The Baltic Sea Project within the UNESCO ASP network
"Baltic Sea WebQuiz 2020"

Organizer:
Tartu Nature House in Estonia (www.tartuloodusmaja.ee), represented by Gedy Matisen.
Funder:
Republic of Estonia Ministry of Education and Research (https://www.hm.ee/en), represented by Imbi Henno.
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Walk & Learn (http://www.mineavasta.ee/), represented by Marko Peterson.
Collaboration partners regarding quiz questions:
NGO Mondoun Estonia (https://maailmakool.ee/) represented by Viktoria Lepp.
Estonian Environmental Agency (https://www.keskkonnaagentuur.ee/) represented by Triin Edovald.
Tartu Tamme School (https://www.tamme.tartu.ee) represented by Kersti Loim, Helen Parker.
Lithuanian Centre of Non-formal Youth Education (https://www.lmnsc.lt/) represented by Gretė Vaičaitytė.
The Baltic Sea Project (https://unesco-bsp.blogspot.com/) represented by Aira Undén-Selander.

SHEET OF QUESTIONS AND CORRECT ANSWERS

Before starting the quiz all participants were asked to check if they have access to:
1) Internet connection, 2) video software, and 3) headphones.

Total score is 100-110 points. This sheet gives you the correct answers in green.
Participants can use the internet to develop their research skills and critical thinking.

NB! Participants should submit their results only once. The organizers will count only the first submitted result for each person**.**
The age group from 10-13 years have 30 minutes to answer 5 questions, the age group 14-16 have 45 minutes to answer 8 questions, and the age group 17-19 have 60 minutes to answer 10 questions.

Category: 10-13 years old students

QUESTION 1:
What kind of marine mammal do we have in the Baltic Sea?

a) humpback whale (Megaptera novaeangliae)
(Photo:https://www.diving-canary-islands.com/en/humpback-whale-megaptera-novaeangliae/)

b) sperm whale (*Physeter macrocephalus*)
(Photo:Gabriel Barathieu - https://www.flickr.com/photos/barathieu/7277953560/)

c) harbour porpoise (*Phocoena phocoena*)
(Photo: Ecomare - bruinvis Michael in 2015 (bruinvis-michael2015-9313-sw).jpg)

Reference: http://stateofthebalticsea.helcom.fi/biodiversity-and-its-status/marine-mammals/

QUESTION 2:

This seal is the smallest seal species in the world. Females grow up to 1,4 m and weight 80 kg, males up to 1,5 m and weight 95 kg. At present, the Baltic seal population faces climate change. Warmer winters mean less ice and snow, which are critical factors for this species' breeding success. This seal species is currently listed as vulnerable in the HELCOM (Baltic Marine Environment Protection Commission) assessment. Which seal is it? Choose the correct answer from the options below.

(Photo: Fernando Ugarte: https://nammco.no/topics/ringed-seal/)

a) Halichoerus grypus
b) Pusa hispida
c) Phoca vitulina

Reference: https://nammco.no/topics/ringed-seal/#1475844586552-bbd974dc-67bc
https://wwf.fi/app/uploads/2/r/u/z4bm4bbejniod2hde4g2kce/wwf_norppa_2017_web_korj_d.pdf

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QUESTION 3:

Countries around the Baltic Sea are happy to have access to clean and safe drinking water. Without water, children simply cannot stay alive or grow up into healthy adults. Unfortunately, many people around the world do not have access to safe drinking water. How many people in the world didn't have access to safe drinking water according to the 2019 JMP report?

a) 1 in 3000 people
b) 1 in 300 people
c) 1 in 30 people
d) 1 in 3 people

Reference: https://www.who.int/news-room/detail/18-06-2019-1-in-3-people-globally-do-not-have-access-to-safe-drinking-water-unicef-who; https://www.un.org/sustainabledevelopment/water-and-sanitation/

QUESTION 4:

Watch this video: https://www.youtube.com/watch?v=kmWMnpKoC5M

In this video you will get information about gulls. There is one gull living around the Baltic sea but is rarely found all over Europe. Which one?

a) Black-headed gull
b) Great Black-backed gull

c) Little gull

d) The European herring gull

Reference: https://www.youtube.com/watch?v=kmWMnpKoC5M, http://datazone.birdlife.org/species/factsheet/little-gull-hydrocoloeus-minutus/text

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QUESTION 5:

What was this challenge "Let's eat the Baltic Sea clean" all about?

a) It was indicated that it has become a big challenge to catch fish from the Baltic Sea.

b) It was indicated that when we eat fish we can remove phosphorus from the Baltic Sea which then reduces eutrophication and helps students to be healthier and improves learning.

c) It was indicated that people in Scandinavia don't like to eat fish and they try to get more people to eat fish because there is so much fish in the Baltic Sea.

Reference: https://www.turku.fi/en/steam-turku/fish-challenge

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Category: 14-16 years old students

QUESTION 1:

The Baltic Sea bird community is highly variable depending on the season. Although some of the bird species are present in the Baltic Sea area around the year, for example the herring gull (*Larus argentatus*), many species use the Baltic Sea only during specific seasons. Some species use the Baltic Sea as a wintering ground, for example the long-tailed duck (*Clangula hyemalis*), whereas others migrate to the area for breeding, such as the Arctic tern (*Sterna paradisaea*). According to HELCOM, which of these birds was marked as endangered on the list of 'Abundance of waterbirds in the breeding season'? Pick one correct answer.

a) *Calidris alpina* (Author: Sławek Staszczuk)

b) *Charadrius hiaticula hiaticula* (Author: Jaak Põder)

c) *Mergus merganser* (Author: Toivo Toivanen & Tiina Toppila)

d) *Larus canus* (Author: Sven Začek)

Reference: http://stateofthebalticsea.helcom.fi/biodiversity-and-its-status/waterbirds/

QUESTION 2:

What does personal "water footprint" indicate?

a) It indicates the amount of water one person spends on eating, drinking and washing per year
b) It indicates the amount of water one person consumes in a lifetime
c) It indicates the amount of freshwater spent to make products and services a person uses per year

Bonus activity: calculate your personal water footprint! Search for the calculator.

Reference: https://waterfootprint.org/en/water-footprint/what-is-water-footprint/; https://www.watercalculator.org/

QUESTION 3:

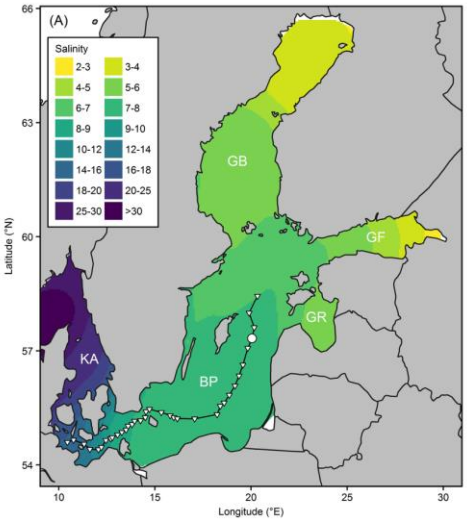
The Baltic Sea is one of the most polluted seas in the world. There is a lot of pollution flowing into it with rivers but that is not the only source of pollution. Marine litter, especially plastic waste, thrown there by people is getting more and more seriously problematic. Which of these facts is wrong about marine waste? Pick one.

a) Microplastics can accumulate in fish, birds and other marine life.
b) Half of all plastics ever manufactured have been made in the last 15 years.
c) Microplastics are plastic pieces smaller than 5 mm.
d) Metal can usually dissolve within 100 years in nature.

Reference: https://www.ngi.no/eng/News/NGI-News/When-plastic-is-part-of-the-food-chain; https://eestipandipakend.ee/wp-content/uploads/2014/10/PP_infovoldik_web.pdf; https://www.nationalgeographic.com/environment/habitats/plastic-pollution/

QUESTION 4:

The Baltic Sea is the world's largest inland brackish sea. Here you can see the map of Baltic Sea salinity. The more north the sea, the less salinity the water has because only the south of the sea is connected to the North Sea. As saltwater is denser than freshwater, the bottom of the Baltic Sea is saltier than the surface. This creates a vertical stratification of the water column. How is this column called? Choose one correct answer.



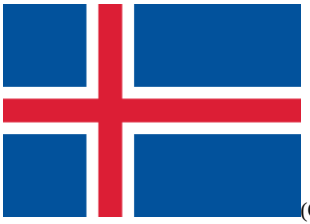
a) halocline
b) saliocline
c) thermocline
d) falocline

Map:https://www.researchgate.net/figure/Baltic-Sea-A-Surface-salinity-distribution-and-major-sub-regions-KA-Kattegat-BP_fig2_328228243

Reference: https://en.wikipedia.org/wiki/Baltic_Sea#Salinity

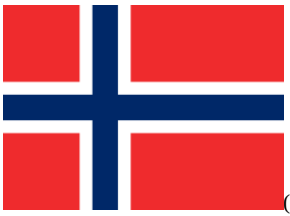
QUESTION 5:

The Baltic Sea Project is an international network among schools for a better environment in the Baltic catchment area. Today, almost 180 schools are active in the BSP. Most are secondary schools situated on the Baltic coast, but the number of inland schools from the entire catchment area is increasing. In which of these countries were the project founded? Choose the correct flag representing the right country.

a)  (CC0, https://et.wikipedia.org/wiki/Island#/media/Fail:Flag_of_Iceland.svg)

b)  (CC0, https://et.wikipedia.org/wiki/Shetlandi_saared#/media/Fail:Flag_of_Shetland.svg)

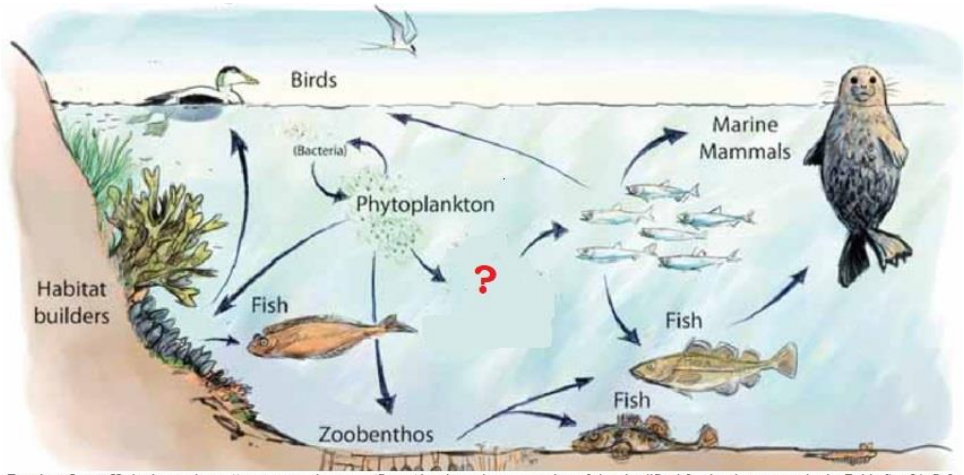
c)  (CC0, https://en.wikipedia.org/wiki/Finland#/media/File:Flag_of_Finland.svg)

d)  (https://commons.wikimedia.org/w/index.php?curid=388300)

Reference: http://www.b-s-p.org/home/

QUESTION 6:

Species are dependent on each other in the food web. Changes in one species will impact others via effects on food availability or competition. Since all species are dependent on each other and connected in the ecosystem, then decide which food web elements are missing from this picture?



Drawing: Jesper H. Andersen, https://www.researchgate.net/figure/A-schematic-presentation-of-the-simplifi-ed-food-web-structure-in-the-Baltic-Sea-24_fig2_280933291

a) molluscs
b) microalgae
c) zooplankton

Reference:https://www.researchgate.net/publication/280933291_HELCOM_2010_Ecosystem_Health_of_the_Baltic_Sea_HELCOM_Initial_Holistic_Assessment_2003-2007_Baltic_Sea_Environmental_Proceedings_122_Helsinki_Commission_63_pp

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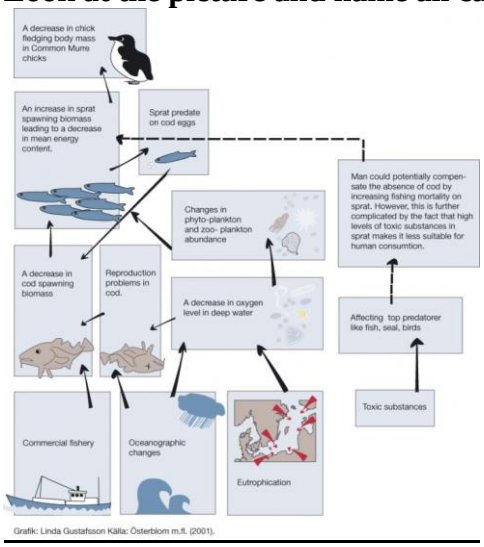
QUESTION 7:

Look at the picture and name all causes of eutrophication.



a) Reproduction problems in cod
b) A decrease in oxygen level in deep water
c) Changes in phyto- and zooplankton abundance
d) A decrease in chick fledging body mass in Common Murre chicks

Reference: https://www.regimeshifts.org/item/85-baltic-sea-pelagic-food-web

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QUESTION 8:

Marine litter has changed to a growing problem in the last years and pays more and more attention to acting. It is not only an aesthetic problem, but there are impacts on the marine environment and living organisms. Litter adversely affects species either by entanglement or other types of injury, mortality, or health effects. Microlitter tiny particles are also of big concern as can be consumed by marine inhabitants. Ingested micropollutants can cause damages to the health and life of marine organisms. Moreover, they can provide transportation of harmful chemicals into the whole food web. Microlitter is considered to be very small particles, approximately up to 5 mm in diameter. Nevertheless, marine birds cannot digest those and can starve with a full stomach of plastic.

Open the bird anatomy virtual laboratory "All about bird anatomy": https://academy.allaboutbirds.org/features/birdanatomy/ Find out how is this digestive part called that is highlithed on the picture.

a) Crop
b) Esophagus
c) Gizzard
d) Pancreas
e) Proventriculus

Reference: https://academy.allaboutbirds.org/features/birdanatomy/

Category: 17-19 years old students

QUESTION 1:

The Baltic Sea's salinity is much lower than that of ocean water (which averages 3.5%), as a result of abundant freshwater runoff from the surrounding land (rivers, streams and alike), combined with the shallowness of the sea itself; runoff contributes roughly one-fortieth its total volume per year, as the volume of the basin is about 21,000 km^3 and yearly runoff is about 500 km^3. Which country has the biggest number of rivers flowing to the Baltic Sea? Choose one.

a) Norway
b) Russia
c) Denmark
d) Sweden

Reference: https://en.wikipedia.org/wiki/Baltic_Sea; https://en.wikipedia.org/wiki/List_of_rivers_of_the_Baltic_Sea

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QUESTION 2:

The Baltic Sea is no longer the major highway of trade that it was in the middle Ages, when it flourished as the main means of communication between the ports (Lübeck, Rostock, Visby, and Gdansk) of the Hanseatic League. The German Hansa merchants traded mainly in fish, notably salted stock fish and.... (?) Choose one correct answer.

a) salted viviparous eelpout
b) salted herring
c) salted common seasnail
d) salted three-spined stickleback

Reference: https://www.britannica.com/place/Baltic-Sea/Coastal-features

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QUESTION 3:

Without safe drinking water, adequate sanitation and hygiene facilities at home and in places of work and education, it is disproportionately harder for women and girls to lead safe, productive, healthy lives. What are the challenges that women and girls around the world face due to limited access to sufficient water supply and improved sanitation facilities?

a. Collecting water and bringing it home is responsibility of mainly girls and women in developing countries
b. Girls and women in some countries are restricted from going to the bathroom during daylight which leads to risk of harassment and assault during night-time
c. The lack of private sanitation facilities at school and workplace force girls and women to miss school and work during menstruation
d. Access to safe water is critical to the health of women and their babies during pregnancy and after

Reference: https://www.unicef.org/wash/index_womenandgirls.html; https://www.unwater.org/water-facts/gender/

QUESTION 4:

It was commonplace that astronomers conducted weather observations during the 1700s, and when an astronomical observatory was constructed in Stockholm in the fall of 1753, one started carrying out daily weather observations there. Stockholm most likely holds the world's longest continuous record of air temperature, and although there are places like Uppsala where one started earlier, the locations of the observations have been changing. In Stockholm however, the observations have always been carried out from the same geographical location, and that is unique. The measured temperatures are on average about 2.3 °C to 2.5 °C warmer after the year 2000 compared to the average before 1900. About 0.8 °C of this warming comes from the local effect of the growing city, while most of the warming is due to the regional climate change over southeastern Sweden. Which year's winter in Stockholm is the warmest one on record since daily weather observations began in 1756?

a) 1798
b) 1811
c) 1989
d) 2020

Reference: https://bolin.geo.su.se/polopoly_fs/1.487792.1583135992!/menu/standard/file/Warmest-winter-in-Stockholm-on-record.pdf

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QUESTION 5:

If a family of four eats fried Baltic herring steaks once a month, how much phosphorus is removed from the Baltic Sea in a year?

A traditional Baltic herring steak consists of two Baltic herrings and it is assumed that each person eats two steaks. On average, one Baltic herring weighs around 75 g.

1 g phosphorus = 1 kg algae
1 kg Baltic herring = 4 g phosphorus
1 kg bream = 7 g phosphorus

a) 27.6 g
b) 37.6 g
c) 47.6 g
d) 57.6 g

Reference: https://www.turku.fi/sites/default/files/atoms/files/lahikala_kampanja1_kaannettavaksi-engb2.pdf

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QUESTION 6:

Which of the following statements is incorrect?

a. Omega-3 fatty acids are necessary to the body. The human body cannot make them on its own and must get them from food.

b. There are three types of Omega-3 fatty acids (ALA, EPA, DHA), of which EPA and DHA are most prevalent in Finnish mushrooms.

c. Omega fatty acids are soft, unsaturated fats that always have one or more double bonds. Hard, saturated Trans fats have no double bonds, which is why they have no omega number.

Reference: https://www.turku.fi/sites/default/files/atoms/files/lahikala_kampanja1_kaannettavaksi-engb2.pdf

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QUESTION 7:

In agriculture, gypsum is spread onto fields to reduce the phosphorus load that ends up in the Baltic Sea. What chemical bonds are present in gypsum?

(Photo: Didier Descouens, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=8533057)

a) hydrogen bond
b) covalent bond
c) polar covalent bond
d) ionic bond

Reference: https://www.turku.fi/sites/default/files/atoms/files/lahikala_kampanja1_kaannettavaksi-engb2.pdf

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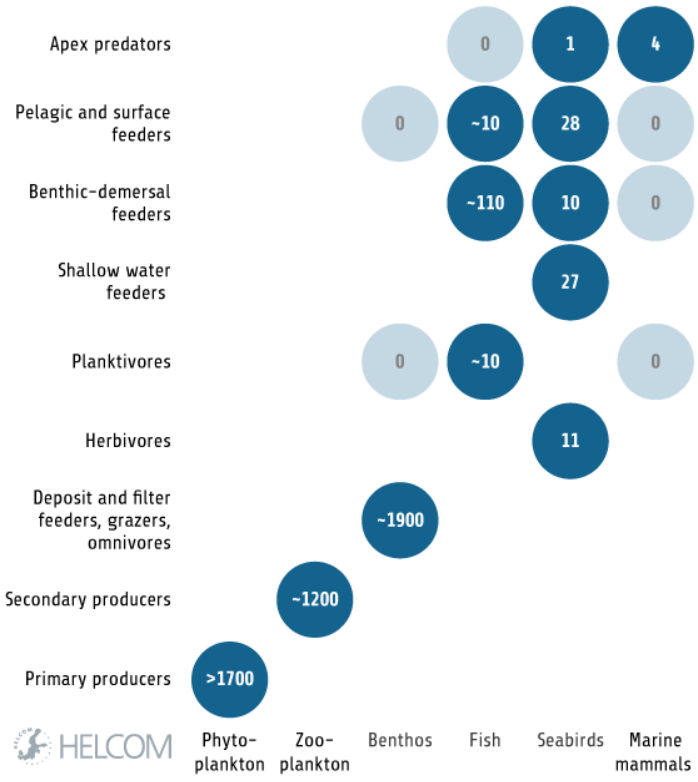
QUESTION 8:

Look at the picture. HELCOM core indicators are operational to address ecosystem components in all dark blue fields, to different levels of extent depending on the development status of the regionally agreed indicators. Light blue fields indicate species groups which do not occur in the Baltic Sea, although they are typical to marine waters in general. The numbers are shown in relation to functional groups on the vertical axis and by taxonomy on the horizontal axis. What are the numbers in this graph showing?



a) How old the species will live.

b) Estimated numbers of species in the Baltic Sea.
c) How deep in the Baltic Sea the species is living.
d) How much of the individuals are in danger.

Reference: http://stateofthebalticsea.helcom.fi/biodiversity-and-its-status/

QUESTION 9:

Marine primary production, in the form of phytoplankton and marine plants, is the foundation for the supporting and interacting ecosystem services of diversity, food web dynamics and habitat. Together they give rise to the various goods and services of direct benefit to humans. Ecosystem services are defined as the functions and processes through which ecosystems, and the species that they support, sustain and fulfil human life. Healthy ecosystems perform a multitude of essential functions.
In the marine environment, the most readily understood services include those that are labelled goods or provisioning services, meaning resources used by humans, originating in the sea. Other categories are: regulating services, cultural services and supporting services. Which of the following are regulating services?

a) Mitigation of eutrophication
b) Space and waterways
c) Sediment retention
d) Food web dynamics
e) Recreation

Reference: https://www.naturvardsverket.se/Documents/publikationer/978-91-620-5873-9.pdf

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QUESTION 10:

Non-indigenous species (NIS) or foreign species are organisms that are not native/alien to a particular area. Non-indigenous species are mainly spread by human activities, often unintentionally. People and goods we use, travel around the whole world now, and they often can carry uninvited species with them. The main pathways of the introduction of marine non-indigenous species to European seas are shipping and corridor pathways (eg inland canals), followed by an unintentional movement of live organisms as contaminants and escapes from aquaria, aquaculture and mariculture.

It is considered that all non-native species have a big impact on the native ecosystem. Nevertheless, not all NIS are invasive, and mainly invasive species with aggressive behavior are capable of causing extinctions of native plants and animals, reducing biodiversity, competing with native organisms for limited resources, and altering habitats. Unfortunately, it is hard to assume which non-indigenous organism has the potential to affect a particular area. Therefore regular monitoring is needed to discover the occurrence and distribution of both already present and newly discovered non-native species.
During the last monitoring year 2019, a new alien species was discovered in Estonian coastal waters: *Mytilopsis leucophaeata* - small mussel-like bivalve, which belongs to the family Dreissenidae. It could be found in fresh, brackish, and marine waters and originates from the east coast of North America, the Chesapeake Bay to Veracruz, Mexico.

How big is the probability that Mytilopsis leucophaeata will become an invasive species for the Baltic sea?

a) The general rule says that of all NIS, which are released into new ecosystems, about 10% survive and about 10% of survivors become invasive.

b) Almost all non-native species will assimilate fast to the new environment and become invasive for the local species and habitats.

c) The general rule says that of all NIS, which are released into new ecosystems, about 10% survive and become invasive.

Reference: https://www.keskkonnaamet.ee/en/activities/nature-conservation/introduced-species

The Baltic Sea Project of UNESCO ASP schools is an international network among schools for a better environment in the Baltic catchment area. The countries bordering on the Baltic share many environmental problems, starting with the pollution of the Baltic Sea. In attempting to solve the environmental problems, education is one of the key factors. The Baltic Sea Project (BSP) has therefore initiated cooperation among schools in all the countries around the Baltic.

Today, over 180 schools are active in the BSP. Most are secondary schools situated on the Baltic coast, but the number of inland schools from the entire catchment area is increasing. In many schools, the BSP is organized as a joint effort including many subjects and teachers working together.

Objectives

- To increase the awareness of the students about the environmental problems in the Baltic Sea area and to give them an understanding of the scientific, social and cultural aspects of the interdependence between man and nature.
- To develop the ability of the students to study changes in the environment.
- To encourage students to participate in developing a sustainable future.

Practical measures

- To set up a network of schools and other educational institutions.
- To create and develop educational approaches and joint programs for environmental and international education.
- To organize joint activities and events.
- To publish the BSP newsletter and other relevant information.

Educational approach

- To achieve a balance between a holistic view and individual subject studies.
- To change the role of the student from passive recipient to active constructor.
- To change the role of the teacher from supervisor to guide in a learning process.
- To use networks to provide participants with opportunities to learn and pass along new ideas.
- To use international cooperation as an inherent element of school work.

Your school is welcome to join! Contact your county's national coordinator.

Our blog:
https://unesco-bsp.blogspot.com/

Our Facebook page:
https://www.facebook.com/unesco.bsp/

The Baltic Sea Project's historical homepage:
http://www.b-s-p.org/home/