

Floristry and outdoor learning

Documentation and inspiration for teachers in Sweden and the Baltic region from workshops in Riga, Latvia, in April 2015



Project name: Nature Schools Network

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Preface

This pedagogical handbook is a part of Nordplus project *Nature schools Network* (2013-2015).

When the *Commission on Education of Union of Baltic Cities (UBC)* held its annual meeting in April 2009 in Tallinn, representatives from different nature schools participated and presented their work. After that it was decided that we should create a formal network of nature schools with the aim to develop new strategies and new material for the pedagogical methods to be used in outdoor and natural sciences teaching in Sweden, Estonia, Lithuania and Latvia.

This network was established and has been funded by Nordplus Horizontal 2010-2012 and the network has accomplished:

- Three courses on the themes:
 - *Outdoor teaching*
 - *Humans and nature, where nature is represented by 3 different biotopes – i) water, ii) forest and iii) acre land*
 - *Pedagogies in teaching climatic effects*

Three pedagogical handbooks (PDF in English at www.farsnanaturcentrum.se)

Outdoor learning
- documentation and inspiration for network
of nature schools in the Baltic region and
Sweden 2010



NORDPLUS
Horizontal

Human and Nature
Nature schools Network 2011



NORDPLUS
Horizontal

Climatic effects
Pedagogies in teaching about climatic effects
Nature school Network 2012



NORDPLUS
Horizontal

- Two class exchanges (Sweden-Estonia)
- One Comenius Regio application (granted for 2011-2013) between Tallinn and Norrtälje Municipality with Nömme Nature House, Erken Laboratory and Norrtälje Nature Conservation Foundation as partners. The aim of the network was to grow by adding partners and increasing collaboration with local enterprises in the field of nature conservation, nature guiding, local organic food production and monitoring of the environment (researchers) as well as teachers. We had partners from teacher training (higher education, Uppsala University), Commission on Education and Environment of UBC, small enterprises and we

collaborated closely with local teachers from secondary and upper secondary schools joining our workshops and seminars.

Purpose

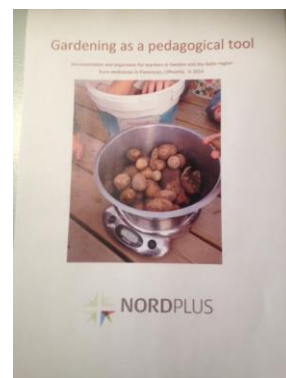
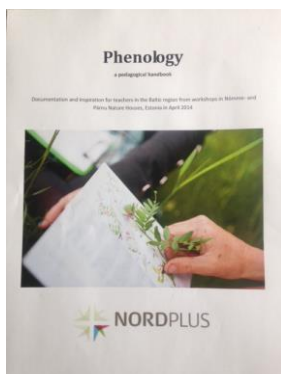
The purpose of the first three years of the last Nordplus project was to establish a network for nature schools in the Baltic region and to create courses and course material (pedagogical handbooks) for teachers in these countries. As the network has been established, visions for the future have also been made. The three main aims for the period (2013-2015) are:

1. To have two 3-day workshops/seminars every year, and to distribute the hosting of the workshops/seminars among the partners. This will enable all partners to contribute more and to make the best use of their most prominent fields of knowledge. This will contribute to high quality workshops raising the capacity of the network to a higher level to be used in all participating countries and to be spread to all members of the Union of the Baltic Cities (UBC) and within the network of the Cost action Netlake (EU).
2. To include small enterprises and researchers in the field of nature conservation, nature guiding, local organic food production and monitoring of the environment in the workshops/seminars together with nature school teachers, local teachers and representatives from higher education of teachers in order to contribute to cooperation between the educational sectors and to establish cross-sectoral networks involving participants outside of the traditional education sectors.
3. To produce and edit handbooks for each workshop/seminar event to be used to spread the pedagogic highlights through the networks mentioned above and via the web site.

Aims and contribution for this new project *Nature Schools Network* 2013-2015

We feel that the aims stated by the Nordplus program, and for all participating partners in this project are in common:

- Increase the exchange of pedagogical ideas and methods related to nature within the Baltic region leading to a higher quality in outdoor educational activities
- Develop an understanding for field education on different levels in the school system from elementary school to university using new input from small enterprises in the field of nature conservation, nature guiding, local organic food production and monitoring of the environment
- Be a part of producing pedagogical handbooks during each event and also be able to distribute them in the home country



- Transfer the hands-on knowledge of small enterprises to teachers and educational program in schools and in the university program for teachers

Sectors who are involved in the project

- Higher education
- NGO
- Primary/secondary/upper secondary Schools
- Private sector



Nature and Science House in Riga, April 2014

We really hope that this handbook will inspire teachers to go outside with their pupils and see the large classroom- the garden, the schoolyard, the nature, the seas, the rivers, different environments and the seasons.

Anna Westerlund, project coordinator,

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Floristry and outdoor learning

A garden is a wonderful place for learning. With all senses the students learn about nature, seeds, food, beauty and ecosystems. It is a perfect place for curiosity, questions and investigation.

Outdoor learning wants to give as many sensory experiences as possible. The sensual experiences create memories for life. We strive to build good self-esteem for the participants and the group will be strong when they work together. Nature, vegetables, flowers, animals, garden and outdoor living is a tool that creates unprecedented opportunities. Go outside with the pupils!

Outdoor education is about learning in authentic environments. A new world opens up, when we leave the indoor environments and also uses the outdoor environments near school. Opportunities to find knowledge today and in the future are staggering. The students must learn inside, outside, in reality, in books, with internet and so on. Outdoor education is about learning in authentic environments with all the senses, to touch, see the wholeness and the students have to feel that they are a part of the learning process.

We can work with many aims in the curriculum and all subjects in the garden. Mathematic, biology, chemistry, art, language, music and different handicraft. It is also a perfect classroom for discussions about a sustainable future.

It's a good idea to have a diary for the garden in the school. You can have just one diary for all pupils and teachers. The pupils are writing and drawing about the work and processes. They can also put photos inside. Everyone at school is able to read about the work, the discussions and the reflections.

Inspiring learning environments



Recommendations for leadership outdoors

- Respect any fears in the group.
- Aims and tasks should be clear to the participant.
- The leader is always a good role model for clothes, safety and approach.
- The participant's needs and questions will always come first. The leader must be flexible and willing to change plans. Catch the situation and see all possibilities. Take advantage of the seasons and the weather changes to create diverse experiences.
- High level of knowledge about nature, other subjects and hiking knowledge gives confidence in the leadership.
- The learning/activity should be adjusted according to season and climate. Lessons, discussion and information should be in a circle so everyone feels involved. The leader should not speak against the wind and preferably seek shelter for the wind.
- All participants' basic needs should be satisfied - warm, fed, dry and well-rested.
- Activities and games should be inclusive. Cooperation should be encouraged and trained.
- The location of the activity should be carefully chosen and the leader should be familiar with it. With younger children, it is advisable to return to places so that they become confident, which is a prerequisite for learning. For youth new places can be a challenge that inspires to investigative work.
- Prefer to get long lessons to reduce stress and give participants the chance to learn, play, and also have some recreation.
- Safety should always come first in outdoor learning. It is important to be familiar with the plans for accident or disappearance.

Examples and methods

1. Floristry

Department of Natural Sciences in Riga, Elita Logina

Background

The Nature School in Riga has education groups for children and adolescents, but also hobby courses for adults in floristry. Other activities connected to floristry are floral camps, various floristic workshops. They take part in campus events, exhibitions and competitions.

The purpose is that students learn about the work of the florist, selecting and preparing materials for work, plan and produce floristic products.

The Nature School in Riga provides space to learn about planting and care of plants. Students learn how to organize their work in a flower shop, salon or other potential business.

Flowers can have a central role in the development of personality. By working with floristry self-esteem can be build. They get to practice to have their creations judged just as they must judge others. In the larger projects and arrangements team work is necessary. Floristry also involves theoretical learning through literature. The student learns plants, plant parts, names, properties, what to use them for.

The Nature School also works with craft skills - working with instruments that require a variety of techniques. They require knowledge of the composition and color.

Students develop many different skills such as patience and purposefulness. Students learn about the timetables for the decoration, flowers linked to the traditions and decorations in various days such as weddings and funerals.

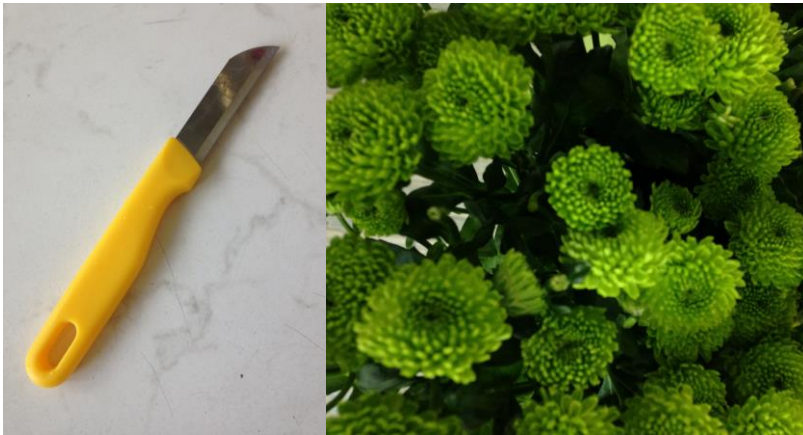
Aim/purpose

Students will get more knowledge about the floristry's possibilities. In this exercise, the color and shape are central. Students create a flower arrangement on the basis of a particular task. Then they give feedback on friend's arrangements and also get feedback on their own flower arrangement according to the guidelines given before the exercise begins.

Preparation

Give the students frameworks and guidelines for exercise. Show the material that will be used and describe the options available. Bring many inspiring flowers and describing its various characteristics that are advantageous to create a flower arrangement.

Material



Ball-shaped floral foam, water in large vessels, pottery, plaster sticks, flowers and greenery, cut knives, bands of different materials and colors, thin papers in different colors, glue, brushes, fine concrete

Method

Start by decorating a pot with tissue paper using a brush and glue.



Second step is to attach a stick in the pot with fine grained concrete. Make sure that the stick is sharpened in the top, so you can attach the ball-shaped floral foam which should be soaking wet.



Now you have the base for starting the creative work to attach flowers in beautiful patterns!

Reflection

Enjoy the floristic art works. Make an exhibition where you can see how different the results become. Give each other feedback and work on highlighting all the positive characteristics of the works!



2, The classroom in greenhouse

Background

Riga Nature school have a fantastic greenhouse. It is very usefull in outdoorlearning when you want to learn in an authentic environment. In the greenhouse the student not only can learn about different spicies. They learn about plant succession and development stages, about the carbon cycle, photosynthesis, greenhouse effect, just to mention a few examples. Below are some examples of useful exercises you can do in a greenhouse with students.

Aim/purpose

The aim is to make the students interested and that they in a playful way learn to know the environment of a greenhouse. They discover things by they own and want to learn more about details.

Preparations

These exercises are examples that require little preparation but which are very useful for the students on their own or in conjunction with other teaching. You have once created the material you will be able to use it many times! Under the heading “method”, you can read about what you need to create the different exercises.

Method



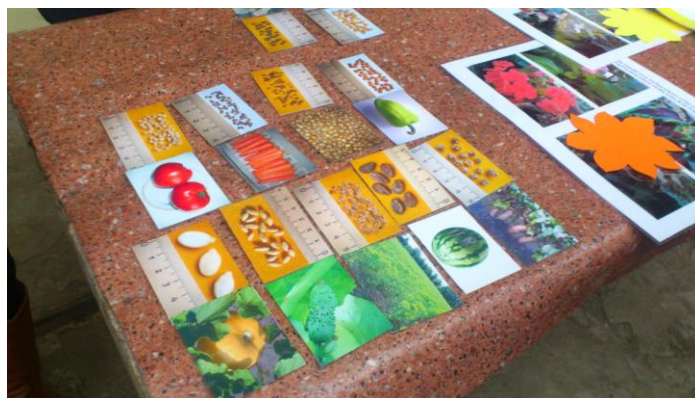
Pictures that belong together

Create small room in the greenhouse where visitors can stop and become curious. On this round pillar are pictures of different parts of trees that belong together. If you spin the various sections you can get a vertical row of images that belong together. In this case it is about trees. The images represent for example bark, leaves, cones and flowers. If you get one vertical row right you have the answer of the other trees that you might not are as sure of.

Technics how to key plants

This interactive board consists small rotatable signs marked with numbers. If you answer correctly the question or clue behind a number, you get directions to move on to another number, and so on until you have gone through all of them. It works just as when key plants – to determine the species of flowers or classification of flowers. The plants and flowers the students can find in the close surroundings as well. There they can discover the answers by them self.





Sort out pictures in different groups.

Give the students plastic laminated pictures of seeds, seedlings, grown plant and fruit. Challenging them to pair the images! Which pictures belong together? This exercise is even better if you can simultaneously show the plant in one or more stages in the greenhouse or garden in combination with your photos.

Reflection

A greenhouse have so many oppertuneties! Students can experiance so many things with all their sences! To enjoy growing plants, flowers, vegetables, fragrance, beauty, moisture, soil is something special that affects us! When we are touch or amazed by natures beauty we are opened to learn more!

3. Afterschool activities Chemistry faculty, University of Riga

Aim/purpose

Riga's Natural school works closely with the university. There is a long tradition that younger students are able to go to university after school and have lab assignments at the chemical faculty at university of Riga. It is an activity that will create interest and inspire more students to further studies. Here you can read about some activities that can be current. These experiments are about nitrogen that is a gas that is a large part of the air we breathe and it is also experiments with dry ice. In the experiments, the nitrogen is not gaseous but liquid. Liquid nitrogen is -196 degrees. Extremely cold! The dry ice is – 80 degrees.

- Make ice cream using liquid nitrogen.
- Frozen flower.
- We are going to tuch the clouds today!

Preparation

Nitrogen gives the opportunity to many simple experiments that can fascinate. Just being in a laboratory environment is inspiring itself!

Material

Floating nitrogen, sugar, milk, creme, flowers or other things to freeze, warm water, dry ice, dish soap, fabric band

Method

Ice creme



Ice creme manufactures easily just by mixing milk, cream, sugar (and eggs if you want). Then add the liquid nitrogen while stirring hardly! Just like that you've got a soft and lovely ice cream! It will be even more effective if you serve ice cream with topping!

Frozen flower

Dip a flower or something else in a bowl of liquid nitrogen. A frozen flower becomes totally hardened and if you crumble the leaves, it feels almost like glass. Try to put a banana in liquid nitrogen. Than you can use it as a hammer – it gets so hard!



Today we are going to touch the cloud!

Dry ice is frozen carbon dioxide, a natural part of earth's atmosphere. It is the gas we emit through exhalation. There is also the gas which mixed with water produces carbonated water (soda).

Dry ice is particularly useful for freezing and maintaining the cold, because of the very low temperature - minus 80 C.

Dry ice turns directly from solid to a gas - Sublime - without going through a liquid stage.



Let the students formulate a hypothesis. What happens if we put dry ice in cold water and what happens if we add dry ice in hot water? What is the difference? Why makes the hot water more steam?

Prepare a glass with detergent and water. Dip a fabric band in the detergent. Fill a bowl half with water. Add the dry ice. Pull the fabric band over the edges of the bowl filled with dry ice and water. A soap bubble will be created!





It is effective to drip two drops of dish soap in a bowl with water and dry ice! Let the students try!

Maybe even more fascinating stand on a cloud! Put dry ice in a tray on the floor. Add boiling water!

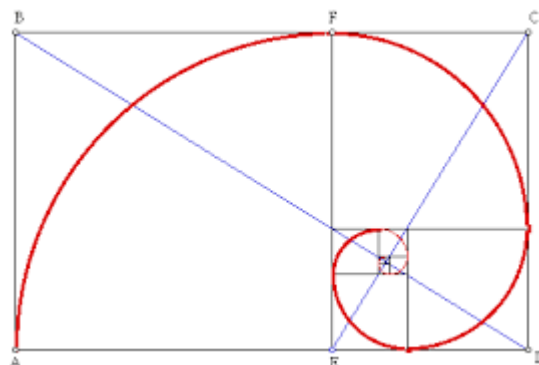


Reflection

The most important thing is to create curiosity and fascination with the subject chemistry. By doing simple exercises that awakened curiosity leads to more knowledge. How is the cloud created? How are a substance's properties, at different temperatures, changed? What do the students think and believe?

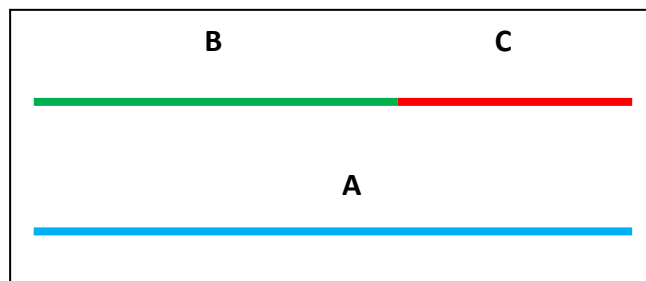
Through their own experiences, students can create a knowledge bank! When students are working with all their senses they will get knowledge that will follow them throughout their whole lives!

4. The golden ratio- everything is mathematic!



Mathematic is sometimes very abstract. But when you talk about mathematics in nature you can show students that almost everything in nature can be explained with mathematics terms!

The Golden Section is a ratio based on the number Phi, 1.618... It can be derived with a number of geometric constructions, each of which divides a line segment at the unique point where: the ratio of the whole line (A) to the large segment (B) is the same as the ratio of the large segment (B) to the small segment (C).



In other words, A is to B as B is to C. This occurs only where A is 1.618 ... times B and B is 1.618 ... times C.

Aim/purpose

The aim, of course, is to make the students interested in mathematics. To talk about the golden ratio you can connect the subject to history, architecture, nature science, art. It is a subject with thousands of opportunities. In this example the students can make posters or cards on the theme golden ratio.

Preparation

It is always fascinating to show pictures of historical buildings, art or nature where you can find the golden ratio.

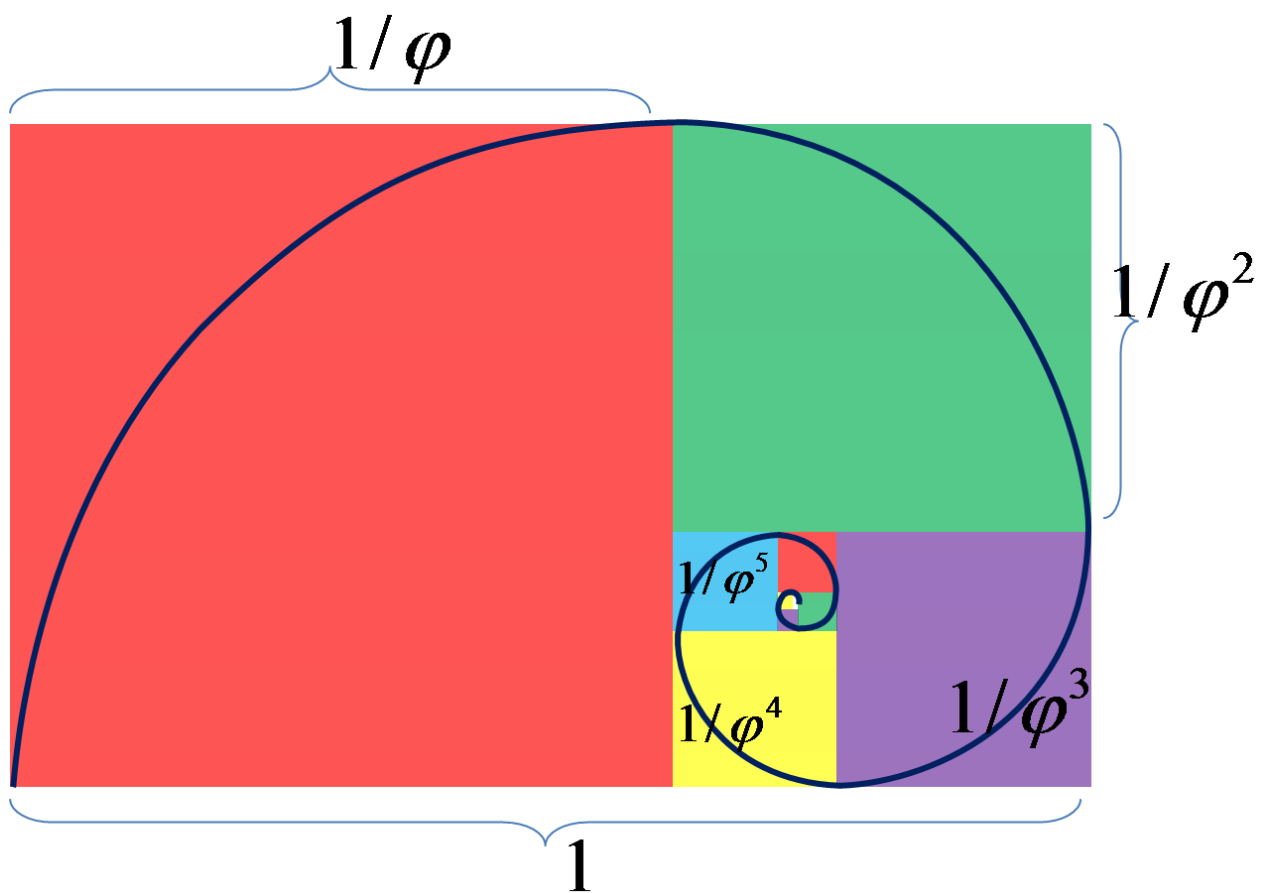


Material

Pen, paper and compass.

Method

The golden section can be used in many ways, can you give some examples? Make your own cards and posters using the method of Golden ratio.



Show students how the relationships between the lengths of the lines are then you draw based on the technique of the golden ratio. Use a compass. By drawing squares with dimensions that relate to each other just as the picture shows above, the exercise becomes clearer. At the same time a beautiful artistic figure is created!

Reflection

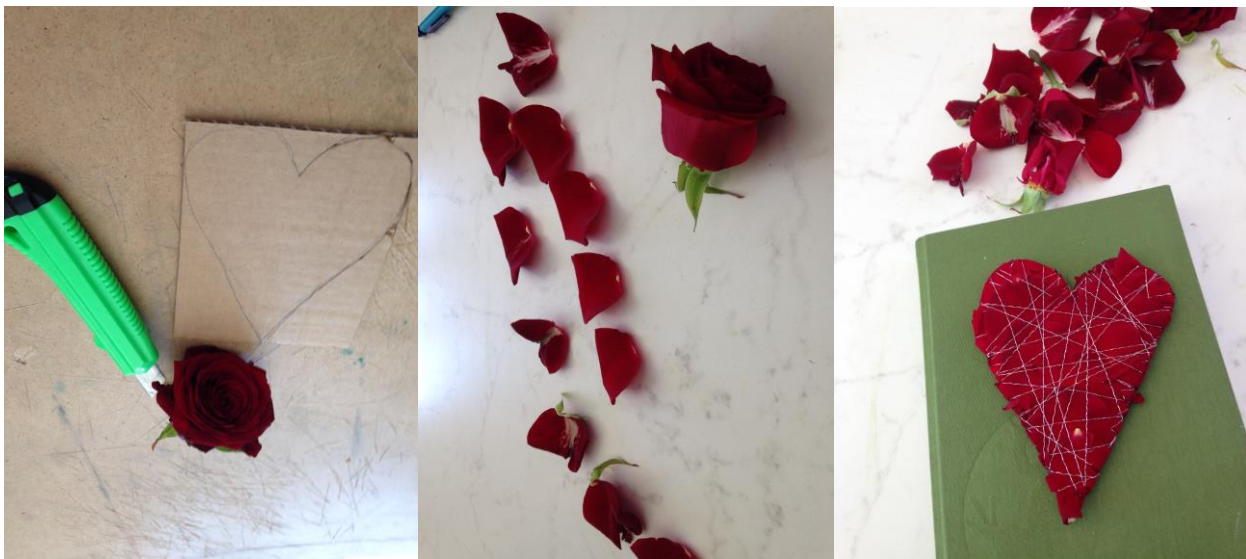
To inspire students to learn more about mathematics this can be one way. It is a perfect task where you can connect to art, biology, chemistry, history, floristry etc.

5. Floristry- part of flowers

Aim/purpose

The aim is to inspire student to use parts of flowers and different techniques to make floristic arrangements. By creating beautiful things with parts of flowers, we also study in detail the different parts of a plant. In this case, we examine the structure of the rose with petals, stamens and pistils.

Preparation



Material

Cardboard, knife, roses, thread.

Method

Cover the heart shaped cardboard with leafs of a rose. Use thread to attach the rose leaves.

Reflection

When students learn about different floristic technique they can be inspired to try other ideas. This is also a wonderful way to study a flower in details. The artistic work combines with nature science. Students can study in detail how a rose is constructed with all plant components.

6. *Technique in the schoolyard*

Aim/purpose

Use the whole playground to inspire to science. Different stations with interactive activities can give students knowledge in a playful way.

Preparation

Look at your schoolyard. What potential places do you have to construct some kind of experimental playful station? At Riga's Nature school there are many good examples!

Material

The material used is different for all station. Children can use them by their own. No special instructions are needed. Let your students try, and have discussions afterwards.

Method



On the left is a magnetic board. On the board there are short sections of a groove that can be attached and moved around. The challenge is to make a path in which a ball can roll. By placing the sections in different ways the ball can roll in different speed or directions.

In the middle is a board with holes. Together with a friend you should try to bring a small cup, holder of a ball, so that it matches one of the holes and the ball hits the hole. You are only allowed to hold strings that are attached to the small cup with the ball. In this station it is very important to work together and listen to each other! Do not pull too hard or too loose. Be gentle. Talk to each other!

On the right is a picture of the opening of a tube which has been trenched down in the ground. With a friend you can stand on respective opening of the tube and whisper messages to each other. Even if the distance is too long to hear each other, the pipe helps the sound waves to reach the friend.



The pictures above show other examples of inspiring stations in Riga nature schools garden. They explain the evenness (left), the acceleration (middle), and kinetic energy (right).

Reflection

Curiosity is spontaneously awaked. Many hypotheses about the function of the different stations will naturally be formulated by the students. This can be an easy way of working with scientific methods in which a hypothesis is formulated, that may later be proven or disproven through an investigative work.

7. Floristry- learning enterprises

Aim/purpose

Riga nature school work close to a local company. The company produces and sells, among other things, greeting card. Students make flower arrangements that are photographed and printed on greeting cards. This project enables a contact between students and local enterprises. Their creations will be preserved and the work gets a deeper meaning. Parts of profits of the cards sold, goes to various charities. "Puse Plus" is the company.



Preparation

At the nature school students makes their floristic arrangements. Variation is unlimited! All students are their own artists and they can create beautiful creations.



Material

The flower arrangements can be created with all methods and material. Use what you easy can get!

Method

After the students have done their creations a photographer will arrange pictures of them. The photos are printed on cards. The cards are sold just as other cards produced by Puse Plus. Profit of the sale goes to charity. The nature school and the enterprise have a yearly arrangement and every year they have different recipients for charity.

Reflection

There is much that is positive by students work closely with a company. Schools need generally more openings for students to get in contact with industry, business and future work opportunities. This is one good example!



Nature schools and schools- different yet similar-
as these wonderful mittens from Riga!

Partners in the project



Activity 4 in Riga, Latvia, April 2015.
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Uppsala University, Erken Laboratory, Sweden



Norrtälje Nature Conservation Foundation, Sweden



Riga Nature School, Latvia



Pärnu Nature House, Estonia



Nõmme Nature House, Estonia



Nature School of Panevezys, Lithuania