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ENVIRONMENTAL LESSONS

STREAM EDUCATION

LITHUANIAN, LATVIA, DENMARK, ICELAND

NORDPLUS JUNIOR

LEARN - EXPLORE - ACT

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Introduction

These days we are living in a world which facing a lot of threats. One of those dangers is a global warming problem which leads to the global climate change. We can feel this situation more rapidly and strongly with each passing day by experiencing sharp changes of temperature, more hot summers, and very changeable weather in winters, the severity of storms and unexpected natural disasters. Even seeing flower blossom in winter time. The tale about the orphan who had to pick up the violets in January becomes a true. So what kind of world will our children live in in the future? Unfortunately, human beings do not take too many precautions in this regard, or although the measures taken are not sufficient, they remain bystanders to this situation.

What can we do in this situation as a primary school teachers? Within this project teachers from four Nordic and Baltic countries share the best methodology of environmental teaching and learning seeking to form nature friendly habits and attitudes in the early age (6-12) and raise an eco-conscious citizen. We look for ways, methods and means to teach children to grow up with the awareness of protecting their immediate environment - school, home, social environment - and then to be the ambassadors of their environment in families.

For the primary school students the best way to learn is the experiential learning, which covers several subjects, students' experience and gives wider understanding about surrounding world.

STREAM methodology seems is the best way to achieve this aim. Different cultural environment is causing different attitude to the education. For teachers it is very useful to look at education from different angle, to find out the best examples of other ways of teaching and reflect on one's own professional practice.

Here we present the STREAM lesson plans, created by primary school teachers for primary school children.

Title: Water pollution

Author: Hlíf, Linda, Sandra and Edda

Hamraskóli Reykjavík, Iceland

Summary

Subject	Mathematics, Science, Engineering, Art , Technology, Reading
Topic(s) within the subject	Pollution in rivers and lakes, and waste in our environment.
Key real-life topic	How waste contributes to pollution and what we can do to minimise it.
Age of students	7 years young learners
Online teaching material	Sorpa.is, iMovie, green screen, google sheets, YouTube videos on the subject
Offline teaching material	Books, worksheets, paper, glue, colours, staples, paint, sphero balls, paper gups, silk paper.

Aim of the lesson

To make students aware of how waste and pollution affects our nature, the animals and the water. And what they can do to minimise the problem, like cleaning their surroundings and bringing waste in sorting stations for recycling.

Outcome of the lesson

That the children will be more aware of the problem with waste and pollution and get them thinking about ways that they can contribute to the solution of this worldwide problem.

Activities

Name of activity	Procedure	Time
Introduction	In class the students read about trash and what happens to it when we throw it away. We talked about how we can sort trash.	One lesson
Sorting trash	The students came up with ways that they know such as plastic, paper, and organic. After discussion, the students did two assignments. The first one they had to sort the trash in right bin and the other one was for them to see on how many different places trash can go.	One lesson
Pick up trash	Students picked up trash in the school area and then they sorted it in the right bin. They then put some of it in boxes with soil to see how it disintegrates over time. (banana peel, leaves, aluminium, paper and glass)	For a long time
Art class – fish and a river	In art class the students had a short introduction of the matter of pollution and what that can do to the fish in the water. They drew their own fish on a double layered carton, colourful and filled with decorations for fun. They painted a river on a large piece of paper. One clean river and one polluted.	Three lessons
ICT- Coding	In ICT class the pupils learned about coding. They used Spero ball to code their fist to swim int the water both the clean one and the polluted one.	Three lessons
Feedback	We had a good discussion with students about their work and how we can keep on helping the world to be better place by recycling and sorting waste.	One lesson

Summary

Subject	Science, language, engineering, art, ICT
Topic(s) within the subject	Water pollution
Key real-life topic	How to find out if the water is polluted and how to clean it.
Age of students	10-11 years old learners
Online teaching material	Fairy tale https://www.colorado.edu/projects/fairytales/the-falcon-under-the-hat/sister-alionushka-and-brother-ivanushka Video “Water pollution” https://www.youtube.com/watch?v=BRbkMPlu7Oo , Video “Water filter” https://www.youtube.com/watch?v=IH-2HyTpmCO
Offline teaching material	Litmus sheets, filter, phone, or tablet, test tubes, bowl, plastic bottle, clean cotton or coffee filter, garden soil, sand, gravel or pebbles

Aim of the lesson

To learn about water pollution and find out the acidity of Lake Talkša

Outcome of the lesson

The research showed that the water of Lake Talkša has permissible acidity (nitrates), but the water itself is not suitable for drinking due to pollution (water birds).

Activities

Name of activity	Procedure	Time
Warm up	At the beginning of the lesson students and teacher have a little talk about water pollution and read the fairytail About boy who drinks a dirty water and turns into goat. Then they watch a video.	45 min
Trip to lake	Students walk to the lake. They look around the lake, describe the surrounding of the lake - farms, buildings, houses, animals in or near lake. Visually analyse the quality of the water.	45 min
Water clarity research	Students are divided in to groups. They get water from the lake into testing tubs and make two researches: 1) Tests water acidity with litmus sheets 2) Filters water with a water filter Students fix the results with phones or tablets. Students bring lake water to the class.	
Water filter project	Students in same groups in the classroom make a water filter.	45 min
Evaluation, presentation	Students compare the filtered water and lake water. They make decision could they drink water from the lake or filtered water by their made water filters. Using tablets or computers, student make a presentation of the research.	45 min

Summary

Subject	Mathematics, Science, Social Studies. Physical Education.
Topic(s) within the subject	Nature and water pollution. Earth's Care – Our responsibility. 3 days activities.
Key real-life topic	Recycling. Is good to do good things! My Earth, My responsibility.
Age of students	5-14 years old learners
Online teaching material	Youtube videos (in Latvian) about pollution: https://saite.lv/nmx , https://saite.lv/IQb , https://saite.lv/DdW , Materials about competition for students of preschool and general education institutions
Offline teaching material	Paper, plastic bottles, old and already used batteries. For activities are necessary old tissues and paper scraps, potatoes. For physical education – rake and bags for trash, gloves.

Aim of the lesson

Learn to recycle and use as much as possible from the things we use every day. How can we affect nature and water pollution with our involvement?

Outcome of the lesson

Students understand how important it is for all of us to be involved in order to preserve our only land. And it is not so difficult for us - little people - to protect the great planet Earth from pollution.

Activities

Name of activity	Procedure	Time
Introduction	In class and social studies lessons, we talk about natural pollution, how and what we ourselves can do to help reduce pollution. The plan for the next few days is discussed.	1st day, 1st lesson
Ant Urda visit in school	Different activities for Preschool and Elementary school cooperating with Urda - https://www.urda.lv/en	1st day
Collecting recyclable materials	All students can participate in collecting waste for recycling. This is an activity that takes place throughout the year, in September we remind students to bring the collected waste to school.	There is no specific time for this.
Cleaning day - sports day	Children and teachers help to clean up the school surroundings: collect empty plastic bottles and other garbage, clean up the apple orchard near the school with rakes, put the grabbed leaves in bags so that they can be taken out of the area with the collected garbage.	2nd day
Counting collected waste	Children have to count and weigh all of the collected waste. Everything collected is sorted, the bottles are counted, the batteries and waste paper are weighed and the numbers are added together to give the final results to the organisers of the activity.	3rd day 1st-5th lesson
Feedback	Feedback - discussions with students about how we did, what good we have done, how much of all kinds of waste we will be able to recycle.	Last lessons of the day

Summary

Subject	Language, Science, Art. ICT
Topic(s) within the subject	Water pollution, density of material, static electricity
Key real-life topic	How to clean water from litter?
Age of students	6 -11 years old learners
Online teaching material	<p>Legend about amber https://amberlita.lt/en/about-amber/legends-amber/ Activity „Secret of Amber palace” for youngest learners. https://www.facebook.com/watch/?v=540836323185046 Static electricity with amber https://www.youtube.com/watch?v=gxpl2J6EdIk https://collegedunia.com/exams/explain-what-happens-when-amber-is-rubbed-with-wool-or-silk-que-phy-articleid-6892 Float or sink https://www.youtube.com/watch?v=GjGZmc49B6s</p>
Offline teaching material	Glass bowl with a blue coloured water, clear glass, picture with sea bottom view (amber, fish, plants etc). Small pieces of amber, glass of water, small wool cloth pieces. Bowl with water. Research sheet (Annex 1)

Aim of the lesson

Pupils will be aware that people can not only pollute, but using a knowledge of science to create new ways to clean the surrounding environment.

Outcome of the lesson

Students understands that there is a scientific way to collect rubbish from the land and create a dream cleaning device.

Activities

Name of activity	Procedure	Time
Warm up	Teacher brings the mysterious box and asks a riddle about amber; gives the clues to students to guess what is in the box.	1st lesson 5 min
Reading the story	Teacher (for 6-7 years old students) or students read and analyse the legend.	10 min
Analysis of legend	Smallest students can talk about fisherman profession; learn what is at the bottom in the sea. 8-11 years old students can talk about moral of the legend: courage, obedience to parents, possibility to make decisions and accept the consequences.	10 min
Language activities	Students can do many language activities on grammar: learn nouns, adjectives, how to write the dialog etc.	20 min.
Warm up	Teacher asks students what they know about amber, where the children have seen amber, where they use it or know where it is used.	2nd lesson 5 min
Research 1	6-7 years old student can research „Secret of Amber palace”. (see in online teaching material) Picture with the see bottom items is placed under the bowl. The clear glass is placed into the bowl bottom upside. Students look through the glass bottom to the „bottom of the sea” and discover what is there. They can count amber pieces, fish, plants and rubbish. Then teacher can talk with students what things can't be in the water and how rubbish affects the sea animals.	30 min

Activities

Name of activity	Procedure	Time
Research 2	<p>8-9 years old students. Experiment on static electricity. The ancient Greeks called amber “electrum” after their name for the sun, “elector.” Thales of Miletus, one of the seven wise men of Ancient Greece was said to have believed that amber must contain life to have the power to move things. Static electricity is the build-up of the electrical charge in an object when it is rubbed against another object. Static electricity causes objects to stick together when they have opposite charges and repel when they have the same charge. Common examples of this include rubbing a party balloon on your head. Students rub the piece of amber to the wool or silk cloth and try to pull up: 1) small pieces of paper, 2) hair, 3) grinded black peppers, mixed with salt.</p>	30 min
Research 3	<p>10-11 years old students “Float or sink”. Students learn the density of materials. They watch the explaining video. Then students choose the school items and make predictions what will float and what will sink. All predictions have to be written down on the research sheet. One of items could be the pieces of real amber and fake amber. Students do experiment putting different objects into the water. Teacher has to explain that real amber is less dense and always floats. Synthetic amber is denser and will sink. After experiment students make conclusions and write them down on the research sheet</p>	30 min
Reflection	<p>After research teacher asks students to think how such ways, they used for experiment, could be adapted to the sea cleaning.</p>	10 min.
Drawing	<p>Using various painting apps or drawing animation apps students draw the sea cleaning machine.</p>	3rd lesson 45 min.

Title: Christmas decorations from waste materials and Christmas cards for partners from recycled paper

Author: Hlíf, Linda, Sandra, and Edda

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Summary

Subject	Reading, Mathematics, Science, Art
Topic(s) within the subject	Recycling, make Christmas card and decorations from waste material, Christmas tradition now and old days.
Key real-life topic	Why do we need to recycle paper? How can we use waste material?
Age of students	6 - 12 years old learners
Online teaching material	Videos on YouTube for ideas, thjodmidjasafnid.is
Offline teaching material	Paper, glue, scissors, scrap paper from the office, glass jars, candles,

Aim of the lesson

Pupils will be aware that they can use old papers and waste materials for decoration and to make paper themselves. Creativity, learn handcraft.

Outcome of the lesson

Pupils will be aware that they can use old materials to make new product.

Activities

Name of activity	Procedure	Time
Introduction	<p>In class children read about Christmas tradition in the old days. They compared the old one with Christmas today. We also talked about how we can make new things from waste material. We read a story from a famous author (Sigrún Eldjárn) called Rauð viðvörun .</p>	Two lessons
Recycled paper	<p>Before we started, we talked about why we need to recycle paper. A good discussion. Students made a connection to trees making oxygen for us, and that is why we have to save trees. We then made the paper from scratch paper from the office.</p>	Two lessons
Christmas cards	<p>We make beautiful Christmas card from the recycled office paper and decorated them with colours and scrap paper for pictures. We then had an exhibition of the cards and chose which ones we would be sent to Denmark, Latvia and Lithuania. It was hard to choose from all these beautiful cards.</p>	Tree lessons
Glass jars	<p>We got some used baby food jars from a friend and the children then painted them in Christmas colours and with Christmas pictures. When it was dry, the jars were heated in the oven to make the paint stronger and then the children took them home to use as candleholders.</p>	Two lessons
Toilet paper roll	<p>We made a lot of Christmas decorations from toilet paper rolls. We made for example stars, two kinds of Santa.</p>	Two lessons
Feedback	<p>We had a discussion with the pupils about that its more environmentally friendly to use waste material for Christmas cards and decorations than to buy new ones.</p>	One lesson

Summary

Subject	English
Topic(s) within the subject	Christmas traditions around the world
Key real-life topic	Create different views/perspectives of Christmas traditions, how different families (their classmates) from the same country spend their holiday season.
Age of students	11-12
Online teaching material	Online dictionary.
Offline teaching material	Pitstop topic book. A chapter called "December"

Aim of the lesson

To engage in each other's views of Christmas.

Outcome of the lesson

A poster about an interview between students.

Activities

Name of activity	Procedure	Time
Introduction	Talk about what is Christmas. Talk about the difference in our national culture compared to other countries.	15-20 min introduction.
Material	We received mail from Lithuania, Latvia and Iceland. Read a topic in the topic book. Interviewed each other about their Christmas traditions.	2 lessons
Feedback	Students came with positive feedback. They were surprised in how different families celebrate Christmas. Not one family did the same. After reading about the different countries broadened their mind.	1 lesson.

Title: Christmas decorations

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Summary

Subject	Mathematics, Science Arts.
Topic(s) within the subject	Recycling. Christmas decorations from recycable materials, 1 lesson
Key real-life topic	Recycling. Festive decorations on your own, reducing natural pollution.
Age of students	5-11
Online teaching material	https://www.pinterest.com/ and https://www.youtube.com/results?search_query=christmas+decorations+diy
Offline teaching material	Paper scraps, scissors, glue, hot glue, everything that is no longer needed that can be found at home, from which you can create a decoration, etc.

Aim of the lesson

Creativity, learn handicrafts: make Christmas decorations with your own hands from reusable materials.

Prepare for the holidays - decorate the Christmas tree with our own decorations.

Outcome of the lesson

We can celebrate without buying decorations, but we can make them ourselves. There are so many materials that can be reused when it seems that it is no longer useful because the basic purpose has already been used.

Activities

Name of activity	Procedure	Time
Preparation	Prepare the workplace by covering it with a cover (not to damage the table), prepare all the materials brought from which the decorations will be made, scissors, pencil and glue	2 min
Generating ideas	Demonstration of decoration samples in the Internet environment, to promote creativity, generate our own ideas.	2 min
Creating a sketch	Children try to draw a sketch of their chosen or invented decoration,	2-3 min
Creating decorations	Everyone chooses colors, materials and begins to create a decoration: start measuring, cutting and glueing.	15 min
Final part and reflection.	Finishing work, cleaning the workplace and discussing what worked, what didn't, what should have been done differently, maybe more accurately.	10 min
Feedback	Hanging decorations on the Christmas tree, decorating the classroom and windows. The teacher thanks for the work done, praises the success, encourages those who did not succeed so well to try again next time or at home.	10 min

Summary

Subject	Art, Science
Topic(s) within the subject	Climate change, pollution, sorting, recycling
Key real-life topic	Paper could be recycled and used a second time
Age of students	7-10 years old learners
Online teaching material	Video “History of paper” https://www.youtube.com/watchv=COxB_GvdzWI
Offline teaching material	Waste paper, pencils, scissors, blender, grids for paper drying, seeds

Aim of the lesson

To introduce students to how paper can be recycled, how important waste sorting is.

Outcome of the lesson

Students will make their own paper from waste paper and make postcards from the produced paper

Activities

Name of activity	Procedure	Time
From what he paper is made?	Students watching the video about the history of paper and realized that paper made from trees.	7 min
Could the paper be recycled?	The students find out whether paper can be recycled and what kind of paper can be recycled.	5 min
Paper production	When the students learned that paper can be recycled, they made paper themselves. First of all, the paper was shredded, then ground, mixed with glue, beaten, and flower seeds were added (the used paper that is on the ground will not only rot, but a plant may grow). Later it was placed in drying frames and dried.	30 min
Cards workshop	When the paper was dry, the students had the opportunity to closely examine what their overprinted paper looked like and make cards out of it. After making postcards, they wrote Christmas greetings on them.	Next day, 1 lesson

Summary

Subject	Mathematics, Science, Arts.
Topic(s) within the subject	Recycling. Christmas Greeting cards from recyclable materials 2 lessons
Key real-life topic	Recycling. Self-recycled paper
Age of students	5-8 years old learners
Online teaching	<u>Internet Resources</u>
material	Paper scraps, scissors, paper glue, old magazines, newspapers, unusable (crumpled) table napkins, etc.

Aim of the lesson

Creativity, learn handicrafts: We can prepare our own paper from previously used and no longer usable paper, its scraps.

Beautiful greeting cards can be made of self-recycled paper.

Outcome of the lesson

There are so many materials that can be reused when it seems that it is no longer useful because the basic purpose has already been used - even newspapers and old tissues. We can produce new things from old.

Activities

1st lesson

Name of activity	Procedure	Time
Preparation	Prepare the workplace by covering it with a cover (not to damage the table), paper liquid mass, scissors, pencil. The paper mass is prepared in advance so as not to waste time, but the students are introduced to the process by adding more papers and napkins to the mass so that they can see how the paper turns into a liquid mass.	5 min
Creating a sketch	Students draw sketches of the shapes they want to make from the papermass.	5 min
Making paper mass forms	Based on the sketches, paper mass forms are created on a prepared base.	15 min
Final part and reflection	Finishing work, the created figures are laid out to dry till the next day, cleaning the workplace and discussing what worked, what didn't, whether it was liked and easy to work with such a wet mass. It is agreed to continue the next day when the paper mass figures are dry.	10 min

2nd lesson

Name of activity	Procedure	Time
Preparation	Prepare the workplace by covering it with a cover (not to damage the table), paper liquid mass, scissors, pencil, old magazines, Christmas crap booking tool.	5 min
Creating greeting cards	Paper mass shapes are dry, children can make Christmas greeting cards from them. Some shapes need to be cut out, others are ready to use to decorate greeting cards. Children are allowed to cut out pictures from magazines or newspapers to create a landscape, decorate the cards with small paper ornaments, etc. Everyone is active, busy, creating beautiful cards that we will send to our Nordplus project partners in Iceland, Lithuania and Denmark (the children know at the very beginning what the cards are for).	20 min
Final part and reflection.	Completing tasks, cleaning the workplace and discussing what was liked or not, what was easy, what was difficult.	5 min
Feedback	Exhibition of greeting cards, choose which ones we will send to our friends in other countries. The teacher thanks and praises the work well done, creativity and hard work.	10 min

Summary

Subject	Reading, Mathematics, Science, Art-Acting- ICT
Topic(s) within the subject	Wind energy- Solar power- hydropower
Key real-life topic	Why do we need to use green energy ?
Age of students	7 years old learners
Online teaching material	Videos on YouTube for explanation on the topic of wind turbines and wind energy. Using information and statistics from national energy institution Video about how we use solar power and how we can use the sun to help us make flowers grow. https://www.youtube.com/watch?v=200JaROLuUY
Offline teaching material	Paper, glue, scissors, pins, plastic straws, colours, pots, soil, seeds

Aim of the lesson

Pupils will be aware that green energy is less harming to our environment.

Outcome of the lesson

Pupils will be aware that they can use green energy in their daily life.

Activities

Name of activity	Procedure	Time
Introduction	In class children heard folktales about trolls that turn into stone when the solar energy hits them. They also discussed other kinds of green energy such as wind power and hydropower. The students then played a game where they pretended to be trolls and when the sun came up they turned into stone and couldn't move.	One lesson
Making wind blows	Before we started, we talked about why we need to think about using green energy, to spare our environment from pollution and save energy resources.. A good discussion. Students made a connection with windmills making electricity. We then made paper wind blows from scrap paper and the children recorded videos of the wind blows in action.	One lesson
Solar Energy-power	We asked students about how they think we can use the solar power in our daily life. Then we showed them a video about how we can use solar power and why it is good for the environment. The students learnt how solar sells works and what they can do for us.	One lesson
Hydro-water-electricity	We went to a place called Elliðarárstöð, which is an old place that used to use water to prejudice electricity. We got to walk around this place and learnt about how electricity can be made from water. The students also learnt why this water is not used anymore.	Two lessons
Feedback	Children fill out a form about what they have learned about green energy, and we discuss their answers in class.	20 min

Summary

Subject	Reading, Mathematics, Science, International
Topic(s) within the subject	The Green House Effect, CO ₂ and other gases, Climate changes in Denmark and the World
Key real-life topic	Why, how and what is changing the Climate?
Age of students	12 years old learners
Online teaching material	https://www.dr.dk/skole/natur-og-teknologi/mellemtrin/klima-noerd is the main page of The Danish Broadcasting TV about climate. PC, youtube videos about the subject and sub-subjects. PowerPoint and Explain It
Offline teaching material	The Danish Broadcasting TV (DR) has made a book for children in at the age of 9-12 years old. The book is called "The Climate Neard". The book is filled with experiments, text etc. about the subject.

Aim of the lesson

Pupils will be aware what is changing the climate of the Earth. And what can we do, to avoid the Climate change.

Outcome of the lesson

What can we (as a 12 years old young human being) do to avoid the Climate change.

Activities

Name of activity	Procedure	Time
Introduction	Reading about The Green House effect. Also watching two videos on Youtube on how the Green House Effect works.	1 lesson
Making a presentation	In groups the students make a presentation on how the Green House Effect is a good thing and can be a bad thing. What is the Atmosphere? What is effecting the Atmosphere? What are we as humans doing wrong? What can we do as students? The presentation is in "Explain It".	6 lessons
Experiment on the Green House Effect	Making an experiment where the students in groups create the Green House Effect.	2 lessons
Experiment and talks on CO2	We talk about CO2 and how it occurs, We do two different experiments: First experiment is about proving, that the invisible CO2 is there. Second experiment is about proving that CO2 occurs in a burning process.	4 lessons
Read and talk about Climate change in Denmark	We read and talk about how the Climate change has an effect on Denmark and the students everyday life. What can we do to stop the Climate change? Experiment: We try to build a storm proof Card House.	2 lessons
Climate change, evaluation and feedback	Talk about Climate change in a global scale.	1 lesson

Summary

Subject	Nature & Science
Topic(s) within the subject	<p>The City in the Future – Problem solving and Green Energy in everyday life in the City. “Project Edison is a nationwide inventor competition for students in 6th and 7th grade. During a longer course, students will become familiar with concept and product development in both theory and practice. The goal is for each group to produce a product, which they will later present at a larger fair. The purpose of Edison is to give students the opportunity to participate in an innovative learning process early in their schooling, and possibly arouse an interest in entrepreneurship and entrepreneurship. The teaching takes place interdisciplinary, and the students have the opportunity to work independently and express themselves creatively.</p> <p>Students participating in Edison must work under a broad national theme set by the Foundation for Entrepreneurship in collaboration with a working group from the participating municipalities. During the autumn, the students must work on product development, presentation techniques, visualization and market potential in preparation for the local finals and for the national finals in November, where they must present their final product to parents, teachers and judges.” from Edisons webpage (In danish) https://edison.ffe-ye.dk/</p>
Key real-life topic	The City room, Future solutions on Green Energy in the cities
Age of students	11-13 years old learners
Online teaching material	PowerPoint (OneDrive), Word (OneDrive), Articles, videos and other documentation on the Internet.
Offline teaching material	<p>Making models of all kinds of material. The material used is from our local “The Treasury”. “The Treasury” is a place where teachers and students can get all kind of materials for free. The materials are donated from all the local companies and are typical waste products from their production. See more on (in danish) https://www.kolding.dk/borger/affald-og-genbrug/besog-os-og-laer-mere-om-genbrug/hent-genbrugsmaterialer-til-projekter-i-skatkammeret/</p>

Activities

Aim of the lesson

The Students should learn to:

- Work and cooperate in groups.
- Entrepreneurship.
- product development
- presentation techniques
- Visualization

Outcome of the lesson

The outcome of all the lessons is an invention which the students pitch for a group of judges. First in the local community competition and, if the students did well, in a countrywide competition.

Here are the groups and their inventions:

Group 1: Building houses on piles in cities by the Danish costs to protect from flooding
Group 2: Watermills in Wastepipes in tall buildings producing green power
Group 3: Information signs with information on today's Co2 pollution in the city
Group 4: A bike which produce green electricity into a battery. The battery is emptied at the workplace.
Group 5: Wireless Power Parking in Parking garages in the city for the future electric cars
Group 6: Pavement in the city creating green power when people walk on them

In the local community competition over 900 students in 225 groups participated. Group nr. 5 – Power Parking actually won the local competition and 5000 danish crowns (667 euros) and went on to the nationwide competition. Here they ended on 31 place out of 126 groups.

Activities

- Generating ideas
- Selecting ideas
- Developing ideas
- Presentation

Assessment

The students pitch their inventions for a group of judges. The judges are mainly CEO's and managers from local companies.

Summary

Subject	Science, Reading, Math, Engineering, Art
Topic(s) within the subject	Wind energy
Key real-life topic	How to use wind in everyday life, to make an electricity
Age of students	8-9 years old learners
Online teaching material	Video about wind turbine https://www.youtube.com/watch?v=ia1LJE9sOxQ&t=247s Wind lift tutorial https://www.youtube.com/watch?v=HDKCff0cxAg
Offline teaching material	2 paper cups, plastic straw, paper clip, tape, scissors, thread, computer, paper, pen

Aim of the lesson

To understand how the wind energy transforms into electric energy.

Outcome of the lesson

Students make a wind lift and try to lift different objects. They gain understanding that wind strength determines the energy produced.

Activities

Name of activity	Procedure	Time
Introducing	Students watch video about wind energy and with turbines. Teacher conducts a talk about the wind energy in everyday life of people.	10 min
Engineering the wind lift	Students make a wind lift from paper cup and straw. (See online material)	35 min.
Research	Students, working in groups of 3, choose at least 3 small objects with different weight (eraser, coin, cup of marker) . They weight them and record data in the research sheet. Then they rise hypothesis how many blows will be necessary to lift the item . Students put item into the cup and then blow to the wings. One member of group counts the blows, until the basket reaches the top and write down results. One member of a team make video of the research. After lifting all three object students make a conclusion.	45 min.
Presentation of results. Evaluation	After activity students can make a presentation: 1) make a chart of the results. They can use paper or app 2) Students make a short video with the comments about the hypothesis and the results of the experiment.	45 min.

Summary

Subject	Language, Mathematics, Science, design and technology.
Topic(s) within the subject	Harvesting of autumn crops; seed storage; natural processes by seasons; seeding and planting, gardening.
Key real-life topic	How harvest can be used? How to get seeds to plant in spring?
Age of students	6 – 8 years young learners
Offline teaching material	Harvest: vegetables and fruit, sunflower etc., seeds, the soil, plant pots; paper, ruler, pencil.

Aim of the lesson

To teach young learners to do something themselves and to respect what others have done, to know how to help in the garden and to encourage their own interest in gardening, so that they can grow something for themselves.

To encourage to use more vegetables in meals and to be active - to live as healthy lifestyle as possible.

Outcome of the lesson

Learners will acquire in-depth knowledge of nature, distinguish processes in nature according to the seasons, and will be able to help parents with backyard garden work.

Activities

Name of activity		Procedure	Time
Autumn	Introduction and research	In Autumn time, when the crops are harvested, pupils explore vegetables, fruit and other plants to get to know how they produce seeds for the “next generation”	One week
	Exhibition of harvest	Every year there is an autumn exhibition of interesting harvests, as well as figures, paintings, fairy-tale characters, etc. made of vegetables,	The whole week
	Collecting and storing some seeds.	Cutting vegetables, researching, looking for seeds and removing them for drying so that they can be stored for the whole winter. Use vegetables for tasting and making salad. (almost zero waste).	One day
Winter	Checking seeds	Sometimes seeds have been checked – is everything OK, will it be possible to plant something in spring.	No specific time
	Promote a healthy lifestyle	We periodically repeat, supplement knowledge about a healthy lifestyle: why vegetables and greens should be used in food.	Periodically
Spring	Preparing and sowing	Our collected, dried seeds, soil and pots are prepared for sowing. Children use paper and pencil/pen to write the names of the plants which they put into the soil. With the help of the teacher, the children are looking for how to plant. Count and sow seeds in the ground and start waiting for what will grow and when.	Two days
	Waiting and expectations	Every few days the children check and measure the plants they have planted.	Occasionally
	Planting	Pupils have waited for their plants to stretch out, it's time to put them in the garden or already taste the greens (scallions).	After a while
Feedback	A lot of interest and fun	Young learners like to work, learn something new. They are ready to get involved and improve their skills. The teacher must be creative so that children do not lose their curiosity. Everyone studies, follows, waits for their planted and sown vegetables and berries with great interest and passion.	The entire growing season of plants until autumn. Children can come to school garden and check what's happening.

Summary

Subject	Science, Engineering
Topic(s) within the subject	Parts of the plant,
Key real-life topic	How to plant correctly, that vegetables will grow?
Age of students	7- 10 years old learners
Online teaching material	<u>Story</u> https://www.ganjingworld.com/video/1fmgkrpq4t25IT74HNkIRrM5q10n1c Roots and stems www.enjoyteaching.com
Offline teaching material	3 clear cups, rice or starch, paper towels, water, food colours., tape, scissors, phone or tablet

Aim of the lesson

To learn the types of roots and understand how the plant feeds

Outcome of the lesson

Students will have understanding how trees “drinks” water.

Activities

Name of activity	Procedure	Time
Story time	Students scan QR code and find a story in the tablet. They reading story and learn what type of roots are.	10 min.
Research	Students, working in groups, make 3 pots from glass and starch and poyr there a coloured water. They make 3 “plants” from paper towel. Each "plant" has to be taped in the middle. Students now one plat’s root have to cut in a small stripes, second one - cut until the tape. Students measure the length of roots and write into the research table. They make prediction which plant will absorb water quicker. After that they put plant into the pot and observe how towel absorbs water.	25 min
Final part and reflection	Students write down the results of research and formulate a conclusion.	10 min
Visualisation	Students draw on paper or with computers/tablets plant with all parts and different type of roots.	45 min.