OBSERVATIONS:

### Children's comments during the activity:

- Water is blue, water is black, water is white.
- Soapy water sinks.
- Tap water can be drunk, but sometimes it is cold and sometimes warm.
- A cone does not sink, it is hairy and light.
- Tree bark sinks, it has holes in it and it is "curvy".
- A small rock sinks faster, no – a big rock sinks faster, because it is heavy.
- A boat does not sink, because it is smooth.
- A boat must be made smooth, so that it wouldn't have a hole in it, otherwise it will sink.

## **Summary:**

Through the activity the children learned whether an object floats or sinks, which objects float and which sink. Children were very active, curious and talkative in their activity. After the activity they continued with the boat game. Children searched new objects from the nature and drove them with a boat.

# Activity 2

**Theme:** Water wets and absorbs

**Age:** 5-7 years

**Necessary materials:** scissors, a pencil, colour paper, a bowl filled with water, different materials – a candle, toilet paper, soil, paper, plastic wrap, etc.

**Aims:**

- A child will know that water absorbs into several materials, i.e. wets them.
- A child will learn to use expressions “seeps”, “absorbs” and “wets”,

## The process of the activity:

1. Discussion on the topics: Why is it so difficult to hold water on your palms? Finding examples of wetting and absorbing from everyday life and finding the connections. What can be used to protect oneself while playing with water or when it is raining?
2. Different materials are put in a bowl filled with water – plastic wrap, pieces of cloth, paper, etc. What does the water wet well and what it almost doesn't wet at all?



**3.** Children pour water on the soil and sand in a vessel. Where does the water disappear?



**4.** Water seeps into the soil and sand.



# Experiment: „Blooming“

## The process of the activity:

1. A child cuts a flower bloom shape from a paper, writes his/her name on the bloom and folds the petals of the flower together towards the inside.



2. Children set the blooms filled with water on the surface of the water.

3. Children observe the water. The bloom petals start to open in 1-2 minutes (the water seeps into the paper, the paper expands and therefore the bloom petals rise up and the flower starts “blooming”)



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## OBSERVATIONS:

### Children's comments during the activity:

- Water spilled on the floor has to be dried.
- Clothes that got wet in the rain have to be dried.

### Summary:

Children learned that water wets and absorbs; all materials don't absorb water, but some materials do. Children found out that water seeps into the paper which is the reason why the bloom petals rise up.

# Activity 3

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**Theme:** Two states of water, water and ice

**Age:** 5-7 years

**Necessary materials:** Three different plastic cups (with very wide, wide and narrow bottom), thermometer to measure temperature, paper and pen to write down the beginning and the end of the experiment, vessel filled with water, measuring cup.

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**Aims:**

- A child familiarises oneself with two states of the water – water and ice.
- A child learns to use the words “to ice”, “to freeze”, “to melt”
- A child learns to look the number on the thermometer.

## The process of the activity:

1. Discussion: water is a liquid that turns into ice (solidifies), when the temperature goes below zero degrees Celsius.
2. Children put the thermometer on snow and measure the temperature.





**3.** Children pour equal amounts of water in three different plastic cups.



**4.** Children mark down the starting time of the experiment.

**5.** Children observe what happens to the water, how water becomes ice.



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## OBSERVATIONS:

### Children's comments during the activity:

- How does the ice get inside the water.
- There are bubbles inside. Look, how many there are.
- When is the ice coming.
- I know what a clinical thermometer is – you can see whether there is any fever.
- These numbers that are towards the sky from the 0 or towards the ground from the 0, show cold.

### Summary:

Children learned through the activity that water starts freezing when the weather is cold. During the freezing process, firstly the air bubbles form in the water. For the water to freeze quickly in cold air, it is essential that the amount of water in a vessel is small. Children found out what a thermometer is and learned which part of the thermometer shows the minus and which part the plus degrees. When children went inside, they took the vessel with ice with them and then watched what would happen with the ice in a warm room.

# Games

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## „The water body game“

### The course of the game:

Players are divided into groups of 5-6 members. In a group, children stand behind each other to form a column and put their hands on the shoulders or hips of the player in front of them. These columns are streams which start to move around freely (flow), when the game leader calls it out. While moving around, they try not to let go of each other. When the game leader shouts "River!", all streams have to form one big column to create a long river. Now the river flows on. When the game leader shouts "Sea!", the children form a big circle and start to move their arms to create "waves."

## „Rain“

### The course of the game:

To both ends of the playground, parallel lines are drawn which stand for two houses. All players locate into one house. Between the two houses, that is outside, one player is situated who leads the game and catches other players. The game leader asks from other players: "Are you afraid of rain?". All reply together: "We are not!" and run to the other house. The game leader tries to catch other players. Those who are caught, step out of the game. Then the game leader asks the same question and the other players run back to the first house. The game goes on, until there is only one player remaining. The run can only begin after the words: "We are not!", only forward running is allowed and there can be no turning back.

## Keywords for handling the topic

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- Natural water and tap water.
- Dissolving of substances in the water (salt, sugar, flour, etc)
- Circulation of water in plants.
- Circulation of water in nature.
- Different bodies of water – sea, lake, river, stream.
- Work and activities connected with water (fishing, water sports, swimming).
- Contact with liquids (drinkable, poisonous).
- Dangers connected with water (swimming, thin ice).
- Life in the water – water plants, fish, water birds, water animals, etc.
- Qualities of water.
- Importance of water/necessity for humans.
- Cleanliness of water/sparing.

- Three states of water.
- Water vessels.
- Lifeguard.



## Experiments

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- „Ice cubes in the water“
- „Water turns into vapour“
- „Comparing liquids using the help of senses“
- „Water as dissolvent“

- „What different substances do in the water?“
- „Filth is hidden in the snow“
- What sounds does water make?

## Suggestion and ideas for topic-related activities

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- Stories and poems.
- Proverbs, riddles and sayings.
- Games with water and sand.
- Using a microscope and a magnifying glass to examine water.
- Study trip to a body of water.
- Fish – in the aquarium, in a natural body of water.
- Life in the water: water plants, an octopus, a starfish, etc.
- Bodies of water: a river, a lake, the sea.
- Water vessels: a boat, a ship, a yacht.

- Water birds: a swan, a duck.
- Water drop.
- Icebergs – a polar bear, a penguin.
- The rain, an umbrella, a rainbow.
- A snowflake, stained glass from a snowflake, snowdrift, etc.
- A snowman, a snow castle, etc.



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