

# STEAM EDUCATION

## 1. We explore the water



### Title

**We explore the water**

### Content/ Subject areas

- Integrated education week, which took place in the first grade, is presented in the paper.
- Final objective and outcome of this week's work- preparation of the scientific map for the term "Water" and presentation of the results of the research activities to the school's community during the scientific conference "What is water?"
- The research problem arising from the term *water* was analysed or emerged in the context of all the subjects of the primary education programmes (world's in-sight, mathematics, Lithuanian language, music, physical education, ethics).
 

The work presents three major topics of the contest:

  1. STEAM (mostly natural science and mathematics subjects)
  2. Various problem solving through communication activities are presented.
  3. Gamification is applied in the educational process.

Short project video clip with English subtitles

### Target group:

6-7 years old/12 children

### Learning objectives / competence s

- The aim of the activities, which were organized during the integrated education week, was to develop various subject-based skills, general competences and higher reasoning skills of the children.
- Natural science educational objectives are directly related to the final result of the work and they were mainly implemented through research activities.
- It was sought to reach development of subject-based skills in mathematical, linguistic, artistic and sport activities, though cognitive objectives and development of natural science-based skills were also integrated in these activities. This was implemented in two ways:
  - particular "scientific discoveries" (e.g. spatial forms produced when freezing the water worked as a mean to introduce children to the spatial objects and to "discover" the solid state of water) were made on a basis of such activities;
  - natural science-based skills are deepened through such activities and their application and relation to everyday environment are noticed (e.g. while preparing the paper for watercolour technique try-out by covering it with a layer of water using a wet sponge, children have noticed the property of "moistening", which was "discovered" during the celery experiment).

Subject-based skills:

**Natural science:**

- To discover the characteristics of water;
- To name senses, which help to recognize water;
- To distinguish the three states of water and indicate their main characteristics. To explain the reasons of their change in a simplified way;
- To notice, name and describe the states of water in the nature.

*Note:* opportunities were created for more academically capable and curious children, in ways acceptable for them:

- to know more about what they are going to study in upper grades of the primary school (property of moistening, changing states of water, condensation process, precipitation formation, water circulation in the nature, water on the Earth, environmental issues);
- to explore subjects that “go beyond the programme” and which are usually not discussed in the primary school- children learned more about molecular structure of substances, different forms of water states, their dependence on particular cohesion and motion of the molecules;
- to participate in experiments, during which some processes took place but their causes were not particularized. These experiments developed curiosity, aspiration to learn more, to find out and motivate the observed phenomena.

**Mathematical:**

- To apply the knowledge about plane figures;
- To get to know and name spatial figures;
- To name the units of measurement for length, improve the practical skills of measuring and comparing different lengths.

**Linguistic:**

- To improve reading and text comprehension skills;
- To distinguish between prose and poetry pieces;
- To be able to stage artistic text.

**Artistic:**

- To get to know and try out the watercolour technique;

**Musical:**

- To distinguish between musical and non-musical sounds;
- To develop singing and rhythmic skills.

**Physical education:**

- To develop agility and jumping by playing mobility games;

**Ethical:**

- To understand that senses help us to notice beautiful things.

**General competences:**

- Knowing how to learn (to set and reach goals)
- Communication (appropriate expression of thoughts and transfer of information)

- Social (communication and cooperation)
- Learning (desire to know and discover)
- Proactiveness and creativity (offering creative ideas)
- Personal (considering your feelings, evaluating your behaviour)
- Information literacy (properly using ICT, the Internet)

### Description of overall activity

The chosen course of comprehensive educational integration allowed the educational process not to be segmented into separate unrelated parts. Therefore, all the activities of the week make up a consistent chain of water-related explorations and discoveries.

*Note* regarding the description of activities and process course:

- Visual material is provided to illustrate the activities, written consent for the use of which was obtained from the parents'. Each described activity has its place in the visual material indicated in seconds.
- References from “Material used in the educational process and ICT tools/programs” and numbering of annexes are provided while describing the activities.
- Aids used in the educational process for the interactive Promethean board are provided as *ActivInspire* program file (flipchart) and in pdf format.

#### 1. Morning news (see video clip 1)

Even in the everyday Morning news activity, which has its own structure, lasts for around 30 minutes and is intended for setting minds for work, familiarizing with activities and goals for the day, finding connections and relations between subjects, getting to know the calendar, weather, temperature, time, encouraging to observe changes in the environment, developing communication skills and etc., certain moments, which are related to the topic of the week, are included:

- **“Chitchat- thingies” with a gift from the water.** Children share their everyday joys and worries (together they also learn the rules of talking properly and listening, develop their personal competence of self-awareness). This week children are talking and passing a ritual object- a gift from the water (coral, peace of amber, shell, seaweed, sea urchin) from hand to hand. (0:00 – 0:20)
- **Energetic exercise with water animals.** On the first day of the week children are moving while trying to imitate water animals (this way a possibility to guess the topic of the week is made), during the other days they learn how to dance “The duck dance”. During different days of the week this dance is performed using different visual material. (0:20 – 0:40) *Reference No.12*
- **On the news- information on precipitation.** The presenter of the morning news (selected using a virtual selection tool) presents a calendar of each day, describes cloudiness and precipitation, which are noted using particular conventional signs, and indicates air temperature. This everyday information is directly based on the knowledge gained about the forms of water in the nature and their changes. Moreover, this activity encourages children to observe weather every day. (0:40 – 1:15) *Reference No.9; Annex No.1*

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## 2. **Motivating, game-based activities- essential factor of learning and key to success** (video clip 2)

Schoolchildren are learning willingly, are active, are trying to reach goals, because all the activities offered to them:

- are meaningful;
- related to previous experience;
- attractive, playful;
- have an attractive result;
- take place in an environment, which stimulates positive emotions.

During the course of the week schoolchildren were offered various activities, the main purpose of which is to make them interested, involve them into work, relate newly explored objects and phenomena with previous experience, as well as to teach how to communicate and cooperate, develop the ability to learn and other competences. Examples of such activities are as follows:

- **Monday intrigue- sea pirate Captain Flint.** On the first morning of the new week this literary character, which is loved by children, welcomes them with a well-known song. During the morning news children are encouraged to read the magazine of this character and all the magazines are left in a place where they are well visible, so that children could read them during the breaks or their spare time. (0:00 – 0:20) A number of other “pirate- sea” activities are arranged.
  - **Key (topic) and problem (problem question) of the week.** Children complete the task of the character of the day- Flint on the interactive whiteboard and try to unlock the chest, which contains the problem question of the week to be analysed. First of all children find “the key” (keyword of the week) and thus the topic of the week is unravelled. Children have to find connections between the pictures, notice the associations, indicate first letters and assemble a word (“*water*”). Geography knowledge is deepened with this assignment (port of Lithuania and the Baltic Sea are indicated on a map). The chest is unlocked with the “key” that was found, the letters are taken out and the problem question of the week “What is water?” is read. During this activity the development of linguistic skills is integrated- auditory analysis exercises are completed, the punctuation of a question sentence is remembered. (0:20 – 1:05) *Annex No.1*
  - **“Rain of thoughts”.** When applying the method of the rain of thoughts, children, while it is “raining” (a certain audio recording is played), have to write words that are related to the term “*water*” on a paper raindrop. When they run out of words, schoolchildren are directed to think in a certain way (e.g. words describing action, beach, vehicles and etc.). During the course of the week, when children learn new things and generate new ideas, the paper raindrops are supplemented with new words and associations. (1:05 – 1:25) *Annex No.1*
- Keyword “water”.** This will be a central word of the scientific map; thus it is stucked on to the wall. Specific way of writing this word is to be noticed- diphthong *uo* (which is going to be studied during the week) and the range of colours of the word (rainbow formation is explained; colours are repeated). (1:25 – 2:05)
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- **Poem of the week “Fairy-tale of rain”.** The poem “Fairy-tale of rain” by V. Palčinskaitė is memorised in different ways (by deleting some words, verses, together with the rhythm of the rain, by singing a song, repeating during leisure time and etc.) thus children learn it naturally during the week. Linguistic skills (reading technique, expressive recitation, text analysis, literary education, distinguishing of poetry, rhyme) are developed with a help of this poem and vital importance of the water, need to save the water and environmental issues are discovered. (2:05 – 2:55) *Annex No.2; Reference No.15*
  - **Mathematical assignment “Finding the treasure”.** This assignment is designed to develop the skills of recognising and naming plane figures as well as cooperation skills. An intriguing assignment of the Captain Flint is provided- to bury the pirate treasure (“plates of gold”) in certain islands. Schoolchildren, while working in groups, divide the geometric shapes (“plates of gold”) into three groups (triangles, circles, quadrangles. More academically capable children can find trapeziums, parallelograms and rhombi among the quadrangles). Then, without talking to each other (“so the aborigine would not hear them”), they “fence” the island with a rope in a certain shape and bury their selected treasure there (e.g. leave the circles in a circle-shaped island). (2:55 – 3:30)
  - **“Young researchers club”.** In order to explore the problem of the week, children are invited to gather up into young researchers club in the “scientific laboratory” of which during the course of the week they perform researches and find out scientific truths related to water. Assignment and objective of the week is presented- to prepare a scientific map of the term *water* and present this map, together with discoveries made during the week, in a final scientific conference. (3:30 – 3:50) *Annex No.6*
  - **Breaks with Frepy.** During the breaks children not only play interactive DTA “Frepy” linguistic games related to the water topic (“Anglerfish”, “Swamp”, “Treasure”, “Danger at sea”, “Fish tail”) but also learn how to learn – plan their learning (results- completed assignments are recorded in a table).(3:50 – 4:15) *Reference No.6; Annex No.3; Annex No.4*
  - **“Battle of the ships” online.** Schoolchildren are presented with an opportunity to play a traditional game virtually. During a break, children in real time play the “Battle of the ships” with a person from another country. In this way children learn how to properly communicate via the Internet (to thank for a game, congratulate the opponent who has won), how to use modern technologies (send a link of the game to a friend so they can play together from different computers). (4:15 – 4:40) *Reference No.8; Annex No.3*
- Puzzles on the interactive whiteboard.** During the breaks children together with their friends put together selected water-themed puzzles (interactive whiteboard Promethean allows up to 10 touch points at once). They learn how to reach a common goal, fill in the activities sheet, observe and compare the time of puzzle completion. (4:40 – 5:05) *Reference No.7; Annex No.3; Annex No.5*
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- **Cumulative assessment “You reap what you sow”.** All year long children assess themselves with “pluses” for successful work (this is the honey collected in the jars by the bees- the hard-working first graders). 20 collected pluses are converted into a sticker (this week the sticker related to theme of pirates and sea) and “approved” with teacher’s seal (“a flower” used by a teacher to assess the pupils). Through this activity counting skills are developed as well. (5:05 – 5:40) *Annex No.11*
  - Motivation is also promoted by creating a certain environment during the breaks- musical, visual background, video clips. *Reference No.13; Reference No.14*

**3. Education based on personal experience, discoveries is the most effective.** Detailed description- *see Course of the process.*

- By referring to personal experience, answering questions, using different sensations, carrying out researches, completing assignments, performing tests in virtual laboratories, playing games, pupils are able to discover the truths of natural sciences, summarize them, come up with conclusions, transfer them to the map of terms and at the end of the week share their experience during an improvised scientific conference.
- First of all researches, related to the major properties of water and senses describing them, are carried out. What is found out is that you cannot always trust your senses (video clip 3,1)
- Later researches are carried out and answers to the following questions are looked for: what are the states of water? What determines the change of those states? What is the form of liquid, solid and gas water? What is the shape of the drop? What determines the different form of water states? How do the molecules move in different states? How can you see vapour? At what temperature does the water boil? How the states are changing in the nature? (video clip 3, 2)
- All the activities of the week are summarized, interactive survey is carried out and the pupils present their discoveries and scientific map to the community of the school. Other interesting experiments with water are demonstrated, which encourage children to continue exploring and searching for answers to their questions in the future. (video clip 3, 3)

**4. Water theme in various activities. Application of personal experience and gained skills.** (video clip 4)

The theme of water presented throughout various activities allowed to recall, apply and notice in a broader context the knowledge and skills gained. In some cases, it helped to develop new skills.

- **Linguistic activities- about the rain.** During the linguistic assignments while reading, analysing and staging the saga “Whose legs are the longest” by L. Gutasukas children deepen their knowledge about precipitation, strengthen their understanding of water circulation in the nature. Presentation introducing the water cycle is shown (0:00 - 0:40) *Reference No.5*

**Research- getting to know condensation.** The process rain formation is demonstrated, the phenomenon of condensation is introduced- experiment

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with boiling water and cold plate is conducted, presentation is shown, various interactive assignments are offered. (0:40 – 1:00)

- **Lunch- condensation.** While putting the food into the plate children are asked to pay their attention to the condensation phenomenon (this is observed on the walls of a cold bowl with hot porridge). (1:00 – 1:15)
- **Observing nature. Making a craft. Mathematics assignment. Icicles.** While spending their time outdoors pupils notice icicles in the school yard. They learn how the icicles form. When children come back to the classroom they make “icicles” from plastic bags and decorate classroom’s window with them. The length of the icicles that children made is measured, compared and correct units of measurement for length are written down. (1:15 – 2:00)
- **Musical activities- the sounds of water.** Children listen to various sound records of water (stream, waterfall, sea waves, snowstorm, rain) and try to recognise them. They check if their guesses were correct by watching video clips. (2:00 – 2:25) *Reference No.11*
- **Vigorous activities- water in motion.** In sports facility children play story-based active games (“The sea is waving”, “Stream, bank”). Exercises with a “parachute” are performed- while listening to a story about a ship being tossed around by wind in the sea, they try to safely bring back the ship into the shore (the ball has to end up in the middle of the parachute. Children offer and try various strategies thus developing team work skills, understanding that only harmonious activities of the whole group can help to reach a goal. (2:25 – 3:05)
- **Break with virtual reality glasses.** While using “Cardboard”, smartphone and “SeaWorld” app, pupils are observing the underwater world. In this way a possibility is made to get to know better, feel and imagine the underwater world. (3:05 – 3.25) *Reference No.10*
- **Art activities- water in colours.** Pupils get to know the watercolour technique and try it out by depicting the underwater world. While completing the assignment the first graders discover new characteristics of water (pastel colours are created using water), notice the ones that they have discovered before while conducting experiments (moistening property discovered during the sponge research). While using information search engine they watch video clips about the inhabitants of underwater world, which they would like to depict in their pictures. (3:25 – 4:50)
- **Rest break- water meditation.** After the classes some time is dedicated to rest and relaxation while listening to the sounds of water. (4:50 – 4:55) *Reference No.16*

**Description of the process and teaching/ learning strategies used**

Research activities, which are directly related to the final objective of the week’s activities- preparation and presentation of the scientific map of the term *water*, are going to be described. Section 3 “**Education based on personal experience, discoveries is the most effective**” of the “Description of the activities” is going to be described in detail. As it was mentioned before, while trying to solve the problem- to find out what water is, children gathered up into a young researchers club. Pupils are informed that they are going to work as real scientists, i.e. all the scientific research stages are going to be included in their activities: children are going to observe phenomena, raise questions, hypotheses, carry out researches, summarise results, draw up conclusions and present them to others. One of the

ways to inform others about the results is to prepare a map of terms. It is discussing that scientists usually work in groups thus children are also going to work in groups while solving problems and trying to reach the objective. In this way they will not forget to follow the rules of good communication.

Interactive whiteboard is a tool used during the work in the “young researchers club”. On this whiteboard children can see the problem questions that were raised, provided instructions, references to DTA, conclusions drawn. *Annex No.6*

**I. First discoveries** are related to the three main characteristics of water. (video clip 3, 1)

- **First research** (problem): How to distinguish water? What are the main characteristics of water?

Children are provided with five samples of different liquids (fresh water, sparkling water, sugar solution, water with lemon and mint essence) and an assignment (*Annex No.7*)

While working in groups, applying basic stages of the scientific research, children determine and define three characteristics of liquid water- colourless, tasteless, and odourless.

While conducting the research they formulate a hypothesis (which jar contains water), choose strategy and course of a research and, by following their senses of taste, sight and smell, describe the samples. The research conducted is then summarised and conclusions are drawn up. They begin to fill in the map of terms. They evaluate their activities in a group and on an individual basis. (0:00 – 2:20)

- **Second research.** What helped to determine typical characteristics of water?

Referring to the reflection of the first research and by describing it, children “discover” and name senses and sensory organs, which helped to determine typical characteristics of water. The map of terms is then supplemented with new information.

When answering the problem question (is it only three senses, which describe the water) children learn that there is two more senses, which might provide more information about water (e.g. touch- wet, hearing- babbling of the stream). To consolidate the knowledge gained about the senses, an assignment on the interactive whiteboard as well as a laboratory work with digital teaching aid “Smart robots” is provided. (2:20 – 2:45) *Reference No.1*

Senses are also discussed in the context of ethics subject- insights on how senses help a person to notice and judge the beautiful and right things in life are shared.

- **Third research.** Which characteristic of water will not be felt with our senses? How do plants “drink”?

The problem question is raised- can we always refer only to our senses while carrying out a research? The celery experiment is then conducted collectively. Celery is submerged into water with food colouring and hypothesis is formulated- what will happen? One child says that now the celery will revive and unfold (because now it is quite withered). The result that can be seen after a couple of hours (the celery became blue up to its top)



allows to come up with a conclusion regarding the moistening (the water can travel up through little channels), which allows the plants to “drink” water. Conclusion is reached that not everything is possible to see “here and now” and that not always you can refer to your senses.(2:45 – 3:35). This “discovery” will be useful when children will learn that all the substances are made out of little particles- molecules (this information is provided in a game form during a break) as well as while conducting other experiments.

## II. **Laboratories of the first graders-** answers to the questions related to the three states of water are looked for. (video clip 3, 2)

Children complete assignments- researches, through the help of which they are able to name the states of water themselves, “discover” their forms, learn about they depend on a different movement of the molecules. The strategy of asking questions is applied, practical assignments are completed, activities in virtual laboratories are conducted, and activities of developing mathematical skills are integrated.

- **What’s in the box?** A game “What’s in the box?”. While answering the questions about the substance, which is in the box, children find out that there is an ice cube- solid state of water hidden in the box. (0:00 – 0:30)
- **How to turn water into ice?** Children try to answer the problem question that was raised. It is prepared to do this practically- water is poured into forms and taken into a freezer. (0:30 – 0:40)
- **What is the form of liquid water?** When preparing to freeze the water and answering questions, children “discover” the scientific term of liquid form of water (liquid substances take the form of a container). (0:40 – 1:40)
- **What is the shape of a drop?** During a break pupils play a game “Drop the champion”- on a piece of paper, which has a 2 cm wide “race track” drawn on it, children have to blow the drop from the start line to the finish line by using a straw. Before starting the game children observe the drops, their shapes and come to a conclusion that the drop has a shape of sphere. (1:40 – 1:50)
- **What is the shape of ice?** Next day children take out the pieces of ice from the forms. They come to a conclusion that unlike the liquid water, solid water keeps its shape. While observing pieces of ice of different shapes they learn about spatial objects and complete mathematical assignments related to spatial figures. (1:50 – 2:15)
- **Where did the water go?** While observing the changes of the wet wipes (one was placed on the windowsill and the other one- on the radiator), which were used to clean the work desk, and answering questions, children learn that there is a third state of water- gas, which usually cannot be seen. It is learnt that this state forms when the temperature is rising. (2:15 – 2:50)
- **What is the shape of the gas state of water?** Children observe the experiment with air freshener, which is filled with gas. They notice that gas dissipates and fill the space (after a while they felt that the smell from the end of a classroom spread to other places). Therefore, they come to a

conclusion gas state of water does not have a shape but fill the space. (2:50 – 3:05)

- **How can you see the vapour?** What temperature is needed to boil the water? Children observe evaporation when the water is boiling. The problem question “At what point does the water boil?” is then raised. Children conduct a group research in a virtual laboratory and then fill in the assignment sheets individually (formulate hypothesis, state conclusions, evaluate themselves) (3:05 – 3:50) *Reference No.2; Annex No.8*
- **Why is the state of water different?** After learning that states of water are changing depending on temperature, children play a game that demonstrates how molecules behave in different states (they hold each other firmly, then loosely and then run around). While working individually by the computers they observe this process in the virtual DTA “Nature and human being, grades 5-6” laboratory and conduct researches while following guidelines. More academically capable children try to explain the process that is taking place. (3: 50 – 4.45) *Reference No.3*
- The states of water in the nature are presented for the more curious children and their knowledge is deepened using the DTA “Nature and human being, grades 5-6” demonstration. *Reference No. 4*

### III. Summary. Other experiments. Video clip 3, 3

- **Scientific conference.** Based on the scientific map of the term “water”, which was prepared during the week, children present their discoveries in the “scientific conference” (0:00 – 0:45) *Annex No.9*
- **Quiz.** Knowledge is consolidated and deepened, things that have been learnt are checked by using Aktiv Inspire quiz and classroom voting system. (0: 45 – 1:00) *Annex No.10*
- **Other experiments with water.** These experiments are designed to stimulate curiosity of the pupils, encourage them to be interested and explore (1:00 – 2:00). Observations are made and answers to the following questions are looked for:
  - „How to get the coin from the water so it remains dry?” (jar and candle experiment);
  - Where does the piece of ice end up when you put it into a jar with oil and water? What happens when some salt is put in there?
  - How should the crow drink some water from the bottom of the jug? (a story about a crow, which threw pebbles into the jug so the water would rise and she could drink, is read)
  - What happens when some vinegar is poured into the water, in which a red cabbage was placed previously, and why does it happen? What happens when some soda is put in there instead of vinegar?

#### Evaluation/ types of assessment

Various forms of formative assessment (self-assessment) were applied during the educational process:

- Verbal assessment- children receive and provide a feedback to each other about successes of the activities during the course of learning. They make suggestions of what should be improved, commend, applause. The CAS rule is applied (Commend. Ask. Suggest) (*Annex No.11*)
- “Mood drops” on the classroom wall- following the indicated criteria, pupils place their badges on an appropriate drop (five point scale) (*Annex No.11*)
- “Mood drops” on the assignment sheets (three or five point scale)
- Verbal reflection- activities are discussed in groups, thoughts are expressed individually to the whole class or thought over in silence.
- Instant self-assessment using “thumb” or “traffic-light” method.
- Cumulative assessment system “You reap what you sow”- pluses are collected for activities and effort that was put in. After collecting 20 pluses, a sticker can be chosen (this week the sticker is related to theme of pirates and sea) (*Annex No.11*)
- “Daily news”- everyday activities after classes, during which reflections on the activities of the day are made (*Annex No.11*)
- “Check if you have learnt”- a tool also suitable for diagnostic assessment. With the help of Promethean interactive whiteboard’s classroom voting system, pupils can select an answer and directly see if they managed to answer correctly. The teacher receives a feedback by saving information about each child’s answers in an Excel file (*Annex No.10*)

## Materials and tools

- *Reference No.1*  
Laboratory work “Explore the importance of senses to a human” of the digital teaching aid “**Smart robots**”  
<https://ismaniejirobotai.lt/index.php?play=88&back=t>
- *Reference No.2*  
Laboratory work “Determining the boiling temperature of the water” of the digital teaching aid “**Nature and human being, grades 5-6**”  
[http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens\\_virimo\\_temperaturos\\_nustatymas/](http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens_virimo_temperaturos_nustatymas/)
- *Reference No.3*  
Research work “States of water”- 1<sup>st</sup> and 2<sup>nd</sup> experiments of the digital teaching aid “**Nature and human being, grades 5-6**”  
[http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens\\_busenos/](http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens_busenos/)
- *Reference No.4*  
Demonstration “States of water” of the digital teaching aid “**Nature and human being, grades 5-6**”  
[http://gamta5-6.mkp.emokykla.lt/lt/mo/demonstracijos/vandens\\_busenos/](http://gamta5-6.mkp.emokykla.lt/lt/mo/demonstracijos/vandens_busenos/)
- *Reference No.5*  
**Water circulation cycle.** Teaching aid of the teacher R. Šulinskiėnė

<http://www.slideboom.com/presentations/302654/Vandens-apytakos-ratas-2-kl>

- *References No.6*

**Speech therapy tool Frepy-** water-themed games during the breaks.

Anglerfish <http://www.frepy.eu/games/Frepy17lt/>

Fish tail <http://www.frepy.eu/games/Frepy6lt/>

Swamp <http://www.frepy.eu/games/Frepy14lt-/>

Treasure <http://www.frepy.eu/games/Frepy20lt/>

Danger at sea <http://www.frepy.eu/games/Frepy17lt/index2.html>

Table for marking (*Annex No.4*)

- *References No.7*

**Puzzles – group activities for the pupils during the breaks**

Fish tank

<http://www.jigsawplanet.com/?rc=play&pid=1bfa86235f7e&pieces=24>

Iceberg <http://www.jigsawplanet.com/?rc=play&pid=387e7a3e028b>

Mandarin duck

<http://www.jigsawplanet.com/?rc=play&pid=00c2962490c2>

Waterfall <http://www.jigsawplanet.com/?rc=play&pid=1ce9e8922d46>

Coast <http://www.jigsawplanet.com/?rc=play&pid=1b7c770ae4ae>

Table for marking (*Annex No.5*)

- *References No.8*

**Online game- Battle of the ships**

<http://en.battleship-game.org/>

ability to play with an opponent- computer

<http://www.learn4good.com/games/board/battleship.htm>

- *References No.9*

**Name selection tools**

<http://primaryschoolict.com/random-name-selector>

also can be used:

[http://www.classtools.net/education-games-php/fruit\\_machine](http://www.classtools.net/education-games-php/fruit_machine)

<http://www.classtools.net/random-name-picker/>

- *Reference No.10*

**Virtual reality glasses**

“Sea World VR2” App (*downloaded from “Play” to an Android telephone*) used with Cardboard and smartphone.

**Youtube resources:**

- *References No.11*

**For the activity of distinguishing sounds of music**

Flow of the stream <https://www.youtube.com/watch?v=EZ8xFe1zw7E>

Forest stream <https://www.youtube.com/watch?v=9Nwn-TZfFUI>

Immense waterfall <https://www.youtube.com/watch?v=Qo3OM5sPUPM>

Rain and thunder <https://www.youtube.com/watch?v=jB-7Y5eDfXk>

Sea waves [https://www.youtube.com/watch?v=HTc\\_2XmKK-M](https://www.youtube.com/watch?v=HTc_2XmKK-M)

Rain <https://www.youtube.com/watch?v=J5OSRpRyl6g>

Show, snowstorm <https://www.youtube.com/watch?v=UO1NCOG9K2s>

- *References No.12*

- **For the energetic exercise**

- Duck dance <https://www.youtube.com/watch?v=kQQ59Z-al4w>

- Duck dance performed by a rooster

- <https://www.youtube.com/watch?v=PMk9MGLe2bk>

- and roosters [https://www.youtube.com/watch?v=8gRw\\_K1Q2A4](https://www.youtube.com/watch?v=8gRw_K1Q2A4)

- <https://www.youtube.com/watch?v=wKiZSberm8E> (when children have learnt the dance)

- *References No.13*

- **For the background of the breaks, to establish a general mood**

- Clownfish <https://www.youtube.com/watch?v=Tqkq4zUJ3Yw>

- Dolphins <https://www.youtube.com/watch?v=MPov9cVfz0U>

- Among the corals <https://www.youtube.com/watch?v=Q1TyoYotSf0>

- Underwater world <https://www.youtube.com/watch?v=Tqkq4zUJ3Yw>

- *References No.14*

- **For the leisure time**

- A song „Droplets“ by I. Jankauskaitė

- <https://www.youtube.com/watch?v=kE8j-pEbtck>

- <https://www.youtube.com/watch?v=V8BliE4Mjw>

- A fun pause with the ducks

- [https://www.youtube.com/watch?v=954\\_HtkIvNo](https://www.youtube.com/watch?v=954_HtkIvNo)

- A cartoon for a leisure time

- <https://www.youtube.com/watch?v=fKCXU8P6aaQ>

- Captain Flint songs <https://www.pakartot.lt/album/geriausios-kapitono-flinto-dainos>

- *Reference No.15*

- **For learning the poem of the week**

- a song “Rain gnomes” (based on a poem by V.Palčinskaitė), performed by music studio “Nieko tokio” <https://www.pakartot.lt/album/grazi-istorija/lietaus-nykstukai>

- *References No.16*

- **For meditation**

- <https://www.youtube.com/watch?v=luRkeDCoxZ4>

- <https://www.youtube.com/watch?v=TkFm1jmJemU>

- <https://www.youtube.com/watch?v=SynzKC4fWp0>

- **Learning aids for the interactive whiteboard prepared using Activ Inspire programme** *see Annexes, provided Flipchart and pdf files in Lithuanian language.*

- Assignments for the Morning news activities (marking the weather using conventional notations, name selection tool, temperature marking, topic of the week and problem question “selection” assignments, rain of thoughts with audio file) (*Annex No.1*)

- Poem of the week and assignments (recording of the interactive activities and a song) (*Annex No.2*)
- For the breaks (links to interactive games) (*Annex No.3*)
- Assignments for the research works (with links to presentations, demonstrations of the digital teaching aids, virtual laboratories) (*Annex No.6*)
- Quiz - voting for assessment and self-assessment (*Annex No.10*)
- **Assignment sheets for research activities**
- Research of water characteristics (*Annex No.7*)
- Determining water temperature (*Annex No.8*)

#### Timing and learning environment

- Duration of the activities: one week (based on the educational plan- 22 academic hours)
- The activities took place in: classroom, art studio, sports hall, kitchen, yard, conference hall.

#### Conclusion

We believe that educational process arranged during the integrated education (learning) week “What is water” respond to the challenges of modern education:

- seeks to implement education trends and guidelines described in the conception of a Good school;
- offers ways how to effectively implement education content provided in general programmes;
- provides aids for the development of general competences and emotional intelligence of the schoolchildren.

The success of the education (learning) process is determined by application of educational methods, which correspond to the characteristics of a modern child, and strategies chosen:

- Integration. Integrated education (learning) based on mutual connections.
- Experience-based education (learning). Daily activities based on previous experiences and discoveries.
- Personalization. Orientation towards individual needs of a child (learning style, abilities, hobbies, fields of interest, previous experience).
- Modern technologies. Purposefully applied ICT tools.

Chosen learning trends allow to educate children, who:

- are always seeking to know and discover;
- know how to plan their learning, choose and apply the most suitable methods of learning, necessary strategies of knowledge;
- are able to reflect, assess their learning, development;
- are not afraid to critically evaluate problems, look for right ways to solve problems;
- are creative;



- have high academic achievements;
- are developing skills of public speaking;
- have high emotional intelligence;
- are able to communicate, agree, achieve a common goal together with others;
- purposefully use modern technologies.

**Annexes:**

- *Annex No. 1 Assignments (flipchart)*
- *Annex No. 1 Assignments (pdf)*
- *Annex No. 2 Poem of the week (flipchart)*
- *Annex No. 2 Poem of the week (pdf)*
- *Annex No. 3 For the breaks (flipchart)*
- *Annex No. 3 For the breaks (pdf)*
- *Annex No. 4 Frepy*
- *Annex No. 5 Puzzles*
- *Annex No. 6 For the activities of the researchers club (flipchart)*
- *Annex No. 6 For the activities of the researchers club (pdf)*
- *Annex No. 7 Research\_characteristics*
- *Annex No. 8 Research\_temperature*
- *Annex No. 9 Map of the term water*
- *Annex No. 10 Quiz (flipchart)*
- *Annex No. 10 Quiz (pdf)*
- *Annex No. 11 Assessment*

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