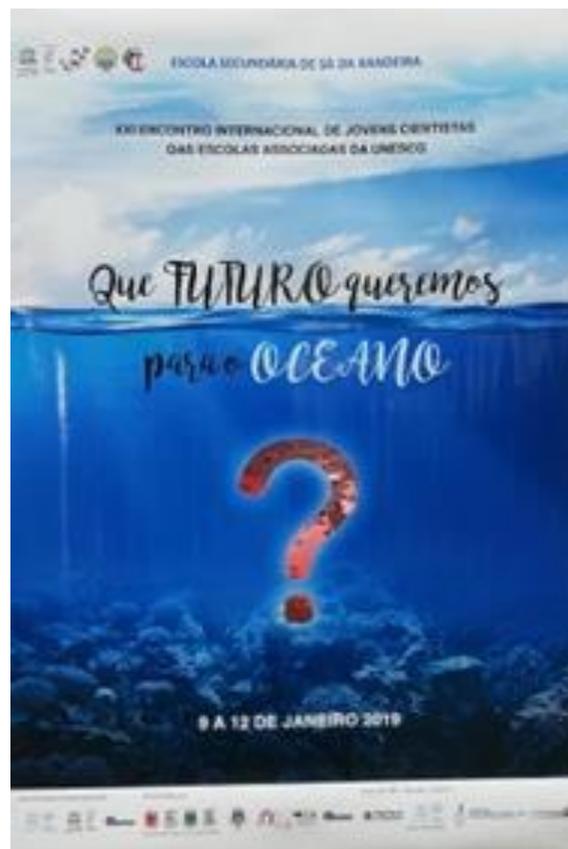


XXI Encontro Internacional de Jovens Cientistas das Escolas Associadas da UNESCO

21st International Meeting of Young Scientists of UNESCO Associated Schools

WHAT KIND OF OCEANS DO WE WANT FOR THE FUTURE?

QUE OCEANOS QUEREMOS NO FUTURO?



9-12 JANUARY 2019

PROGRAMME /SCHEDULE

JAN9 - Wednesday

- 10.00 - Reception
11.00 - Opening session
Intervention of the Conservatory of Music of Santarém
Visits:
- Exhibitions:
 - Library: "The sea in literature - from antiquity to actuality, from erudition to pollution"
 - Library Atrium:
 - communication posters
 - participants' works: "The colours of the ocean in the four seasons"
 - Fair - Library Atrium: organic farming and handicraft products
- 13.00 - Lunch - ESSB
14.30 - Auditorium - Colloquium:
 - "The sea is the largest museum in the world - know and preserve the underwater cultural heritage"
Doctor Fátima Claudino - CNU
- 15.15 - Group Photography and visit to the Historic Centre of Santarém
18.30 - Recreational and cultural activity
20.00 - Dinner - ESSB
21.30 - Concert offered by the Conservatory of Music of Santarém

JAN10 - Thursday

- 9.00 - Presentation of communications - Block A
Break
Discussion of Block A communications - Working in small groups
- 13.00 - Lunch - ESSB
14.30 - Presentation of communications - Block B
Break
Discussion of Block B communications - Working in small groups
General conclusions - Working in small groups
Presentation and discussion of the general conclusions - Plenary session
- 20.00 - Dinner - ESSB
21.00 - Cultural activities by participants

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JAN11 - Friday

Study Visit - Lisbon

- 10.30 - Lisbon Oceanarium
13.00 - Lunch - Location to be defined
15.00 - Jerónimos Monastery - guided tour
16.15 - Belem Tower
20.00 - Dinner - CAR Fonte Boa
21.00 - Cultural activities by participants

JAN12 - Saturday

9.30 - General conclusions of the Meeting

Evaluation

Presentation of the 21st International Meeting of Young Scientists of the UNESCO Associated Schools whose theme will be in the context of the United Nations Decade for Deserts and Struggle against Desertification (2010-2020)

Delivery of certificates of participation

Closing session

11.30 - Departure of a bus to the Railway Station of Santarém

Co-organizers:



Comissão Nacional da UNESCO - Portugal
Portuguese National Commission for UNESCO



ESCOLA SECUNDÁRIA DE SÁ DA BANDEIRA



Sponsors:



Conservatório de Música
de Santarém

Scientific/cultural support:



Comissão Nacional da UNESCO - Portugal
Portuguese National Commission for UNESCO



Emília Costa
Salvador Barbosa da Cunha e
Costa

Doutora Fátima Claudino

PARTICIPATING SCHOOLS

Participating schools:

Colégio Guilherme Dumont Villares - Brazil

Colegio los Abetos - Spain

Colégio Magno - Brazil

Escola Andorrana de Santa Coloma - Andorra

Escola Secundária Aurélia de Sousa - Portugal

Escola Secundária de Aquilino Ribeiro - Portugal

Escola Secundária de Sá da Bandeira - Portugal

Escola Secundária Dr. Bernardino Machado - Portugal

Hudson High School - USA

Instituto de Educación Secundaria Luis Seoane - Spain

Instituto de Educación Secundaria Pazo da Mercé - Spain

International School of Turin - Italy

Naturwissenschaftliches Technikun Dr. Kunkele - Germany

Newton South High School - USA

Non Presence Schools:

Escola Secundária Básica de Desejada - São Tomé and Príncipe

Instituto Médio Politécnico Alda Lara – Angola

Colégio Afonso Pena - Brazil

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10.00 - Reception

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Intervention of the Conservatory of Music of Santarém

Visits:

- Exhibitions:
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Opening session

CNU: Dra Fátima Claudino

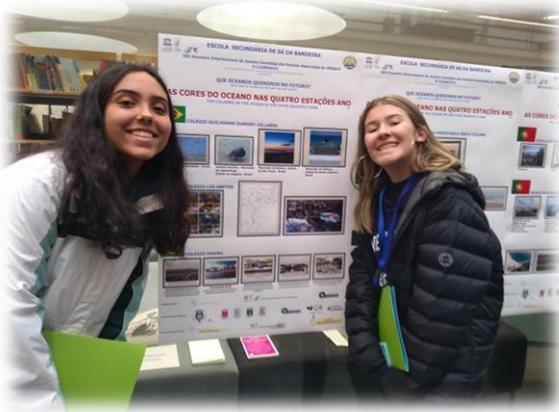
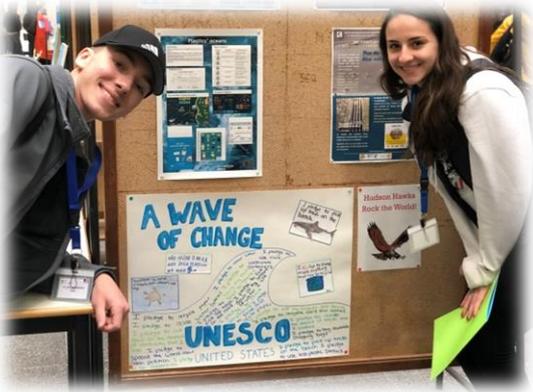
Town Council: Dra. Inês Barroso

ESSB/Host school: Dra Adélia Esteves **



Performance with the Portuguese guitar

Exhibitions



Exhibitions





Lecture:

- *"The sea is the largest museum in the world - know and preserve the underwater cultural heritage."*

Doctor Fátima Claudino - CNU



Group Photography

Visit to the Historic Centre of Santarém
Guided visit with Dra. Celeste Gregório Lopes

PELO TEJO VAI-SE PARA O MUNDO

O Tejo é mais belo que o rio que corre pela minha aldeia,
 Mas o Tejo não é mais belo que o rio que corre pela minha aldeia
 Porque o Tejo não é o rio que corre pela minha aldeia.

O Tejo tem grandes navios
 E navega nele ainda,
 Para aqueles que veem em tudo o que lá não está,
 A memória das naus.

O Tejo desce de Espanha
 O Tejo entra no mar em Portugal.

Toda a gente sabe isso.
 (...) *Pelo Tejo vai-se para o Mundo.*
 (...)

Alberto Caeiro
"O Guardador de Rebanhos - Poema XX"




Pelo Tejo vai-se para o mundo.

Escola Secundária de Sá da Bandeira



**Em Santarém,
 por mares
 quase ignorados**

XXI Encontro Internacional de Jovens Cientistas de Escolas Associadas da UNESCO



9 de janeiro de 2017

Vestígios de oceanos em Santarém — navegar pelos mares ignorados da cidade.




Portuguese traditional games



Concert by Conservatory of Music from Santarém



Programa	
Concerto em ré menor: Adagio e Presto	A. Marcello
Rodrigo Gonçalves, Oboé Prof. André Piolanti, Piano	
Marcha turca	Mozart
Trio de Saxofones: Daniel Ferreira, João Ferreira e Rafaela Amorim	
Andante et Scherzo	L. Ganne
João Carreira, Flauta Transversal Prof. André Piolanti, Piano	
Seufzer, Thränen, Kummer, Noth	J. S. Bach
Joana Fernandes, Soprano Prof. André Piolanti, Piano	
In diesen heil'gen Hallen	Mozart
Rodrigo Calais, Baixo Prof. André Piolanti, Piano	
Après un rêve	Gabriel Fauré
Prof. André Serra, Viola de Arco Prof. André Piolanti, piano	
Quarter tone waltz	Gordan Tudor
Prof.ª Diana da Rama, Saxofone	
Andante et Rondo	F. Doppler
João Carreira, Flauta Transversal Prof.ª Joana Fernandes, Flauta Transversal Prof. André Piolanti, Piano	
<i>Fim</i>	



**Welcome Speech by Dra. Adélia Esteves, Headmistress of
Agrupamento de Escolas Sá da Bandeira ****

Good morning to you all:

- Representative of the UNESCO'S National Committee and National Coordinator of the Associated Schools' network – Dr. Fátima Claudino
- Educational Council Executive representing the Mayor of Santarém – Dr. Inês Barroso
- President of the Local Parish Union – Mr. Carlos Marçal
- Headmaster of the Santarém Music Academy – Dr. Maria Beatriz Martinho
- Vice President of the Local Parish Union – Mr. Abílio Ribeiro
- Pedagogical Headteacher of the Santarém Music Academy – Dr. Sónia Tomás
- President of the Advisory School Board of Sá da Bandeira School Cluster and President of the Parents' Association of Sá da Bandeira Secondary School – Mr. Júlio Rodrigues
- UNESCO'S Project Coordinator of the 21st Meeting and other members of the organizing team

Dear Guests, Dear Colleagues, dear Students

I hereby begin by welcoming you all and wishing you an amazing 2019 filled with professional, academic and personal success.

The 21st International Meeting of Young Scientists of the UNESCO Associated Schools entitled “What kind of oceans do we want for the future?” represents new and significant challenges.

In 2019, we both celebrate 25 years of UNESCO'S Associated School and 175 years of the institution. The decision for this celebration's motto “175 Years of Future” confirms that, for us, the age of the institution justifies a great responsibility, commitment and effort in the building of the future which we would like to be coherent and sustainable.

The fact that this is the 21st Meeting is, certainly, for all of us, organizers and participants, an important landmark that shows undoubtedly the commitment, perseverance and professionalism of all those who over the years have gone through this direction.

Therefore, I thank all of those who have once again made all the efforts so that one more Meeting could be possible.

I am chiefly grateful to my dearest colleague, Dr. José Barrão, who since the first Meeting has participated in its organization and also to the colleagues Natividade Gomes and Marina Santos who accepted the challenge of collaborating, for the first time, in the organization of this event. I would also like to thank the colleague Celeste Lopes for her indispensable contribution and finally the President of the Parents' Association of Sá da Bandeira Secondary School, Mr. Júlio Rodrigues, for his leading role in the success of this event. **Thank you all!**

The suggested theme for this Meeting entitled "***What kind of oceans do we want for the future?***" should cause a careful reflection concerning the respect for nature and the environment. Moreover, it should make us aware of the urgency of our commitment in the protection of the natural patrimony and the imperative need of being more active concerning the existing reality.

Indeed, if we all recognize that the pollution of the oceans is nowadays an urgent problem; however, 20 years ago with EXPO 98 (1998 Lisbon World Exposition) the theme was already "***The Oceans, a Heritage for the Future***" which proved an obvious concern. Actually, if we don't act, it may increase into an unsolvable trouble.

Considering the planet Earth is different from all the other planets due to the oceans which cover more than two-thirds of its surface area, one can easily understand their infinite value for our planet. This way, one can conclude that the future of the humankind is inseparable from the planet's health.

Nevertheless, the reality we face today is that the oceans – invaluable resource which feeds us, stabilizes the climate, provides endless benefits - are ill.

Unfortunately, the waste that accumulates in the oceans are a serious threat; 20% or 30% of this waste is the result of activities at sea, such as fishing, shipping, oil or gas offshore production, dumping...; about 70% of the waste is plastic litter which is not recyclable.

The sea coast, the beaches, the rivers, the oceans have been transformed into landfills of millions of tons of waste.

Quoting the United Nations (2014), the marine litter constitutes "a symptom of our *use and throw away* society shows the way we approach our natural resources."

By the way, it should be pointed out that 8 millions of plastic litter end up in the oceans so the European Union just voted to ban single-use plastics by 2021.

In addition to this, one should not forget to mention Sylvia Earle, an 82-year-old American explorer, a National Geographic explorer-in-residence since 1998, the first female chief scientist of the U.S. National Oceanic and Atmospheric Administration. She has dedicated her life to protecting the ocean and its wildlife. She says *one should take care of the oceans as if our lives depended on them*.

To finish with, I hope that after thinking deeply about this threat to the oceans and the quality of life of all living beings that cohabit on the planet Earth you can contribute to the sustainable future of the oceans, motivated by a sense of belonging to this common habitat.

Thank you all for having accepted the challenge of this Meeting!

JAN10 - Thursday

- 9.00 - Presentation of communications - Block A
- Break
- Discussion of Block A communications - Working in small groups
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Outline of the communications from all the participating schools

COLEGIO LOS ABETOS

Elena Conde and Sara de la Riva

TAKING CARE OF THE OCEANS: IS EVERYONE'S RESPONSIBILITY

Oceans cover three quarters of the Earth's surface, they hold about 97 per cent of all Earth's water and they represent 99 per cent of the worldwide living area. Moreover, oceans carry out a great variety of functions allowing the existence of every single specie in our planet, including human beings.

In the first place, oceans regulate the planet climate, since they absorb the excess heat from the atmosphere redistributing it through oceans' currents, and they even regulate the climate change's effects exchanging gas with the atmosphere. In addition, oceans are the main oxygen supplier while they absorb carbon dioxide. According to a United Nations (UN) report, every year oceans absorb nearly 25 per cent of the carbon dioxide transferred to the atmosphere by humans reducing the impact of the greenhouse effect.

On the other hand, oceans represents a great amount of natural resources, from biological and fishing ones, to mineral, oil and energetic ones. More than three thousand million people depend on the sea biodiversity.

From a socio-economical point of view, oceans are also important as they contribute to the wealth and development of the economic activities around the world. It is estimated that the value of the sea resources and its industry corresponds to the 5 per cent of the world GDP (Gross Domestic Product).

However, despite the invaluable importance of the oceans, they are constantly threatened by pollution. Related to that, plastic is gaining importance as a material which is overrunning our daily life thanks to its characteristics (flexibility, durability and lightness among others) and its lower price.

Plastic production has gone through the roof in the last few decades and it is estimated that in 2020 plastic would exceed 500 million tons per year. This would mean 900 per cent more than 1980 levels.

The same as its production, plastic waste is rapidly increasing. Just 9 per cent of the manufactured plastic is recycled. As a consequence, 8 million tons of the plastics end up into the seas and oceans every year. According to the United Nations, public opinion needs to embrace the horrible consequences that our activities are carrying out in seas and oceans. To do so, every 8th of June the World Oceans Day is celebrated. In 2018, under the slogan 'Let us clean our oceans', the celebration was focused on initiatives to warn plastic pollution and to suggest solutions to keep oceans clean. The secretary-general of the United Nations recalled that 'we all should make an effort to stop this foreseen tragedy and try to reduce significantly all kinds of sea pollution, and particularly plastic one'.

In June, 2007 the first Conference about Oceans was held. It was the first conference with this topic held in the NU. It was an important chance for the world to see the declining health of seas and oceans. The conference was also good to foster the objective number 14, part of the Agenda 2030 adopted by the 193 members in 2015. This objective makes a call to preserve and to use in a sustainable way oceans, seas and sea resources.

Los Abetos is a school located in the centre of the Iberian Peninsula, concretely in Manzanares el Real, a village near Madrid. We do not have direct access to the sea, however, we feel that the oceans' pollution is a global problem and everyone should be involved.

Our school is located in a National Park in the Guadarrama mountains. It is the second most visited park in Spain and it is close to the spring of the Manzanares River. Since rivers flow into the sea, we believe that if we take care them we are also taking care of oceans. This is why we have chosen to help with our rivers' health, because it is the most direct way to help oceans too.

In the last few years, many initiatives related to the conservation of the Manzanares River's surroundings have been held. Some of them are: prohibition of swimming in some areas of the river (since 2016) or a campaign run by the Comunidad de Madrid "Don't bring plastic if you go to the countryside" (in 2018).

From Los Abetos we have joined other UNESCO schools and we are carrying out a project called 'Desplastificate' (Stop using plastics). The main goal of this project is to make students aware of good practises and uses of plastic. To do so, different projects are being developed among the whole school community. All of these projects foster alternative to the use of plastic. One of the actions within this project is the cleaning of the left plastics in the surroundings of the river the 5th of every month. We think, as we said before, that cleaning the river we are stopping this plastic to flow into the ocean.



COLÉGIO MAGNO

Ana Beatriz Pinheiros Costa and Giovanna Cavassa Hayashi

THE NEED TO UNDERSTAND LITTER IN COMMUNITY LIVES AND ITS IMPACT ON THE MARINE ENVIRONMENT

Taking as a reference the Light Report of the Civil Society Working Group for 2030 Agenda (GTSC A2030), the direct relationship between the historical Brazilian political, economic and social crisis and the country's delay in fulfilling the SDGs is irrefutable. It is important to note the paramount importance of the conditions, not only of sustainable development, but also of marginalized communities, considering that both social and ecological issues are simultaneously being ignored or neglected by government policies. Although there are several coastal communities in Brazil, we had to make a cut, paying special attention to Estuário Santos-São Vicente (Santos-São Vicente Estuary), in the Região Metropolitana da Baixada Santista (Baixada Santista Metropolitan Region), in the state of São Paulo. Although it is an APP (which means a Permanent Protection Area) of mangrove swamps, both the ecosystem and the community itself have been compromised. This area is the subject of research by the Institute of Oceanography (IO) of the University of São Paulo (USP), which involves doctor Márcia Regina Denadai and professors Joseph Harari and Alexander Turra, as well as social projects and researches by the professors Barbara Lage Ignacio and Ronaldo Christofolletti, from the Federal University of São Paulo (Unifesp). The contact with such professionals led, in particular, to the recognition of the attention that must be paid to the liberation of garbage - mainly domestic and industrial - in the coastal areas, also showing a striking contrast of the economic and social realities sustained by politics, who disadvantage sustainable development. According to Federal Law No. 12,305 / 2010, officially known as the National Solid Waste Policy, the term that best classifies the predominant type of waste in the seas is "solid waste", since it is any material or solid, or semi-solid substance from human activities. The same law, in its article 6, paragraph VII, emphasizes "the recognition of solid waste reusable and recyclable as an economic good and of social value, generator of work and income and promoter of citizenship", and in this sense some solutions can be developed, not excluding the main factors, which in our view are the local communities. While on the one hand solid waste disposal in the seas (95% of garbage on Brazilian beaches is made up of plastic) is mainly due to industrial, commercial and domestic activities, on the other these quantities are also exponentially high because of the high industrial circulation and port activity. The macrocosm of the accumulation of industrial capital, in addition to the microcosm of lack of infrastructure and intense social marginalization, results in an intense physical, chemical and biological contamination of these areas, so that the adjacent communities, traditional or otherwise, are exposed to countless risks and threats. One consequence of these actions that deserves emphasis is the progressive reduction of traditional fishing and customs, as observed in the visit to the Caiçara community of Diana Island, in this cut made from the Baixada Santista.

It is essential to emphasize that most of the communities whose dwellings touch the coastal areas do not have basic sanitation, nor even social bodies that not only raise awareness, but also protect them in terms of infrastructure and health. Taking Diana Island as an example, the population still celebrates the garbage collection that began to be carried out in 2000, but at the same time they feel extremely marginalized by the fact that they do not receive the necessary support from the government agencies. It is worth mentioning that extremely poor

people, the majority of the population, live under conditions of great indignity and misery, marked by the reality of stilts, irregular constructions on water that end up creating absurd situations of vulnerability when talking about education, health, security, hygiene and sustainable development. At the moment, the necessary modification of this scabrous and degrading reality has been encouraged by socio-environmental projects, such as the Science Tide in Santos, developed by UNIFESP's Professor of Marine Sciences, Barbara Lage Ignácio, in collaboration with the British Council and the Arte no Dique Institute. In addition, another social reality studied in relation to the Baixada Santista is referred to a portion of society with a remarkably higher purchasing power, concentrated in the Seafront, a neighbourhood popularly known as Orla. However, due to industrial activity that is poorly controlled in terms of environmental damage in the surrounding or due to the existence of social and economic contrasts such as stilts, where any residue is dumped into the sea, the Orla suffers impact on both environmental and aesthetics aspects. The existence of one of the largest port areas of the globe in the same place adds up to the gigantic demand, in time and space to recover, minimize or adjust the damaging effects on the coastal ecosystem and population. Intensification of dredging (removal of sediments from the sea, for example, for better locomotion of vessels) also has influenced this environment negatively. Interferences such as those caused by solid waste reach social, biological and economic spheres, responsible for highlighting the extreme need for projects to control the dumping of waste in the seas and oceans. Thus, the social and economic distances of a society must be eliminated or minimized to the maximum, particularly by making the majority of the population feel less excluded without drastically changing their culture, way of life and customs. Awareness and inclusion projects, such as those presented here, are significant steps towards creating a less unjust society and a sustainable development of marine resources, as well as the application of other SDGs.



ESCOLA ANDORRANA SEGONA ENSENYANÇA SANTA COLOMA

Ainhoa López Naranjo and Vanessa Rocha Branco

KEEP THEM CLEAN!

The five oceans in planet Earth cover 71% of its surface. Each ocean is a host to different conditions and environments. Most people believe that human activity, the burning of fossil fuels and the release of greenhouse gases in the atmosphere, is the main cause of climate change. Thus, human beings are both the cause of climate change and also one of the species most affected by it. Approximately eight million tons of garbage—most of it being plastic—reach the seas and oceans every year. Many of these plastics items are of single use and unfortunately, much of them end up in the oceans. Therefore, the future of our oceans will be determined by the way we handle plastics on land. Studies have been conducted about micro-plastic —small plastic particles caused by the degradation of plastic in nature— and its effect on animal life and humans. Sadly, the amount of plastic in the world, and the oceans, is massive. This is reflected by large garbage patches that can be found all around the oceans, some of them as big as the state of Texas. There are measures that are already in place to reduce and eliminate plastic in the oceans. Organizations and governments are implementing different measures and regulations to combat the current plastic crisis. As a small, landlocked nation, we can prevent plastic from ending up in the oceans by recycling and spreading awareness about recycling to the people. In fact, there are already measures we take in order to recycle, such as a strict code of recycling that is already in place in our school, called a “green school.”

Water covers 71% of planet Earth and we can find it in its 5 oceans. The Pacific Ocean is the largest ocean covering more than 30% of the Earth. It touches the west coast of America along with east Asia and Australia. The Atlantic Ocean is situated between the Americas and European/African continents. It is the second largest and saltiest ocean in the world. The Indian Ocean is the third largest ocean and contains 20% of water on Earth’s surface. It borders India at the North, East Africa, Australia and the Southern Ocean. Because of its high temperature, it has limited marine life. The Southern Ocean is found in the Antarctic region. In terms of size, it’s the fourth largest and has a severe climate. Finally, the Arctic Ocean is the world’s smallest and shallowest of all 5.

It is the coldest and least salty ocean. It is about the size of Russia. It is located at the North Pole, so it has polar ice. However, over the years, much of it has been melting.

Scientists see clear evidence that our planet has been getting warmer really quickly. As a result of this warming trend, the glaciers have been melting, the distribution of the ice has changed, and the temperature both of the oceans and the Earth has increased. Most believe that human activity (the burning of fossil fuels and the greenhouse gases in the atmosphere) is the main cause of this climate change. Therefore, human beings must be responsible for their actions as they can destroy the sea life. The whole world can be affected by pollution. If we don’t take care of the planet and don’t recycle properly, we won’t be able to breathe clean air or eat food that is not contaminated.

Approximately eight million tons of garbage a year reach the seas and oceans. Much of the plastic you touch in your daily life is only used once and thrown away. Unfortunately, much of this plastic ends up in the ocean, but the future of plastic in our ocean will be determined by the way we handle plastic on land. Until recently, most research into ocean plastic sources came from beach cleanups; as a result, the most common objects found were items that humans use near beaches, like cigarettes, straws and cups. Plastic has been found in more than 60% of all seabirds and in 100% of sea turtles species, that mistake plastic for food. And when animals ingest plastic, it can cause life threatening problems.

The situation is so serious and severe that some news show us the danger that we suffer caused by this pollution and amount of plastic. For instance, the FAO (Food and Agriculture Organization) published a report about the presence of micro-plastics in the seas and oceans. In fact, 1 million birds and 100.000 marine

mammals die every year and it is estimated that the 80% of this pollution is provoked by human activity. Apart from the damage caused in other species, a pilot study shows that micro-plastic has already reached the human intestine in several countries like the United Kingdom, Italy, Russia and Japan, among others. This pollution is not something new; on November 13th 2002 the Prestige oil spill was the worst and largest environmental disaster in the history of both Spain and Portugal. The black tide caused by the ship covered the coasts with oil and left damage valued in billions of euros and a lot of fish and birds died.

Sadly, the amount of plastic used in the world is enormous. The Great Pacific Garbage Patch is an evidence of this accumulation of ocean plastic. In fact, it is the largest in the world and is located in the centre of the North Pacific Ocean. It covers an estimated surface of 1,6 million square kilometers, an area twice the size of Texas or three times the size of France. At the time of sampling there were more than 1,8 trillion pieces of plastic in the patch that weighed approximately 80,000 tonnes. It is not easy to see the patch from the sky because it is a big area and sometimes satellites can't detect it. There are many "garbage patches" and these natural gathering points appear where rotating currents and winds converge.

If we don't propose solutions, life on Earth could be seriously threatened. There are many solutions that we could offer; we only need to be aware of how much damage we cause, take responsibility and act. In some countries recycling has a big importance and is present in society: plastic bags cannot be sold and you get a refund returning a plastic or glass bottle. If we recycle, plastic and glass can be reused and we can give it second life (purses, wallets, roofs, glasses...). In fact, the aim of many organizations is to make people aware of the importance of preserving nature. For instance, 4Ocean's goal is to clean the oceans. This organization was created by two men who decided to pay people to go with their fishing-ships to recollect plastic and trash left in the water. What is more, they make and sell bracelets with recycled materials. Currently they have a lot of people who clean the oceans seven days a week. In this way, we can offer jobs to a lot of people and, at the same time, we are saving the oceans and our planet. Many companies are already aware of this serious problem that we are facing. One example is IKEA. One of IKEA's goals is to be fossil fuel free by 2020. Another ambition is to leave no landfill. That means to avoid mixing materials and to maximize the potential for reuse and recycling.

As we can see, many enterprises are already acting. However, we, as a part of society, can also contribute to help the oceans, sea life and our own lives. We can do our bit to help in many ways: avoiding single-use plastic bags; looking at the ingredients in cosmetics and avoiding all products with micro-plastic; rejecting single-use containers and/or utensils like glasses, cutlery or straws; taking care of the beach, etc. Our country, Andorra, is a landlocked nation. It does not have access to the sea but we have mountains and we also need to take care of them. Our school is a "green school", we recycle and we have a great awareness of the environment. Sometimes, some students go to the mountains to collect trash to keep them clean. We should do the same but in costal places to reduce this contamination. "We do not inherit the Earth from our ancestors; we borrow it from our children".



ESCOLA SECUNDÁRIA DE AQUILINO RIBEIRO

Maria Braamcamp Sobral de Sousa Romano and Verónica Afonso da Fonseca

“BLUE WITH ASHES”

The ocean provides a diversity of services to the ecosystem as it retains carbon dioxide, it supplies much of the oxygen available on Earth through photosynthetic organisms, and it regulates the climate. It is a source of food, medicines, energy and natural resources.

However, it faces serious threats, including pollution, depletion of resources, destruction of habitats, environmental degradation, the disappearance of biodiversity and the introduction of exotic species.

What oceans do we want for the future?

We definitely want oceans to be clean, balanced, and environmentally protected.

It is known that human beings damage the ocean in different ways. Laws, regulations, and resource management influence what is taken from or deposit in the ocean. Human activity and development cause pollution and physical changes on the beach, coasts and rivers. In our project, we decided to address a form of pollution, the environmental problem caused by the butts that are dumped into the ground. In Portugal, about 7,000 butts per minute are discarded on the ground and the vast majority end up in the ocean. This debris is light and easily transported by wind and rain until it gets into the rainwater circuit, for example when it reaches the gutters. The rainwater coming from the gutters and carrying thousands of butts, is not treated and ends up in rivers, oceans or beaches.

"Think global, act local"

We must pay attention and be aware of what happens on a global scale, such as ocean pollution, but our action can and should be carried out locally. By acting correctly, we influence friends, neighbours, family. And this chain can increase endlessly. It was our goal to act locally. We have embraced this challenge to alert the educational community for the environmental impact of butts on the ground, in the outer space of school and on the beaches of the Municipality of Oeiras. 10th year Science and Technology class A has explored the theme and each group presented a final project:

"Butt bins" constructed with reused materials to be placed outside the school, in areas used for smoking; Stickers / posters / comic book storyboards to inform and raise the environmental awareness of citizens / elements of the educational community; Cleaning campaign for the beach of Paço d'Arcos, the closest to the school; Kahoot game for school classes for awareness and prevention; Sculpture of a wave of butts caught from the ground outside the school, representing the threat of humanity to the oceans; A film for social awareness of the damage butts can cause on the beach.

The message we would like to convey is that: We are all responsible for protecting the Ocean. It sustains life on Earth and Man has to live in order to contribute to that sustainability. Individual and collective actions are needed to secure the Ocean we want for the future.



ESCOLA SECUNDÁRIA DE AURÉLIA DE SOUSA

Catarina César Lacerda Leite Aires and Luísa Maria Araújo Florido6

COLORWAVES PLASTICPRINT CALCULATOR

The ocean was always a source of inspiration for poets, a wonderful cenário for photographers, a place to swim, to do sports and to have fun. Navigating across the ocean, nations meet, communicate, exchange products and obtain food.

Quercus, the Portuguese Association of Nature Conservation, underlines the top 10 problems that affect our oceans. On our communication we are going to focus on plastic waste, pollution and habitat destruction. All of them threaten marine biodiversity.

On the 8th of July we celebrate the World Oceans Day as a way of drawing people's attention to the need of a sustainable use of our oceans. We, young people, want to be an active part of this, and, with the help of the new technology, let the students of our schools know that each one of us can make a difference. Therefore, we created a Quiz (Plasticprint Calculator), with the goal of, through gamification, alert as most young people as possible for the need of preserving our oceans and ensure that the future generations will have the wonderful colors of our marine ecosystems back.

Below, we present our **Quiz: PLASTICPRINT CALCULATOR**

1. How many plastic bottles or tin cans do you throw away per month? (Opt: 0-2; 3-6; 7-12; 12+)
2. Which of these types of waste do you sort and/or compost? (Opt.: Food; Paper; Tin cans; Plastic; Glass)
3. How often do you use plastic straws?
(Opt.: Never; Rarely; Sometimes; Very often)
4. Do you take your own bag to the supermarket?
(Opt.: Yes, always; I try but sometimes I forget; I don't even think about it)
5. When I go shopping...
(Opt.: I bring my own bags; I don't ask for a bag unless I really need it; I don't care)
6. Which of these do you reuse?
(Opt.: Plastic bottles; Glass jars; Shoe boxes; Other(s))
7. Do you leave trash or cigarette butts at the beach? (Opt.: Often; Sometimes; Rarely; Never)
8. Did you ever volunteer for a clean-up?
(Opt.: Yes; No, but I plan to; No, but I've made donations for clean-up projects; Never)
9. Do you try not to throw unnecessary chemical products on the toilet, bathtub, washing machines, etc.? (Opt.: Yes, always; I guess; Not at all)

There are solutions that we already know and it is our duty as a citizen to put them on practice. It is urgent to reuse, reduce and recycle, specially, plastics, microfibers and microspheres, that remain in the oceans, without decomposing for centuries, harming living beings all across the ocean. The future of the oceans is a 21st century concern and there are many measures that are already in action.

For example, the clean-up system launched by the association The Ocean Cleanup on september of 2018. The system consists of a 600-meter-long floater that sits at the surface of the water and a tapered 3-meter-deep skirt attached below. The floater provides buoyancy to the system and prevents plastic from flowing over it, while the skirt stops debris from escaping underneath. Both the plastic and system are being carried by the current. However, wind and waves propel only the system, as the floater sits just above the water surface, while the plastic is primarily just beneath it. The system thus moves faster than the plastic, allowing the plastic to be captured. The goal is to remove half the Great Pacific Garbage patch in just five years, and at a low cost.

Another example is an investigation that's being made in the Aveiro University: Portuguese researchers found a species of fungus that is responsible for plastic degradation. *Zalerion maritimum* can be found in the portuguese and spanish shore, as well as in Australia and Malaysia. Data shows that, when it's isolated in an environment that simulates a polluted ocean with microplastics, the fungus can reduce about 77% of this material in 7 days. This can represent a quick and efficient ecologic solution for plastic pollution in the future. Despite of these optimistic results, the fungus is still under investigations.

Our oceans are in crisis, therefore we believe that we must all come together to help, not just our oceans to keep its diverse colors and its natural beauty, but also the living beings that call it their home.

"Individually, we are just a drop. Together we are an ocean." – Ryunosuke Akutagawa.



ESCOLA SECUNDÁRIA DE SÁ DA BANDEIRA

Maria Carolina Spínola Marques Tôco and Sofia Alexandra Rodrigues Barreiro

LET'S NOT TRANSFORM OUR HOME IN TRASH

For millions of years, a lot of different creatures have been living in our planet, from the smallest bacteria to the biggest and most majestic blue whale. But all of that biodiversity has to have come from somewhere and that somewhere is the ocean. The ocean, that takes up to 72% of land surface, is still one of the foundations for the existence of life.

However, as we know, the ocean is suffering terrible changes. Because of that, besides the average sea water level rising and its increased temperature, thousands of living beings are dieing and even becoming endangered species. All of this is happening because of human's activity, who, with their egoism and consumerism, are letting their own home be destroyed.

Effectively, the ocean is in such critical state, that it's recovery has become really hard. People have lots of harmful practices, just like plastic waste. In our hands, a plastic bag is used only for 15 minutes before it's left in the trash. Because of that, every year, more than 8 million tonnes of plastic end up at the bottom of the ocean. All of this because society didn't create the habit of recycling those bags and think it's easier to buy a new one the next time they go to the supermarket. Another act, that appears to be trivial to people who don't pay attention to this situation,

is the unnecessary use of plastic straws when we are having a drink. This object hasn't got a crucial function in the majority of cases. However, there's no cafe or restaurant we go to, where they don't give us a straw when we have a drink. But what a lot of people don't know is that those simple straws take 450 years to totally disintegrate. If we didn't use them at all, the impact on the ocean would be much smaller. In fact, if Humans keep wasting plastic this way, in 2050, there will be more plastic in the oceans than fishes and that's a really serious situation that needs to be stopped.

Because of those and other praxis that we didn't talk about, the ocean's "health" is in a very acute decline and so, several consequences are shown. It's impossible not to mention the destruction of the marine biodiversity and its fauna that, because of the pollution, is being seriously affected. A recent event, amongst so many others, was the one of a whale, found in Indonesia shore, that had in its stomach, about 1000 pieces of plastic. The matter of turtles is also a really famous one. These creatures, confusing plastic bags with jellyfishes (which are the basis of their diet), eat them and, most of the times, choke and die. It's also a common issue for fishes and other living beings to get stuck in trash, getting hurt or even die.

Evidently, this situation affects our lives, whether in a more or less direct way. Many marine landscapes get destroyed and become impossible to visit because of all the plastic. The beaches are also affected with the washed-up trash, not only adding to the last problem we mentioned, but also impacting tourism, since many countries are known for their beaches, that become degraded because of pollution. On top of it all, it's already usual for corpses to appear on shore, as we have sadly seen and heard about on news.

However, although it's really hard to recover the ocean's "health", we believe it is still possible. And for that to happen, there are many steps we can take concerning that subject. One that is already being applied in the European Union is monetary collection of plastic bags in stores. This idea aims to bring people to recycle those bags or use other ones made of different materials when they go to the supermarket, because, as we said before, there is the awful habit of trashing the bags after using them only once. As a consequence, more than 40% of all the plastic is used only one time before it's wasted.

Another measure, already applied in Norway and shown to be very efficient, is the setup of plastic collection stations in supermarkets' entrances. With this, people can buy a bottle of water, for example, and when it ends, they can leave the empty bottle in the recycling bin, getting a discount on the next bottle of water that they buy. With this project, Norway can recycle about 97% of their plastic bottles, which is a really positive number. Besides that, regarding the straws we mentioned before, something really good that could be done would be convincing people not to use them, since it's an unnecessary item. If cafes and restaurants still want to use them, they could simply use other materials instead of plastic, like metal for example. With that, they wouldn't need to buy new straws, only wash them and use them again. It's a way to save money and the ocean at the same time!

Summing up, with this project "Let's Not Transform Our Home In Trash", we want our planet, that is the ocean, since it plays such a big part in our survival, to be protected at all cost and, therefore, preserved for the future generations of all the creatures that here reside.



ESCOLA SECUNDÁRIA DE SÁ DA BANDEIRA

Ana Mafalda dos Santos Morão and Sara Isabel Ferreira Patrício da Silva

"MICROFIBRES" AND THEIR ENVIRONMENTAL IMPACT

During this presentation a brief allusion to everyday products containing microplastics will be done. We'll demonstrate how microfibers are released from clothing being washed in washing machines, then driven into rivers from where they will flow into the oceans; their clumping creates adverse environmental conditions for marine life and, by building up into foodwebs, destabilizes all ecosystems and, consequently, causes negative impacts on different aspects of human life. Two measures aimed at minimizing the impact previously referred will be addressed: the use of the Guppyfriend[®] bag and Cora Ball[®], two products that are marketed online and developed, respectively, by STOP! MICROWASTE and Rozalia Project. Finally some mention of the importance of the sea, in particular to Portugal economical and leisure activities, will be made in order to sensitize all participants to the aquatic microplastic problems.



HUDSON HIGH SCHOOL

Rachel Matisko and Tyler Simonenko

A WAVE OF CHANGE

As seniors this year at Hudson High School, we take pride in representing our school and our community at the upcoming UNESCO conference this January. This year's conference revolves around the theme of "oceans" and how we would like to see them in our future. Being two students who wish to pursue a career in marine science, we are especially passionate about this project and the idea of conserving our Earth. For our project, we hope to inspire the youth within our community and induce change in the small town of Hudson.

The team decided to face this year's topic using a two-pronged approach: education and action. The first step for our project encompasses reaching out to the younger generation of Hudson, helping them learn what pollution does to the ocean and how they can help. The second step of our project is a more direct route of change. We decided that we would like to reduce the amount of waste that our school systems produce, directing our focus on the usage of plastic straws. With these two ideas, we ultimately aim to spread awareness for our cause and contribute to the global efforts of saving our oceans.

To tackle the educational piece of our project, we visited all three elementary schools within Hudson and spoke to the entire fourth grade class (nine classrooms in total) about the dangers of plastics, how plastics can end up in our oceans and what each student could do to help reduce the amount of waste they produce. We chose fourth grade because they are the oldest grade in their school and we feel they can act as role models for the younger kids in the elementary schools. These fourth graders are also old enough to understand the topic and still be excitable. The lesson given to these students promotes the idea of being environmentally conscious, as well as allowing the kids to interact with us and stay engaged. We encouraged the students to ask questions, give us ideas, and explain their thinking to each other and with us so as to promote communication and creativity. We teamed up with our schools Marine Ecology class in order to further spread our message. With their help, we were able to cover each school efficiently and diligently.

Initially, for the action piece of our project, our plan was to focus on the removal of plastic straws from solely the high school. We conducted a survey to see how many students actually used straws at the school and found that 82% of the students surveyed never used them with their meals. With a lack of usage among our peers, we opted to focus our energy somewhere that would be more impactful. After contacting the food service that our school system employs, we learned that one of the elementary schools, as well as the middle school, had already removed straws from their cafeterias. With this new information, we came to the conclusion that focusing our efforts on the elementary schools would make a more profound impact, as the idea of change was in the air already and there were two more schools with straws. With this newfound resolution, the team attended multiple Home and School Association meetings which consisted of volunteer members from each school who work closely with the Superintendent (Director of Hudson Public Schools) to plan school festivities and listen to community feedback. At the meetings we presented the idea of removing straws from the school system as a whole and educating students about the dangers of

waste production, which received positive feedback. The Home and School Association will continue to discuss the possibility of removing plastic straws from the lunch rooms of Hudson.

Hudson's Art Exhibit is an example of our determination to share our passion with the community. Along with the lesson given to each fourth grade class, we asked them to participate in the creation of a large mural that will depict their drawings on a large background which connects to the theme of the conference. We provided outlines of marine organisms for the kids to color and tape onto the mural. The kids were also asked to write down a pledge on a small piece of paper which they could hang on the mural along with their colorings. These pledges stated what the kids could start to do to be more environmentally friendly. Along with the idea of how we would like to see our oceans in the future, UNESCO also stated that another major theme for the art project includes the oceans in all four seasons.

With the help of our graphic design teacher, we are going to use each class' mural and incorporate them into one large banner that shows the elementary schools' participation. This banner will be displayed at the high school further spreading the message of ocean preservation.

After bringing our materials to Portugal and presenting them to the other students and members of the conference, we hope to follow up with each fourth grade class in the spring and thank them for their participation. Additionally, we would like to show them how they were able to be a large part in our project and that they had a great impact on not only us and the community, but on an international scale as well.



INSTITUTO DE EDUCACIÓN SECUNDARIA PAZO DA MERCÉ

Alejandra Narínez González and Diana Lopez Soto

OCEANS OF PLASTIC

Plastics are a material that we have very much integrated into our daily life, this has negative effects on fauna and flora but it facilitates our daily lives, which is an advantage. Generally this material is not recycled, but it reaches the oceans where it is accumulated originating plastic islands like the Pacific or the Atlantic; of these islands, micro particles of plastics are emitted and the animals present in the oceans feed themselves, causing them to reach our food; in addition, these affect the life of marine species, both plants and animals.

To reduce this consume and the pollution is necessary look for some alternatives: nowadays the Scientifics are looking for some material that could replace the plastic bags, at home we could reduce the consume without shopping plastic products and recycling them.



NEWTON SOUTH HIGH SCHOOL

Jack Tumpowsky, Julia Geller, Maia Madison, Will Lavey and Willa Frantzis

MICROPLASTICS

Although we were not yet sure what we wanted our UNESCO project to be, when we first met as a group in June, we all knew that we wanted to focus our project around the problems that plastics and micro plastics in the ocean have brought both locally here in Boston and around the world. After some thought and a few trials of other project ideas, we decided on creating a documentary that we would present at our school in hopes of informing our student body on exactly how pressing and drastic the issues of plastics in our oceans are.

To help gain awareness for our team as well as to gather data, we sent out a survey to all students at Newton South to see how much students knew about plastic in the ocean. In our survey we asked about the amount of time it takes for plastic to break down, the amount of plastic water bottles bought and how many of those are recycled, and much more. Through the submitted responses, we found that for each question, only a little

more than half of all students who participated could correctly answer the question. Additionally, we asked classmates to discuss the ways in which someone could reduce their use of plastic as a way for students to reflect on the survey and their own plastic consumption, and hopefully start to make changes in their own lives with a goal of decreasing the amount of plastic they

use each day. But, we knew that simply the results from this survey would fail to provide our audience with a broader explanation of the problem, so we set out to interview a few people who might have more insight on the topic. Eventually, those interviews would be changed into our final product: a day at our school where we would show our documentary and then have a panel of volunteer teachers to discuss what we showed and any other questions the audience had about plastics in the ocean.

First, we interviewed Professor Edward Boyle, who researches and teaches ocean geochemistry at Massachusetts Institute of Technology. He informed us on how human waste, specifically plastics, have chemically changed the ocean, and talked about the long-term implications of this. After interviewing Professor Boyle, we went to meet up with Ethan Edson, a graduate student at Northeastern University, studying Marine Biology. Edson is designing and engineering a device called the MantaRay Micro plastic Sampler, patent pending, to gather and more accurately estimate the number micro plastics worldwide and perform experiments on them back in Nahant, MA where Northeastern's Marine Biology lab is located. Our team drove out to Nahant to film Mr. Edson and have him talk to us about the MantaRay and also explain how he and other students and professors are researching plastics' effect on oceans. We also gained some key information and footage from a CBS Sunday Morning program entitled "Drowning in Plastic Waste". After interviewing multiple people to give us further insight on the topic, we pieced together our documentary, in hopes of telling an informative and compelling narrative. Thanks to our master video editor Will Lavey, our documentary came out looking both professional and intriguing, as he was able to sequence clips we filmed throughout the past couple months around the interviews in an interesting way.

In the end, the day was a success. Audience members were engaged during the discussion and were eager to learn more about the topic. Several students came afterward to tell us they were shocked by the statistics, both from our school and worldwide, and thanked us for hosting the presentation. We stopped a few students before and after the presentation to see how much they knew before and how much they knew afterward. Everyone we stopped knew little about what we presented and were delighted at how much they learned. Now, we cannot wait to share what happened on that day with everyone at UNESCO.



NATURWISSENSCHAFTLICHES TECHNIKUM DR. KÜNKELE

Carolin Löffler and Pia Anders

MICROPLASTICS - AN OCEAN FULL OF WASTE

Plastic is the most common type of waste to be found in sea and lakes. On our shores and riverbanks and in our seas, we often find plastic garbage like plastic bags or plastic bottles. We are familiar with pictures of “waste islands”, including larger plastic waste. These chunks decompose into smaller and smaller pieces: microplastics. Microplastics refer to solid and insoluble synthetic polymers (plastics) that are smaller than five millimeters. Microplastics are tiny pieces of polyethylene plastic that are added to health and beauty products such as some cleansers and toothpastes.

These particles reach the sewage treatment plants via the local sewage. There the bulkiest substances are filtered out; some remain in the sewage sludge, the rest reaches the seas and rivers. The synthetic polymers are eaten by marine organisms, attract pollutants and can not be removed from the environment again. They have already been detected in seals, fish, shells and smaller organisms, which they absorb passively or with their food. According to a very recent Austrian study, microplastics have also been detected in human’s feces. On the long run, the effects of microplastics on our bodies are vague, but presumably not harmless. As far as now, standardized field methods for collecting sediment, sand and surface water microplastic samples have been developed and are being further tested.

According to the United Nations Environment Program, plastic micro beads first appeared in personal care products about fifty years ago, with plastics increasingly replacing natural ingredients, as some plastics are cheaper than their natural equivalents or they provide the products with new properties. No earlier than 2012, public has become aware of this context, even though there were countless products containing micro beads on the market.

In our presentation we will not only name the causes for microplastics being a threat to our ecosystems. We will also point out how individuals can contribute to tackling the challenge which has been created by ourselves.



COLÉGIO GUILHERME DUMONT VILLARES

Giovanna Gaspar Valente and Lucas Ferraroto Vieira

NEW ORDER IN MANAGING DRINKABLE WATER: A CASE STUDY

Brazil is a continental country with a population of around 210 million people, with a territory of approximately 8 million Km². Bathed by the Atlantic Ocean in an extension of 7.367 km, it is an extremely rich area in terms of diversity where we can find different kinds of ecosystems. Declared national heritage by the Brazilian Constitution of 1988, our coastline is also extremely relevant as 40% of our population lives in this area, which is why its preservation is a very important need.

In the census carried out in 2010, IBGE found out a population of 290.607 people for an area of 142,589 km², with a demographic density of 2,047 inhabitants per km². The area can be reached by sea or by Cônego Domenico Rangoni Road (Piaçaguera-Guarujá) and Rodovia Ariovaldo de Almeida Viana Road (Guarujá-Bertioga) and receives annually a great flow of tourists, approximately a million people a month, especially in Summer. At this time of the year there is significant increase in services need which, in turn, contributes to environment degradation.

The case study

As an example of preservation, our high school students visited Santo Amaro Island which holds Guarujá municipality and is located in the coast of São Paulo State. Guarujá is formed by a sedimentary plain, of a cenozoic origin, where sand and clay prevail. Such sedimentary cover sits on a crystalline base, that surfaces in slopes. The climate in this area is tropical and the average annual temperature is around 24°C. Near the sea we find low vegetation but it soon becomes a bushy vegetation known as “jundu” where we find small-sized trees and mangroves with aerial roots surrounding the streams. In the higher regions, which are more exposed to the ocean winds, we find the Tropical Forest, also known as the Atlantic Forest.

As our goal was to relate the local to the global and their consequences in people's lives, our students observed and researched the Santo Amaro Island, in the coast of São Paulo State, in order to make analyses of the characteristics of occupation and bathing conditions of five beaches located in the island, focusing more on two of them: Prainha Branca and Praia do Tombo where civil actions are found. On Prainha Branca there is a very active caiçara community (crossbreeding of Portuguese, Indians and black people that, in the colonial period, developed a very peculiar culture) which struggles to preserve the natural beauty and the traditional culture in harmonious relation with the environment.

The Praia do Tombo is also a positive example that awareness and social activism generate social and environmental benefits. Dwellers and visitors (especially surfers), in partnership with the city council, engage in actions to keep the beach quality, which is why they have received an important international certificate called “Blue Flag” (an initiative of the FEE - Foundation for Environmental Education – that aims at good practices of environmental management with the participation of the civil society, the private sector and public authorities).

It should be mentioned that this school project was carried out in two steps. The first one was developed in the classroom where the students had the first contact with the topics to be studied, by reading and researching about the subject. The second step was the field trip, when the students had the opportunity to make field observations while receiving orientation from a team of monitors and the History and Geography teachers. This last step led to a report which was registered in a fieldwork notebook.



ESCOLA SECUNDÁRIA DR. BERNARDINO MACHADO

Mariana Curado Marques and Rui Gonçalves Pêgo

THE SIXTH OCEAN: THE GENESIS OF A NEW ENVIRONMENT

The appearance of a “Sixth Ocean” (the Presentation’s Theme) implies “The Genesis of a New Environment” in the current phenomenological view of the Global Warming, which is, as well- known, caused, in its majority, by anthropic actions, namely through the burn of fossil fuels, which, by releasing elevated concentrations of carbon dioxide (greenhouse effect gas) to the earthly atmosphere, leads, ineluctably, to the warming of the atmosphere and, collaterally, to the warming of the ocean water, which represents the home of multiple marine ecosystems. Water temperature fluctuations reflect consequences to the biodiversity of such ecosystems, as temperature constitutes an abiotic factor on which depends a wide range of living creatures within their ecosystems, forcing them towards geographical migrations across the globe, in order to meet ideal temperature values or temperature values within a tolerance interval acceptable to each species.

Thus, in view of “The Genesis of a New Environment”, we intended to study to what extend the warming of the ocean waters alters the photosynthetic rate of seaweeds, measuring, therefore, the variation in the amount of water consumed from the experimental device/the amount of bubbles of the O₂ gas released, so as to locate the tolerance interval of the selected species.

Therefore, it was conducted an experimental activity, using a brown seaweed *Fucus vesiculosus*, commonly known as bladder wrack or sea oak. This is a multicelular seaweed naturally found on the coasts of temperate and cold regions of the Pacific and Atlantic oceans, including the western Baltic Sea. On the Mondego River estuary, its presence is common; therefore, its gathering was relatively easy.

Interpretation of the results/Conclusion

Photosynthesis is an autotrophic process of obtaining organic matter, through which photosynthetic cells use H₂O, obtained from its surroundings, as a source of electrons, releasing O₂, process named as water photolysis. The photosynthetic rate may be evaluated by the level of water consumed by the photosynthetic organism and/or by the amount of gas (O₂) released.

Thus, in the experimental device, the photosynthetic rate, according to the ambient temperature, will be evaluated either by the amount of water consumed by the seaweed through the drop on the water level on each beaker, or by the amount of gas (O₂) bubbles trapped in the experimental device.

It should be noted that, in order to safeguard some validity of the experimental results, we isolated the water with oil, so as to avoid its evaporation and enable the trap of gas bubbles, facilitating its accounting.

As one can verify, through the registers marked at the results table, the beaker, which was on bain-marie, registered a slight drop in its water level, situation which was not verified in the beaker which was at ambient temperature. On the other hand, the presence of gas bubbles was constant at the beaker on bain-marie. Despite its presence, it is inconclusive whether the bubbles gas was actually O₂, as it might as well be water vapor due to the condensation caused by the temperature increase, since one may observe that the water was slightly turbid.

In spite of the multiple scientific limitations of this experimental procedure, it is possible to make some interpretations/reflections. If, on the one hand, the temperature increase contributes to the increase of the photosynthetic rate, fact verifiable through the drop in the water level and the amount of gas

bubbles released, on the other hand, one may point out the appearance of other factors equally altering the normal photosynthetic rates caused by the temperature increase.

From the moment in which the water is no longer transparent, fact verifiable in the experience by the turbidity of the latter, the passage of the solar radiations will be compromised, interfering, very likely, with the photosynthetic rate, in this case, reducing it, leading to a decrease of the producer beings populations, namely seaweeds and marine phytoplankton, which represent the trophic base of their ecosystems. Thus, the global warming increases the risk of being creating a new environment, sterile of life, in a single ocean, the sixth, uniform, featureless, contrasting with the biodiversity of the current five oceans on Earth.



ESCOLA SECUNDÁRIA DE SÁ DA BANDEIRA

Maria Inês Figueiras Pelarigo and Mariana Patrício Esteves Seabra e Melo

OIL ROUTES VS SUSTAINABILITY OF THE OCEANS

The transfer of oil from one country to another is a very large task. Billions of barrels of oil a day are shipped in Oil Tankers to various destinations all over the world. The shipwreck of this oil tankers can cause various consequences to the ocean and his wildlife. The oil spreads into the ocean and destroys many species of marine life and also destroys their habitats.

The oil that is shed also causes impacts in the water sources, human health and the landscape, so if we want to ensure the quality of our life and the life of other ecosystems, we need to start taking measures.

The first priority is to gather the biggest amount of pollutant material before it hits the coast, because there the ecosystems are much more sensitive, and the ecological and economic consequences can aggravate pretty seriously and get to a point where there is no turning back. Then, in most cases, when the oil stain isn't too large, it is possible to use special ships which absorb petroleum that is disturbing the ocean wildlife.

In order to reduce the risk of oil spills it's essential the introduction of double-hull tankers as well as a bigger investment in the maintenance of the ships, in the formation of ship crews and the improvement of navigation skills.

The oil routes put in really high danger the sustainability of the oceans, so we must use better techniques to stop oil spills and to ensure the continuation of marine species.



INSTITUTO DE EDUCACIÓN SECUNDARIA LUIS SEOANE

Ainoa Franco Gulías and Marcos Sertal Argibay

THE ATLANTIC: AN OCEAN OF DIVERSITY

In the report that IES Luis Seoane High School is going to present at the XXI EIJCEAUNESCO we will try to analyze the different aspects based on the Atlantic as well as the relationships that Galician people establish with it from the beginning (without forgetting the past), creating in this way some specific similarities and correspondences: oceans and people.

We will emphasize the privileged situation of Galicia in relation to the Atlantic, from a geographical point of view; we will underline its mark within the economy of the agricultural sector, the industrialization of the sea activities in the architectural design, in the infrastructures as well as in the particular distribution of population, the ancient and present relationships with the continent of the other side of the Atlantic, or in tourism.

We will finish with the explanation of some after-effects that, in our territory can mean an attack against the ocean without turning back according to the SDG number 14 and the 2030 Agenda, to flee from this Atlantic ocean that we do not want.

Based on the word "diversity", we intend, first of all, to expose in our communication, the multiple relations between the Atlantic Ocean and our territory, Galicia; secondly, to make known a vision of an "Atlantic that is not what we want".

The Region of Galicia is located in the northwest corner of the Iberian Peninsula, formed by three provinces bathed by the Atlantic (A Coruña, Lugo, Pontevedra), and only one interior (Ourense). The administrative capital is Santiago de Compostela.

Its 1498 kilometers of coastline make it the Spanish territory with greater contact with the sea, and, on its perimeter, we can find a total of forty-four islands, among which we highlight Arousa, Cies Islands, Ons and Onza, Sálvora or A Toxa.

Since ancient times, the Atlantic appears in numerous texts and legends:

- God formed the Rias Baixas when He supported his hand in Galicia
- The bath of the nine waves in the beach La Lanzada gets the female fertility
- Finisterre (Death Coast) is considered the end of the known world

The Galician population today is about 2.7 million inhabitants, distributed in a non-uniform way: Most of the urban population centres (cities such as Vigo, A Coruña, Ferrol, Vilagarcía, Ribadeo, Viveiro) are located in the Atlantic strip; the exception is the capital (Santiago de Compostela).

Speaking of infrastructures on the coast, in Galicia we have the AP9 highway, which runs along the Atlantic coast from the link with the A-6 to the city of A Coruña. We also have a total of 122 ports of European relevance.

Also, the economic activity of the population has the sea as a mainframe starting in the old times. In this way, we can talk about fishing, the canning industry, shipyards, aquaculture, and a wide range of companies that establish the economic development of their inhabitants.

Along the Atlantic Galicia we find singular buildings headquarters of fish markets, food markets, fishermen's guilds, or, the beautiful typical houses of sailors, whose facades are painted of the same colour as their own boats.

On the other hand, we will analyze in our presentation the main tourist attractions appearing in our region, thanks to the goodness of the Atlantic; we receive more than 5 million of national and foreign tourists

(data of 2017), although the main challenge we face is to achieve a necessary balance in order to get a sustainable tourism.

An example of it:

-Vigo: Samil Beach, Ría de Vigo, A Pedra Market, Cies Islands

-Ribadeo, on the Lugo Coast (Cantabrian Sea): Praia de As Catedrais

-A Coruña: Riazor beach, Hercules Tower, Serra da Capelada

We have many promenades that allow a direct contact with the ocean as a place of recreation and knowledge of flora and fauna; with Natural Parks (The Atlantic Islands Park is the tenth most visited national park in Spain, and comprises the Islands Ons, Cies, Salvora and Cortegada), with sandy beaches that monopolize almost 25 % of the Blue Flags (Maximum award granted by the FEE- European Foundation for Environmental Education) granted in Spain; or , lately,with the tourism of cruises recoving in Vilagarcía and Vigo.

Finally, we will develop some aspects related to “The Ocean we do not want”, taking into account the Objectives of a Sustainable Development: uncontrolled expansión of port that eliminates natural spaces, Eucaliptus plantations in the Atlantic strip, Cellulose industries, plastic waste, radioactive pits, fishing overexploitation, enviromental disasters related to the oil tankers traffic, invasive species...



INTERNATIONAL SCHOOL OF TURIN

Ben Schuering, Carla Schuering, Emma Dimitrov, Matteo Ferrari, Sophie Holmes and Tommaso Massimello

TOURISM IN LIGURIA - CRITICAL VIEWS ON THE ITALIAN SEASIDE SITUATION

The International school of Turin is very proud to be invited to the 21st meeting of young scientists in Santarem to present, discuss and analyse the overall UNESCO theme Oceans in danger- how will the ocean of our future look like. Since September 2018 our UNESCO club is working on the topic and investigates how tourism and transportation in Liguria affects the Ocean overall. In this paragraph we would like to summarize our actions and main strategies of our investigation as follows:

TOURISM

Community Survey about Holiday Habits: Seen that our school is situated in Piemonte, many students visit places in Liguria at least once a year. A survey is being conducted to investigate how these people of the school's community are involved in the topics being discussed: tourism, pollution and overfishing. A Prior Tourism Analysis leads to the following factual statements:

Private beaches: In private beaches, people that frequent the beach pay to be there, and pay to have people come and clean the beach and help with helping with security. This allows the beach to be clean and free of trash that can cause pollution on the beaches.

Public beaches are a lot dirtier than private beaches. Public beaches do not get paid by the entrance of its customers, therefore it doesn't receive money to pay people to clean the beach, making the beach dirtier such as a significant amount of trash in the sand.

As the sand contains trash, it can go into the ocean through waves and the tides, which affects the marine ecosystem. Public beaches are not supervised, so safety can be an issue. TRANSPORTATION

The method with the fastest travel time is car (1 hour and 46 minutes but it is dependent on car type and traffic; then train (2 hours and 9 minutes) and lastly bus (2 hours and 35 minutes)

The most cost efficient mode of transportation is the bus (10 - 13 euros), then train (10-25 euros), and lastly the most expensive is car (17 - 35 euros from tolls)

The method which emits the least amount of CO2 is the train, as it does not emit as much CO2; then comes the bus which overall emits more than a car but can carry more people (around 20kg CO2 overall), then lastly car which is worst as it is per person (14 kg CO2 per average sized car running on petrol)

The use of electrical cars is the most environmentally friendly method transportation; however, there is a need for recharge stations and more expensive. The tragic event of the Morandi Bridge caused a change in holiday habits and transport as

Approximately 25 million vehicles use the bridge every year; this traffic has had to be re-routed leading to chaotic traffic in the regions that depended on the bridge

Tourists need to take into account longer travel time; cruises and touristic tours take this into account and might even subtly change their schedules

In 2017, the port of Genoa managed the loading of more than 7 millions tonnes of products for the European market; this port traffic has been significantly affected seen as their transportation links has been “split into two”

“But it could go the other way, with the Genoese losing all faith in the other vital pieces of concrete that they rely upon so much.

MICROPLASTICS

Polluted water at the Ligurian seaside

From secondary data UNESCO club members analysed how polluted the ocean water is at the Ligurian seaside. 14 out of 23 controlled points of the sea in Liguria are heavily polluted which are mainly the Province of Imperia, Ventimiglia, Taggia, Diano Marina, Ceriale, Genova, Recci, Lerici and Riomaggio. Only SanRemo, Albenga, Finale, Quiliano and Vernazza are within the limits. • The environmental institute found that 48 percent of all the samples it collected in Italy's 15 coastal regions show signs of pollution, mainly microplastics and lack of sewage treatment.

Goletta Verde's team of scientists analyzed more than 300 samples of water from along Italy's coastline and found that 39 percent were "heavily polluted," while a further 9 percent also showed signs of substantial pollution.

The main cause, states Legambiente's final report. "Poor purification is, in fact, an environmental emergency that must be tackled urgently since we have also been ordered to pay a fine of 25 million euros to the EU, plus 30 million every six months until we are in good standing," Giorgio Zampetti, Legambiente's director, said in the statement.

The coastline in Liguria, Tuscany and Sicily are the most polluted, according to a map by Legambiente which outlines the results. The waters around the island of Sardinia are the cleanest



PLASTIC STRAWS: YOU DO NOT NEED THEM – THE OCEANS THANK!

Introduction

The World Economic Forum reports that there are 150 million tons of plastics in the oceans and if consumption continues at its current pace by 2050 there will be more plastics than fish in the oceans.

Researchers at “The University of Western Australia” and the “CSIRO Wealth from Oceans Flagship” made a study by the end of 2013 to find that every square kilometer of water on the Australian surface was contaminated with about four thousand small plastic fragments.

This research allowed the first mapping of marine floating plastics on the Australian coast. Professor Charitha Pattiaratchi said that in hotspots plastics were found at sea near densely populated areas in regions where ocean currents converge.

But this problem is much closer than we can imagine. On the Brazilian coast, most marine litter is plastic. Factors such as improper disposal of bathers, boats and lack of selective collection in certain regions causes this solid waste to come into contact with the marine environment and to carry several types of problems for the ecosystem.

Goals

Plastic straws were created to facilitate the ingestion of liquids by people with some difficulty, and have turned out to be something natural and these days are even unnecessarily distributed in bars and restaurants

The objective of this work is to identify actions that are being carried out to raise the awareness of the population of our region and of our school to extinguish the use of these plastic straws.

Methodology

The first action was a search for new legislation in Brazilian cities restricting the use of this material in public places.

Next, observations were made observations on the waterfront and in the gardens of our beaches, in order to identify places that still use plastic straws, also trying to identify conscious traders who are already replacing these straws with other materials.

The next step was to walk along the beach trying to raise awareness about the problem of plastic straws and to show alternatives such as non-disposable cups and noodle straws. These tracks will be reused to be exhibited at all school events.

In our school environment, lectures were given to student teachers and staff showing the impacts that plastic straws cause on the marine environment and substitution alternatives.

For the community, the work was submitted to COBRIC (Brazilian Committee for Scientific Initiation). After the acceptance, the work and its results generated the Banner that was exposed in the University Santa Cecília, one of the Universities of the region.

Results

The research and involvement of the students, teachers and school staff, as well as the bathers who were on the beach had already shown a desirable awareness of the problem. In the environment of our school, the students themselves committed to replace the plastic straws, normally used in the canteen and brought in the lunch box by other materials.

Conclusions

There are already several alternatives for the plastic straws that cause almost no environmental impact, among them, the use of noodles, paper straws, metal straws, silicon straws and other materials. The company "Paz em Gaia" invested in the idea of bamboo straws and had big sales increases in recent years as shown in the chart below.

The awareness of the students of our school has already been an excellent result. It is hoped that these behavioral changes will be reflected in families who, when observing their children, look for alternatives to the straws and disseminate these ideas.

It has also been established that the insertions on the beach have raised the issue for the public, thus obtaining support for the increase in the rigor in legislation that will encourage the search for alternatives to plastic straws.

Narciso Paulo Faztudo

THE IMPORTANCE OF THE OCEANS

Since the origin of human life, the oceans play an essential role not only for man, but for the whole planet. We have as an example the fact that their existence was one of the factors that allowed life to originate on earth around 4.5 billion years. From then on the oceans were becoming more and more present and necessary in our lives almost imperceptibly.

The oceans are necessary, even more so today with the great technological and energetic demand that the growing world population demands, in totally unimaginable contexts, where they perform extraordinary functions.

Starting with the maintenance of life on the planet, the oceans are responsible for regulating temperature, producing much of the existing O₂, characterizing the various types of climate, "sheltering" about 80% of existing species of life on planet earth and so on.

From the economic point of view, the oceans are present in the fishing (food, which has been a problem lately due to the great demand of food caused by the increase of the world population), extraction of minerals in general, displacement (water transport) of ships / boats (importation and exportation of materials ...), plays a tourist role and so on.

From the political point of view, the oceans also have the function of separating, dividing and / or acting as frontiers for continents, countries and the like. It is worth noting that countries on the coast are dependent on other countries for export production, receiving imports ... In addition to becoming more vulnerable to the defense of their country.

In this paper I will talk about the extinction of sea turtles in Angola, after a meticulous study of the facets of the subject in approach, I emphasize that, in the country, artisanal fishing and lack of inspection continue to threaten the survival of sea turtles, according to environmentalists.

Angola is a signatory to several international conventions for the protection of endangered marine species, particularly turtles. Even so, these animals are in serious danger. For the environmentalist Miguel Morais, artisanal fishing is the main threat to this marine species in the country.

"Although we have conservation areas and legislation for the conservation of sea turtles, we have a lot of uncontrolled fishing, and this, to a certain extent, has negatively influenced the turtle population dynamics along the coast," says the coordinator of the project "Kitabanga", which means "giant tortoise" in the national language "Kimbund".

In Angola, there are five species of sea turtles: "green", "leather", "grimace", "olive" and "imbricata". The leatherback turtle is considered the rarest in the world and is at risk of disappearing from the country. This marine animal weighs 900 kilograms.

"Kitabanga": The Salvation of Angolan Turtles?

The project "Kitabanga", from the Department of Biology of the Faculty of Sciences of the Agostinho Neto University, was implemented in 2003 and works in tune with the Angolan Ministry of the Environment, investigating the various types of sea turtles present on the coast.

By 2017, the "Kitabanga" has already saved the lives of thousands of turtles on the fifty-five kilometers of beaches under its tutelage. As Miguel Morais advanced to DW Africa, the project was able to send "two million" turtles to the sea, protecting from the human threat about "twenty thousand" during the spawning phase.

Kitabanga has also carried out environmental education campaigns, which, for its coordinator, has contributed to the "change of mentality" of the people. Nevertheless, there are still several cases of dead turtles in fishing nets and catches on the beaches during spawning.

"This is a scenario that we still see. It is a realistic scenario that implies that every year there is a large mortality of these animals," says Miguel Morais.

He added that cases such as the detention of three Chinese citizens, on January 20 in Luanda, for alleged trafficking and commercialization of turtles protected by international conventions, can serve as an example and prevent further practice.

Controlled situation

The national director of Biodiversity of the Angolan Environment Ministry, Nascimento António, says that authorities can not "lower their guard," although the situation of the turtles in the country "is not worrisome."

According to Nascimento António, many communities still consume turtle meat: "Turtles are victims of many interventions: in terms of pollution and nuisance of nests." But communities are aware of this situation. We consider that the situation of sea turtles in Angola is stable, "he says.

In order to strengthen the protection of sea turtles in Angola, the Government intends to identify potential areas for marine conservation, which would mainly include nesting areas for sea turtles. With this, "yes, we will be able to conserve sea turtles better, because once the area is declared a conservation area, it will have another status in terms of access to the public," says Nascimento António.

Survival of man, but we need to have a certain time of exploration resources. We need a world, rights must be defended.

When there are problems with the ocean, it automatically affects the man. Because what we eat, mineral resources, all of this is extracted from the ocean, so here is the need to have an ocean out of marine species attacks, pollution. We can still do the different if we do the following:

1. Do not throw trash in rivers, beaches and lakes;
2. Do not dispose of oil in the sewage system;
3. Do not use pesticides in water sources.

ESCOLA SECUNDÁRIA BÁSICA DE DESEJADA

Work done by the Director, Martinique José, with the collaboration of teachers, students and school assistants.

A ESSÊNCIA DO OCEANO PARA A CONTINUIDADE DA VIDA FUTURA

Felizes aqueles que para além de recurso humano tenham ainda recursos naturais.

São Tomé e Príncipe, duas ilhas no meio do mundo pois estamos no Golfo da Guiné e somos felizardos por termos em nós a linha do Equador que separa o hemisfério Norte do Sul tudo isso no Ilhéu das Rolas.

País onde foi feita a primeira teoria da relatividade pelo Albert Einstein, Ilha do Príncipe em Maio de 1919.

Sendo Ilhas, a zona marítima é maior que a zona terrestre, por isso, e demais razões podemos facilmente apropriar-se do mar para como é evidente produzir: energia, fazer pesca, etc. para o consumo interno e externo, educação marítima contribuir para o maior uso e respeito para com o mar.

Procurar maneiras simples e eficazes para vivermos, de, com e no mar.

O gigante multiuso mal-usado é o mar.

Mar é beleza incontornável

Mar é riqueza imprescindível

Mar é vida, pois de lá também temos Água Doce

Mar é mar e mais nada pode ser mar... é mar.

Mar é bem-estar.

Mar será tão imprescindível que os países onde não são banhados irão se aproveitar do mesmo.

O mundo dependerá muito mais do mar dentro de algumas décadas

Mar um bem incontornável que será indiscutivelmente um dos mais usados.

Topics' discussion: group work – Block A

Plastics and other (bad) companies

TOPICS FOR DISCUSSION

- Synthesis of communications.
- Key ideas presented.
- Strategies that schools can develop to reduce the use of plastics.
- An example of a school or community campaign to reduce use of plastic.

GROUP A

Ben Schuering – IST
Carolin Löffler - NTK
Diana Lopez Soto - IESPM
Elena Conde - CLA
Luísa Maria Araújo Florido - ESAS
Maria Braamcamp Romano - ESAR
Will Lavey - NSHS

- Synthesis of communications.
People want to reduce the amount of plastic consumption in the world through certain techniques and education
- Key ideas presented.
Microplastics are bad for the environment because they kill marine life
Cigarette butts are polluting the ocean and are not biodegradable
We know that plastic in the ocean is a problem but most humans are not doing anything about it -> marine animals are dying because of this
- Strategies that schools can develop to reduce the use of plastics.
Compostable utensils in schools
Education for everyone, but starting with the youth
Recycling
More specific trash containers
Beach/forest cleanups
Ban single use plastics
- An example of a school or community campaign to reduce use of plastic.
Collect bottle caps and repurpose
Educating the youth
Travelling to other areas to do beach cleanups

GROUP B

Alejandra Nartínez González - IESPM
Ana Mafalda dos Santos Morão - ESSB
Catarina César Lacerda Leite Aires - ESAS
Maia Madison - NSHS
Maria Inês Figueiras Pelarigo - ESSB
Matteo Ferrari - IST
Verónica Afonso da Fonseca - ESAR

each school presented different projects; some took action others educated
explained importance of the ocean, plastics, danger for human and the sea, how social
status and education/ care about plastic disposal are connected
lot of people do not know enough about the plastic in our food chain
raise awareness
water access without bottles
spare plastic wrappings
reusable coffee cups
lent books/..
stop using plastic straws
“eco cigarette butts”
return an amount of bottles -> vouchers for lunch
collect trash as a class in turns
sort trash to recycle
events to collect trash from shores (all students)
governmental regulations

GROUP C

Ana Beatriz Pinheiros Costa -CM
Carla Schuering- IST
Giovanna Gaspar Valente - CGDV
Jack Tumpowsky - NSHS
Rachel Matisko - HHS
Sara Isabel da Silva - ESSB
Vanessa Rocha Branco - EASESC

Plastics take a while to degrade, quickly transforming into micropastics
Microplastic Dangers:
Organisms may eat or get stuck in plastics-
The plastics then travel up the food chain-
Recycling:
Remove single-use plastics, try to avoid plastics all around
When we do use plastics, recycle them (reuse + recycle)
Education:
Campaign your communities/educate them on the dangers of plastic
See if you can get your school to change/better its plastic usage
Organize an environmental group and make some projects about the environment to share
with the community
Bleach clean-up/river clean-up/mountain clean-up

GROUP D

Ainhoa López Naranjo - EASESC
Emma Dimitrov - IST
Giovanna Cavassa Hayashi - CM
Lucas Ferraroto Vieira - CGDV
Mariana Melo - ESSB
Tyler Simonenko - HHS

Synthesis of communications.

- Microplastics are a prominent part of daily life which, in turn, is harmful to the ocean and aquatic life.
- In order to reach a solution to this issue, everyone must contribute through their actions, and change should begin now.
- Examples of solutions could include, recycling, reduction of use of plastic, reusing plastic, or alternatives to plastics.
- Plastic islands are an example of the effects of pollution due to single use plastics.
- Due to lack of government involvement, society should take action instead

Key ideas presented.

- Microplastics
- Single use plastics
- Plastic Islands
- Education is crucial
- Growing issue
- There are ways to help

Strategies that schools can develop to reduce the use of plastics.

- Get rid of single use plastic items (such as straws, plates, forks)
- Repurposing plastic waste through art projects
- Invest in educational projects to inform the youth on pollution
- Clean up groups
- Invest in reusable utensils

An example of a school or community campaign to reduce use of plastic.

- No plastic materials in the cafeteria (reusable plates, cups, forks) International School of Turin
- Assembly or lectures about reusing and recycling Guilherme Dumont Villares College
- Media activity and advertising Hudson High School
- Campaigns to encourage reusable items Magno
- Campaigns to clean up beaches and local areas EASESC

GROUP E

Ainoa Franco Gulías - IESLS
Rui Gonçalves Pêgo - ESDBM
Sara de la Riva - CLA
Sofia Barreiro - ESSB
Sophie Holmes - IST
Willa Frantzis - NSHS

Synthesis of communications.

Many groups talked about plastic pollution in the ocean, specifically microplastics, and how they affect our lives by entering the food chain. Groups also described how human consumption of plastic leads to polluted beaches and other landscapes.

Key ideas presented.

- Microplastics
- Pollution on beaches Trash islands
- Recycling
- Human habits of consumption
- Ways to reduce plastic consumption
- Education on pollution
- Effects of plastic on wildlife
 - Animal deaths
 - Plastic in the food chain

Strategies that schools can develop to reduce the use of plastics.

- Educating students on the detrimental effects of plastic
- Using natural cosmetics without microbeads
- Use Coral or Guppy Bags
- Use reusable water bottle instead of plastic one
- Eliminating straws
- Recycling bins
 - Make them more accessible
 - Biodegradable utensils
 - Paper bags instead of plastic bags
 - Not selling plastic water bottles or snacks packaged in plastic
 - Eliminate unnecessary plastic packaging or use paper instead
- Hand dryers instead of paper towels
- Installing water bottle fillers
- Recycle plastic packaging

An example of a school or community campaign to reduce use of plastic.

- The group that put in place cigarette butt bins, so they will not be thrown on the ground
- The student group that taught a lesson at their local elementary schools on oceans and how to protect them
- Ask the children how they believe they can help the environment
- Campaign to use reusable water bottles
 - Make students' ideas heard and show them how they can help through a panel/discussion
- Schools can organize clean-ups at their local beaches
- Use the litter they found to create art to sell or put on exhibition Create murals that bring awareness to the issue of plastic consumption

GROUP F

Julia Geller - NSHS
Marcos Sertal Argibay - IESLS
Maria Carolina Tôco - ESSB
Mariana Curado Marques - ESDBM
Pia Anders - NTK
Tommaso Massimello - IST

- Food chain: plastic works its way up the food chain until it gets to humans also known as trophic magnification
- Polluting micro plastics: plastic ends up in the ocean even if it is not first dumped directly into the ocean (run off...)
 - Empowering marginalized peoples (government support, waste management systems)
 - People changing their habits to be more sustainable (people in action); for example cigarette butts, having collection stations throughout cities
- Strategies
- Goal: reducing plastic consumption
 - Education: a lesson about plastic effects with fourth graders, documentary, putting up posters at a school, presentations here
 - Action: putting recycling checkpoints in schools, putting cigarette butt collection stations in cities, beach cleanups
 - Technology: using metal straws instead of plastic, putting a guppy friend (micro fiber bag) in the washing machine, having a high quality washing machine, buying clothes with natural fibers, Manta Ray data collection (scientists), coraball
- Things that stood out
- There is a type of fungus that can degrade plastic
- The effects of BPA on adipose tissue (fat cells)
- The currents move plastic to areas of the oceans and form plastic patches
 - The sea horse story (it clung to a cotton swab instead of algae)
 - The connection between empowering people and sustainability





Topics 'discussion: group work – Block B

Man and the sea

TOPICS FOR DISCUSSION

- Synthesis of communications.
- Key ideas presented.
- Strategies that schools can develop to reduce the use of plastics.
- An example of a school or community campaign to reduce use of plastic.

GROUP A

Ben Schuering - IST Carolin Löffler - NTK Diana Lopez Soto -
IESPM Elena Conde - CLA
Luísa Maria Araújo Florido - ESAS Maria Braamcamp Romano - ESAR
Will Lavey - NSHS

Oil spills, transportation methods, microplastics, and tourism can affect the condition of our oceans

- Key ideas presented:
 - Oil spills are polluting the ocean
 - Diversity in the ocean
 - Brazilian beaches
 - How tourism affects ocean pollution
 - How overfishing affects the ocean
 - Humans are dependent on the ocean -> water, resources, oxygen
- Economic and sporting activities related to the ocean and the sustainability of marine ecosystems:
 - Tourism can cause ocean pollution
 - Fishing
 - Transportation (refrigerated vehicles)
- The possible collaboration of young people with international organizations for the protection of the oceans
 - Choose a more eco-friendly transportation method
 - Education
 - 4Oceans
 - Reusable water bottles and more water fountains

GROUP B

Alejandra Nartínez González - IESPM Ana Mafalda Morão - ESSB
Catarina César Aires - ESAS
Maia Madison - NSHS Maria Inês Pelarigo - ESSB
Matteo Ferrari - IST Verónica da Fonseca - ESAR

Synthesis of communications.

- tourism
- relation between man and the ocean
 - impacts of human activities
 - pollution, over fishing, ...

Key ideas presented.

- sustainability: recycling, controlled fishing, transportation
- on holidays people are more careless about nature

Economic and sporting activities related to the ocean and the sustainability of marine ecosystems.

- tourism, pollution, due to a lack of awareness; use of sunscreen (chemicals dissolve into the sea water)
- surfing (surfers often promote responsibility)
- diving (more educated about impacts)
- swimming
- canoeing
- illegal fishing, overfishing, endangered species...
- restaurants, overfishing, low prices,
- transportation, more ecofriendly ways like trains or the bike,

- The possible collaboration of young people with international organizations for the protection of the oceans
 - volunteer work
 - donate
 - share ideas with locals
 - small campaigns

GROUP C

Ana Beatriz Pinheiros Costa - CM
Carla Schuering- IST
Giovanna Gaspar Valente - CGDV
Jack Tumpowsky - NSHS
Rachel Matisko - HHS
Sara Isabel Ferreira da Silva - ESSB
Vanessa Rocha Branco - EASESC

Synthesis of Communications / Key Events Discussed

Fishing: Fishermen talked about there being less fish + a lack of biodiversity

Global Warming: Global warming affecting levels of oxygen and therefore affecting the algae + different plants, therefore affecting the fish food chain

Oil/Petroleum: Increase of petroleum leads to increase of oil routes so when the oil spills along the way it compromises marine life and negatively affects the marine economy.

- Tourism: Tourists throw trash on beaches/litter near restaurants. Pollution from tourism affects the tourism in popular vacation spots
- Economic + Sporting Activities related to the ocean + sustainability of marine life

Fundraising: Sporting events @ some function + donate £ to cooperations, such as 4 Oceans

Snorkeling: Can see destruction or trash in water - aware of problem

Group clean-ups

- Collaboration of Young People

Young people - open minded, contribute more, new ideas + new ways

Popular/famous - larger outreach to people because we have the power of our voices

We can show them that we care about the future

GROUP D

Ainhoa López Naranjo - EASESC
Emma Dimitrov - IST
Giovanna Cavassa Hayashi - CM
Lucas Ferraroto Vieira - CGDV
Mariana Patrício Esteves Seabra e Melo - ESSB
Tyler Simonenko - HHS

- Synthesis of communications.
 - Oil Routes and spills
 - Climate change caused by human activity
 - International agreements that work together to protect beaches and coastlines
 - Detrimental human activities such as overfishing and ignorance that damage the ocean and local economies
 - Human actions that may lead to an overabundance of plastics and microplastics
- Key ideas presented.
 - Humans are largely at fault for many destructive events
 - Climate change
 - Overfishing and low stock sizes
 - Environmental, political, and social problems that delay solutions
- Economic and sporting activities related to the ocean and the sustainability of marine ecosystems.
 - Tourism in specific areas that contribute to pollution and damage to the ecosystem
 - Overfishing
- The possible collaboration of young people with international organizations for the protection of the oceans
 - Citizens that can contribute to government programs
 - Public pressure
 - Voting for bills or restrictions
 - Educate younger generations and spread the word about pollution
 - Local action within school systems and local organizations
 - Utilize social media and the internet to develop environmental consciousness

GROUP E

Ainoa Franco Gulías - IESLS
Rui Gonçalves Pêgo - ESDBM
Sara de la Riva - CLA
Sofia Alexandra Rodrigues Barreiro - ESSB
Sophie Holmes - IST
Willa Frantzis - NSHS

Synthesis of communications.

The groups in this section talked mostly about the environment and how pollution affects the ocean. They focused more on how human activities affected the ocean and how the ocean affects people.

- Key ideas presented.

Global warming and it affects the marine life and it's impact on the rest of the Earth How trade routes and oil impact the ocean

Shipwrecks cause oil spills that contaminate the water We are consuming polluted sea food

How destruction of infrastructure increases pollution

Tourism increases the amount of microplastics in the ocean Transportation can result in ocean acidification

Economic and sporting activities related to the ocean and the sustainability of marine ecosystems.

Tourism Fishing

-Fish markets -Diving -Boating -Steam boats -Trade -Oil rigs

Where we extract oil and how we transport it

Swimming – excess sunblock releases chemicals into the ocean

- The possible collaboration of young people with international organizations for the protection of the oceans

Oceans cleans up plastic from the oceans and turns it into bracelets and more Education

Writing letters to organizations suggesting how they can become more sustainable or congratulating them on what they are doing well

Organizing events to raise money to donate Choose to buy biodegradable products

Buy from stores that use sustainable practices Volunteering

Learn how to free animals from trash

Beach clean-ups

GROUP F

Julia Geller - NSHS
Marcos Sertal Argibay - IESLS
Maria Carolina Spínola Marques Tôco - ESSB
Mariana Curado Marques - ESDBM
Pia Anders - NTK
Tommaso Massimello - IST

Summary

Carbon emissions lead to climate change and ocean acidification
Carbon emissions
Increased temperatures lead to increased rates of algal photosynthesis, which in turn leads to dead zones
Petroleum used for the production of plastic
Overfishing destroys ecosystems

Tourism

leads to increased carbon emissions, overfishing, and increased plastic consumption
sunscreen used at the beach
damages ocean ecosystems

Oil spills

Reliance on oil leads to increased carbon emissions and increased risk of oil spills
Nuclear fallout

Sporting, tourism, and economics

Sunscreen

Transportation—increased carbon emissions
Overfishing

Increased consumption of single use goods when traveling
Surfing is a sustainable activity

Scuba diving allows one to explore the ocean and better understand its ecosystems
Swimming (when sunscreen is absorbed)

Dredging oil and sediments from the ocean

Collaboration of young people with international organizations

UNESCO conference

Project Blue Flag (quality of beaches marked with flags)
Eco-schools

Oceans—young people can buy bracelets and encourage others to buy them too

WORKSHOPS: GENERAL CONCLUSIONS

- Ocean, climate change and habitability on the planet.
- Ethics in human activities with a view to:
 - the maintenance of biodiversity in general and in the Ocean in particular;
 - improving the living conditions of populations living in coastal areas whose economy depends on the sea.
- Role of Science in defending the sustainability of the Ocean.
- Strategies that should be developed in schools in order to regress the physical and chemical pollution of the ocean.
- Behaviors that young people must have in the community in which they live so that the Ocean can regain sustainability.

GROUP A



The ocean is in danger because of the microplastics, oil spills, poor transportation methods, and tourism. Not many people know about this issue; however, through education for the youth, laws against single use plastics, and communal actions, it is possible to reverse the current condition of the ocean.

To do this, young people in the world must be open minded and willing to change bad habits in order to regain sustainability.

In addition, schools can help educate students about the issues, implement environment friendly utensils and recycling in order to stop adding to the pollution.

Developments in science can help researchers discover more about the problems and invent new technologies to solve them. For example, the Cora ball can help collect microfibers before they enter the ocean.

Marine ecosystems are connected to humans contrary to popular belief. In order to keep other animals healthy, we must preserve and prioritize the survival of sea life since we take resources from there. Some people living in coastal areas are dependent on the survival of this sea life because without it, their economy would crash. By doing frequent beach cleanups, recycling and reducing plastic consumption, we can preserve the condition of these cities' economies.

Overall, if people want change, we need everyone working together as a wave.

GROUP B



Ocean, climate change and habitability on the planet.

- climate change; sea level rising, more storms...-> harder to live on earth
- ecosystems destroyed
- health risks for humans
- Ethics in human activities with a view to:
 - o the maintenance of biodiversity in general and in the Ocean in particular;
 - o improving the living conditions of populations living in coastal areas whose economy depends on the sea.
- Role of Science in defending the sustainability of the Ocean.
 - research how things are connected to find solutions for big problems
 - be part of education in order to have a large effect
- Strategies that should be developed in schools in order to regress the physical and chemical pollution of the ocean.
 - return an amount of bottles -> vouchers for lunch
 - collect trash as a class in turns
 - sort trash to recycle
 - events to collect trash from shores (all students)
 - governmental regulations
- Behaviors that young people must have in the community in which they live so that the Ocean can regain sustainability.

First of all both blocks explained and highlighted the importance of the oceans to marine life and humans. They also focused on educating people and presented several measures to minimize the problem.

Block A focused on plastics, microplastics and cigarette butts and the impact they have not only on the oceans but the ecosystems in general. Plastics, once thrown away can easily enter the food chain, specially microplastics which are eaten by small organisms. It was also explained how people from different social status cope and see the problem.

Block B was focused in general on the relation between man and the ocean and the impact human activities have on the oceans. For example, tourism, restaurants, transportation in general and the fact that people tend not to be careless about nature when they are on holidays

GROUP C



- Through all of these presentations we have found that man-made items like plastic and petroleum or practices like tourism are detrimental to our ocean environment and because of this, eventually detrimental to us. Science will show us that the problem is extremely urgent, whether it be the evidence of micro-plastics affecting marine life or tourism affecting ocean temperatures + climates. Through projects and campaigns, like being conscious of our plastic consumption and educating our communities on the dangers of the issue, we can both make a difference ourselves and also inspire others to want to help as well. Our schools need to try and eliminate single-use plastics and work harder to responsibly recycle the plastics that we do use. By first convincing young people that the problem is urgent, we can start and inspire long-lasting and truly meaningful impact in our journey to defeat climate change.

GROUP D



- Ocean, climate change and habitability on the planet.
 - The state of the oceans has been degrading greatly due to generations of careless pollution, consumerism, plastic and waste production, as well as a lack of responsibility. Global temperatures have been increasing greatly, and our generation must be the ones to make a change.
- Ethics in human activities with a view to:
 - the maintenance of biodiversity in general and in the Ocean in particular;
 - improving the living conditions of populations living in coastal areas whose economy depends on the sea.
 - Considering the economic importance of ocean based industry, the livelihoods of those that live off of the sea as well as the biodiversity of the oceans, the goal is to produce solutions that will benefit both parties involved.
- Role of Science in defending the sustainability of the Ocean.
 - Science has the most important role in defending the sustainability of our oceans. Not only will biological science prove to be crucial, but technological improvements will also contribute to the cleaning of our current oceans and the maintenance of them in the future.
- Strategies that should be developed in schools in order to regress the physical and chemical pollution of the ocean.
 - Schools should begin teaching their students to have an environmental mentality from a young age and should teach them sustainable practices that can benefit society. Schools should also encourage student collaboration between younger and older generations to develop a diverse understanding regarding the oceans.
- Behaviors that young people must have in the community in which they live so that the Ocean can regain sustainability.

Younger generations must learn to be aware of how they impact the oceans and the environment as a whole. Additionally, pursuing change will produce an active society that will be motivated to make a difference. Schools should also encourage students to collaborate with their peers and other community members to spread the word.

GROUP E



From all the presentations we learned that our oceans are in a critical state because of humans actions. Because of human dependency on plastics, the oceans are filled with microplastics that are entering the food chain, which is problematic because we do not know the full extent of the consequences. Additionally, the ocean is polluted and acidified by human transportation, which also leads to global warming. The increased water temperatures reduce biodiversity, which effects the entire earth because everything depends on the ocean. To conclude, together we can educate our peers and take immediate action, because our future depends on what we do now.

GROUP F



- Ocean, climate change and habitability on the planet.
Ocean pollution and climate change are urgent issues facing our planet. The state of our oceans is rapidly worsening, making Earth less habitable for both the humans and animals that populate it. Scientists predict that by 2050 there will be more plastic in the sea than fish.
 - Ethics in human activities with a view to:
 - o the maintenance of biodiversity in general and in the Ocean in particular, improving the living conditions of populations living in coastal areas whose economy depends on the sea.
How can we move to more sustainable fishing practices while still allowing fishermen to maintain their livelihoods and grow their industry?
Pay fishermen to recycle their nets Subsidize seasons/time periods of not fishing Fine overfishing and unsustainable practices
- Ecotourism?
- Limit parking spaces to encourage carpooling and reduce emissions Better electric public transportation
 - Parking outside of cities (limit the number of cars that can enter cities)
 - Sell biodegradable sunscreen in beach parking lots so people can apply it before they reach the beach
 - Carry in carry out policies on beaches (fines for littering) Increase the number of recycling bins on the beach
 - Test pollution of water weekly – blue flags
 - Increase price to attend beach if the water is over a certain threshold of pollution

Role of Science in defending the sustainability of the Ocean. Proving the impact of ocean pollution on the earth and human health Providing concrete evidence as to why we should protect our oceans Showing carbon emissions will decrease biodiversity

Show that by affecting the oceans we affect our lives

Devising new technology to clean the ocean and prevent ocean acidification Devise new technologies to reverse and prevent further climate change

- Strategies that should be developed in schools in order to regress the physical and chemical pollution of the ocean.

Set goals and dates for goals Organizing beach and river cleanups Education

Have scientists present their research to students Implement compostable utensils in cafeterias

Introduce more recycling bins (better waste management systems in schools)

- Behaviors that young people must have in the community in which they live so that the Ocean can regain sustainability.

Educate their peers recycle

Respect the environment Reduce reuse

Choose respect Listen first Show kindness

Take responsibility

Set SMART goals Be honest

be present

JAN11 - Friday

Study Visit - Lisbon

10.30 - Lisbon Oceanarium

13.00 - Lunch - Location to be defined

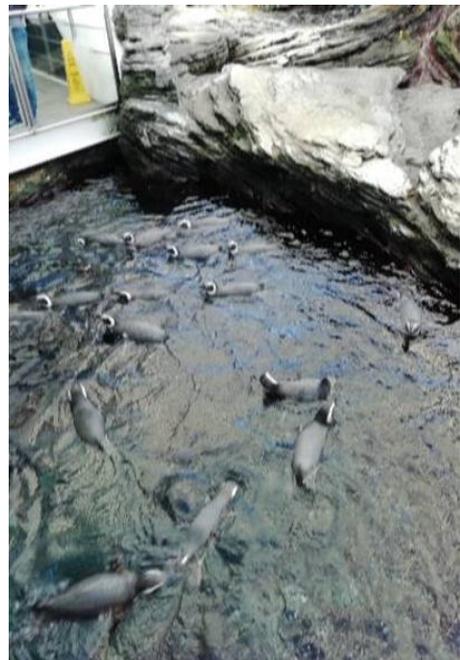
15.00 - Jerónimos Monastery - guided tour

16.15 - Belem Tower

20.00 - Dinner - CAR Fonte Boa

21.00 - Cultural activities by participants

LISBON OCEANARIUM



JERÓNIMOS MONASTERY AND TOWER OF BELÉM



9.30 - General conclusions of the Meeting

Evaluation

Presentation of the 21st International Meeting of Young Scientists of the UNESCO Associated Schools whose theme will be in the context of the United Nations Decade for Deserts and Struggle against Desertification (2010-2020)

Delivery of certificates of participation

Closing session

11.30 - Departure of a bus to the Railway Station of Santarém



EVALUATION FORM



ESCOLA SECUNDÁRIA DE SÁ DA BANDEIRA

21th INTERNATIONAL MEETING OF YOUNG SCIENTISTS OF UNESCO ASSOCIATED SCHOOLS

2019 JAN9-12

Topic: WHAT KIND OF OCEANS DO WE WANT FOR THE FUTURE?

 YOU ATTENDED THE MEETING AS: (Indicate with X, please)

TEACHER	<input type="checkbox"/>
STUDENT	<input type="checkbox"/>

EVALUATION

Using a scale of 1 to 5, where 1 is "Bad" and 5 is "Very Good", rate the following items marking X in the corresponding location.

1. LOGISTIC

		1	2	3	4	5
1.1.	Accommodation:	<input type="radio"/>				
1.2.	Meals:	<input type="radio"/>				
1.3.	Work Rooms:	<input type="radio"/>				
1.4.	Transportation:	<input type="radio"/>				

2. PLANNING / METHODOLOGIES

2.1.	General program:	<input type="radio"/>				
2.2.	Activities:					
2.2.1.	Methodology used in the presentation and discussion of communications:	<input type="radio"/>				
2.2.2.	Work of the participants in small groups:	<input type="radio"/>				
2.2.3.	Study visits:	<input type="radio"/>				
2.2.4.	Cultural activities:	<input type="radio"/>				

(Continued on back)

Logística // Logistics

Instalações: a maioria (45,8%) considerou **3**

Accomodation : the majority (45,8%) considered 3 (adequate)

Refeições: a maioria (47,5% - =) considerou **4**

Meals: the majority (47,5%), considered it 4 (good)

Local de trabalho (Biblioteca): a maioria (52,1%) considerou **4**

Library- working place : the majority (52,1%) considered it 4 (good)

Transporte: a maioria (60,4%) considerou **5**

Transports: the majority (60,4%) considered it 5 (very good)

Planeamento/Metodologias -- Planning Methodologies

Programa Geral: a maioria (45,8%) considerou **5**

General Programme: the majority considered it 5 (very good)

Atividades -- Activities

Metodologia utilizada na apresentação e discussão das comunicações: a maioria (37,5%) considerou **5**

The methodology used in the presentations and discussions was considered by the majority (37,5%) 5 (very good)

Visitas de estudo: a maioria (58,3%) considerou **5**

School trip : the majority (58,3%) considered it 5 (very good)

Atividades culturais: a maioria (66,7%) considerou **5**

Gestão do tempo – Time management

Tempo para preparar o Encontro: a maioria (91,7%) considerou **Suficiente**

Time to prepare the meeting: the majority (91,7%) considered it adequate

Tempo para as atividades durante o Encontro: a maioria (75%) considerou **Suficiente**

Time for the activities during the Meeting: the majority (75%) considered it adequate

Cultural activities: the majority (66,7%) considered it 5 (very good)

Relações interpessoais – Interpersonal relationships

Estudante/estudante: a maioria (72,9%) considerou 5

Student/student: the majority (72,9%) considered it 5 (very good)

Estudante/professor: a maioria (56,3%) considerou 5

Student/teacher: the majority (56,3%) considered it 5 (very good)

Professor/professor: a maioria (64,6%) considerou 5

Teacher/teacher: the majority (64,6%) considered it 5 (very good)

Participantes/organizadores: a maioria (62,5%) considerou 5

Participants/organizing team : the majority (62,5%) considered it 5 (very good)

NOTES¹

You may want to consider **using a hotel** and then **having participants pay** for housing. People would be more willing to pay if they knew it was a hotel and it would improve **the one part of the conference that suffers, which is the accommodations**.

You learned a lot of stuff with the students. This kind of meetings is important because the **young people can express his ideas and make a better world**. Thanks for the invitation, I enjoy it a lot.

We loved the stay and the experience was great as **we made so many friends**. Despite this, **the accommodation should be improved (hot water) as well as the meals**.

Uma sugestão para as próximas edições: as **impressões** das fotografias e **banners** podem **ser em tamanho maior**.

Too much time was planned for many activities

The transition of organizers worked smoothly and it was a successful conference overall.

The overall experience was incredible!

The conference was a great time. Can't wait to tell everyone in the US about it!

The **bathroom could be better**

Thanks for all it's a super nice experience

Thank you very much for making efforts to translate everything in English. This was very much appreciated. I also loved the *oceanarium* and thought that was a very appropriate activity considering this years theme. Thank you also for replenishing towels in the dorms everyday. **I love how the tour of Santarem was done for students by student leaders**. That was a great addition. I also think playing the traditional portuguese games was a great way to introduce us to the culture and help students bond within the conference. It was great that this activity happened early on. One suggestion, I would have is **to allow for just ONE from the student audience after the each groups presentation**. These questions would help the school presenting get used to being accountable for the work they

¹ Original answers were kept.

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Thank you so much for everything and congratulations!

Speak English

Se tivesse tido conhecimento deste programa mais cedo, teria vindo mais vezes. Todo o convívio foi muito bom quer entre estudantes, quer entre estudantes e professores. As atividades culturais foram interessantes e bem dinamizadas

Parabéns à organização!

Parabéns à organização!

Our accommodation had several insufficiencies, mainly related to heating and power, during all the time I have spent there. Besides, it is important to note that overall the meetings' time management wasn't precise, involving several delays and didn't match the hours in the schedule provided.

Não tenho nada a acrescentar. Apenas realço que adorei a experiência e que, se possível, definitivamente irei repetir.

More English appreciated

Moi boa organización. Esperamos poder seguir a participar neste encontro

It's great to see more technology integrated into the conference. It is also great to see some of last years feedback has been taken into consideration and additions have been

It was very good but **we need more free time** to know the place

It was very cool

it was an amazing experience and I totally recommend it. Despite this, **the accommodation should be improved (hot water)**.

It was all very familiar. I loved it.

In order to make the meeting more successful, **the meeting including people/organiser should all speak English**, as most things could not be understood

In general, the organization was pretty satisfactory. In general everyone felt integrated and like they contributed to a better understanding of the problems of the oceans and the solutions for them

In general, it was a great opportunity. However, **the accommodations were not that good since we had many problems related to cold water, energy, etc..** Besides that, **there were some delays, according to our appointments, so time management didn't work that much**. However, it's undeniable that the whole experience was full of great people and knowledge.

In fact, I really love this experience.

I think this activity went really well. The meals, the transportation and the work space were great; however, **the dorm rooms were a bit small and there was no hot water**. Also, the relationships between students, teachers and organizers were really good.

I think the meeting was a wonderful way to spread awareness about all the problems on our oceans and motivate us to do something about it. It was also a wonderful way to meet new people from all around the globe. I think **the only problem was the lack of warm water**.

I think that **the school was a bit too cold** and that **the time management wasn't efficient enough**. **We spend too much time doing activities especially after dinner**.

I really enjoyed this meeting, and I hope next year I can participate again.

I really enjoyed having so much time for each activity. It gave us time to make connections between students and explore the school. My only suggestion is if possible, putting shower heads in the bathrooms so you don't have to hold the shower head while you wash yourself. Overall I really enjoyed my time here!

I liked how organized the conference seemed and I also like how everyone at the conference was able to get involved in all of the activities. The small group sessions were particularly enjoyable.

i like it

I had an amazing time, thank you for this opportunity

I had a wonderful time participating in the conference this year and I truly hope that my school and others will be invited to participate once again next year.

I had a lot of fun!

Gostei imenso desta experiência e pretendo voltar para o ano!

Foi uma experiência muito interessante e enriquecedora.

Em geral gostei muito de este encontro porque podemos fazer novas amizades. Há certos problemas que se poderiam melhorar como a água quente ou fria mas e algumas comidas do meio dia. Obrigada por a vossa hospitalidade.

Considerarei o tema deste encontro de grande importância, para a sensibilização e o conhecimento dos oceanos, assim como, alertar as gerações mais jovens para salvaguardar este bem precioso que é o Oceano.

1º - As apresentações dos trabalhos deveria ter um tempo maior, pois há pesquisas interessantes para conversar. Assim também quanto a palestra da Dr. Fátima, de excelente qualidade, mas não tivemos um tempo para perguntas. 2º - agradeço, do início ao final, por toda a solicitude apresentada por vocês coordenadores, funcionários e o povo português em geral, pelo momento impar reflexivo e produtivo que nos proporcionaram.

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GENERAL CONCLUSIONS

Refer what motivated you to participate in this meeting.

I **want to be a marine biologist** in my future. This conference was a great opportunity to begin getting involved in something that can help our oceans. It was also an amazing travel experience, my first time to Europe.

I have long been **motivated and concerned with the issues surrounding climate change** and I thought this meeting would be a fantastic opportunity to finally participate in acting to support the issue. In addition, I have always been **interested in learning and experiencing new cultures**, so the opportunity to meet so many students and teachers from around the world was very appealing to me.

Interest on the ocean. Participation to UNESCO club also last year.

I wanted to come here because is a **great opportunity to meet people and to raise awareness the problem that we have in our world**

The topic of the meeting

General ocean knowledge, and learning about different problems oceans are having

In general, I am very interested in **marine biology** and also feel responsible to do my part and protect the oceans.

My motivacion was to **meet new people** and is a good experience.

My curiosity about the condition of the ocean, and **my will to help the world to be a better place** as I understand the global issues that have arised.

I thought the meeting would be a **great opportunity to expand my horizons**. I have never been to a foreign country before and have met only a small amount of students that have lived outside of the United States. Additionally, it was an opportunity to show my passion for a subject I really care about. The "Oceans" theme was perfect for me because **I want to go into Marine Biology** and I am passionate about preservation.

I was **motivated by the chance to search and learn about** such an important subject as **the oceans** and their future, as well as **to contact with peers** from such different countries and cultures.

I was motivated to participate in this meeting because I am **passionate about protecting our oceans and interested in learning about other countries' cultures**.

I was motivated to participate in this meeting because I am **interested in global scientific issues** and how we can save and perseve the ocean.

This program is invaluable to me. **There is no other opportunity available where students can design, plan, execute and communicate a long term project like this. On top of that, they get to gain a cultural experience and learn from their international peers.**

My family motivated me

I got asked to go and so I did

I enjoy discussing the environment and particularly **have an interest in the seas and oceans** and wanted to be able to discuss possible solutions to the problems facing us today

My spanish teacher last year showed me this program and told me that I should participate in it, so I applied because I thought it would be a good experience. Also, my teacher mentioned how the group every year needs someone with video editing experience, which got me interested.

Meet new people and try teach something for the rest of the people

I have always **loved the sea**, and my goal is to **protect and preserve the Earth's Oceans**. When I heard about the conference, I immediately wanted to join in order **to take action on the issue** of ocean pollution, and **to understand how other cultures** have interpreted this issue and how they are acting.

meet people and learn new things

The experience and **knowing different people** from around the world

The experience and **knowing different people** from around the world.

The topic, which I find very interesting and worthy of attention and reflection, as well as the **opportunity to represent my school** in an international UNESCO meeting.

Meet new people.

O que me motivou foi saber que iria **conhecer pessoas de outros países** além de visitar Portugal em que muitos falavam que eram muito recetivos.

There are many reasons that encouraged me in order to come here. However, I think the main reason was that being invited by my school made me realize that maybe we can beat the destruction of our world. I think the idea of knowing that we are all part of something bigger and that we are all connected and that everything affects everything made me realize that political, social, environmental, biological, etc. end up creating a single thing that demands to be protected. **We wanted to share stories of people who are strictly connected to the ocean** in order to show its importance not because it's our story, but because we need to discuss that.

Decidi participar porque **queria conhecer novos alunos**, ter uma nova experiência de convívio e pelo **tema apresentado este ano**

The opportunity of **looking up for other visions about this work.**

I participated in this meeting because I consider myself someone who is **worried about the oceans, the issues related** to them and how young people can find ways to change the current situation. Moreover, attending this kind of meetings is always a good experience for us as it a way of **knowing new people and exchanging cultures.**

Conhecer novas pessoas de diferentes nacionalidades e ajudar no desenvolver deste projeto com um **tema que me interessa bastante.**

Eu participei neste encontro para **poder conhecer pessoas de novos países** e a sua opinião acerca do **tema deste ano, os oceanos.** Ao poder **ouvir e conhecer outras opiniões** e outros pontos de vista consegui alargar o meu conhecimento.

Quando tive conhecimento deste projeto fiquei bastante interessada em participar porque **gostei bastante do tema** que nos foi proposto trabalhar, para além de que tive também conhecimento que **teria oportunidade de comunicar, conviver e trocar ideias, não só com pessoas de outros países como até de Portugal.** Gosto bastante deste tipo de projetos em que temos possibilidade de **comunicar com pessoas estrangeiras** e não só porque nos proporciona **oportunidade de conhecer novas pessoas e fazer novas amizades**, para além de que posso **melhorar/praticar o meu inglês** e também ganhar experiência no que toca a viajar, uma vez que, me garante mais prática de comunicação etc.

The **opportunity to meet people from the different countries**, and the need to **spread awareness for ocean pollution.**

I think **preserving the ocean and planet Earth** in general is everyone's duty and I thought this meeting would be a wonderful way to discover what I can do to help.

Este tipo de **temas interessa-me bastante** (preservação do ambiente, dos oceanos, etc...) e quando me sugeriram participar no projeto, vi uma oportunidade de, não só poder **partilhar o meu interesse com outras pessoas**, como poder **conviver com alunos de outros lugares**, com **culturas diferentes** (mas com este tema em comum), que é algo que tenho um enorme prazer em fazer.

In your opinion, what were the highlights of this meeting? Why?

I really enjoyed seeing all the **different approaches** to the project. The way one school interpreted the project verses how another school did was interesting.

I liked hearing everyone's **presentations** most of all because I was so excited to see that **everyone cared about the different issues** just as much as I did.

The Lisbon visit

The highlights of this meeting were, in my opinion, **the repetition of things that we know but we don't make anything to change it**

the presentations of a few schools and the conclusion that groups A, B, C, D, E, and F made.

The Lisbon visit

For me, the highlight was **meeting so many different people** with different cultures and learning about how they live because America is distant from all these cultures so it was fun to experience different countries.

In my opinion the highlights is a **raise awareness about oceans and the plastic's use** because the people must protect the oceans and its ecosystems

Touristic Trip to Lisbon

I really enjoyed both the **tours of Lisboa** and the **presentations** themselves. It was interesting to see everyone's take on the project - giving a vague outline of the project allowed the students to show their passion for the ocean in a unique way that boosted creativity and cooperation. The **tours were great** as well because we were able to talk to many other students from other countries and sight see in the heart of the city.

They were **the visit to Lisbon**, as it **enabled the conversation and bonding** between all students.

The highlight was **meeting and getting to know all the other students**.

The highlight of the meeting was **going to Lisbon** for the day and **working in small groups**.

I loved the **oceanarium** and **each schools presentations**. The **oceanarium** was a great activity because the students we took with us naturally love the ocean. I believe we could have spent the whole day there happily. I also love hearing how each school attack this year's theme.

The **cultural activities**, because they made the people know more about other cultures.

In my opinion the best moment was during the **cultural activities**, because we have a lot of fun doing them

The highlights of the meeting where the **cultural visits** to the city such as Lisbon and Santarem as I enjoyed seeing the culture of the country

I really enjoyed the **small group activities** because they **allowed me to connect with people from other countries and work with them**. Another highlight was the **presentations** portion. After everyone's hard work in their countries, we were able to see the end result of their progress and how far they had come.

In my opinion, were the **microplastics** because all people must know for reflect what we do to the ocean

The **cultural activities** and the **presentations** were my favorite parts of the conference. I loved **learning about different traditions in other cultures** during the cultural presentations, and how those cultures have shaped their nations' approaches to different oceanographic issues.

learn how take care our ecosystem

In the first place, I **achieved a deep knowledge about this topic**. Secondly, the international meeting was great as I could **meet people from different countries** and I'm highly motivated to visit them and to travel abroad.

In the first place, I achieved a **deep knowledge about this topic**. Secondly the international meeting was great as I could **meet people from different countries** and I'm highly motivated to visit them and to travel aboard.

The **group discussions** as well as the **cultural presentations**, because it allowed us to explore the participants' creative, intellectual and communicative abilities.

Cultural Activities, and the opportunity of **looking up for the other perspectives** about the theme

As **apresentações e as discussões em grupo** porque estavam todos por mais que não são dos meus países motivados por mostrarem o que querem para o futuro.

I believe the highlights were related to the **discussions** that were developed throughout the meeting. Getting to know that we are all students from different countries united for a main cause was amazing. It shows us how powerful we, the ocean and the society are. Besides that, the cultural visits were incredibly good. We've got to understand more about Portugal and it's pretty great from someone who comes to Brazil, even though it made me realize how perspectives can be really different.

Os pontos altos dos encontros, as **atividades em grupo**

The **cultural moments** were the best because we could see how the different countries seize the moment.

The better understanding of the problems related to the oceans as every group taught us different things. We also **learned how oceans are related to people, social status and the role of education in those cases.**

Na minha opinião, os momentos altos deste encontro foram a **visita a Lisboa e as atividades culturais assim como os jogos tradicionais.**

Os pontos altos deste encontro foram maioritariamente **o convívio entre estudantes** de todas as nacionalidades, a oportunidade de conhecer novos costumes e **novos jogos também através das atividades culturais, e também a apresentação dos trabalhos** onde podemos ouvir projetos que outras escolas fizeram nas suas escolas para se dedicarem a esta problemática da poluição dos oceanos.

Pessoalmente, os pontos altos deste encontro é a **convivência** com novas pessoas e as experiências de vida que iremos recordar para toda a vida.

Aquilo que gostei mais de realizar foram as várias **atividades de tempos livres** que as diferentes escolas proporcionaram. Foram momentos em que, na minha opinião, nos divertimos ao mesmo tempo em que aprendemos um pouco da cultura de cada país. Para além disso, achei muito interessante ouvir nas **apresentações dos trabalhos** os projetos ou as iniciativas que foram implementadas nas diversas escolas. Dessa forma não só mostraram a pesquisa que efetuaram mas também algo que decidiram fazer para melhorar a situação dos oceanos em que nos encontramos.

I think that **the communications** were an important way of educating people about the problems that concern everyone, as well as the solutions and what can we do to help. Also, the free time activities helped us knowing about different cultures while having fun.

On Thursday we found out more about all the problems that threaten our oceans and we were inspired by some groups that have already made a change, as small as it might seem. With the **cultural activities** we learned more about other countries and cultures. The field trip was also very enriching because we got to now new places.

Na minha opinião, todo o projeto foi bastante interessante e, devido à variedade de atividades que houve, cada uma delas tem a sua parte boa. No entanto, para mim, a **visita a Lisboa** foi, de facto um ponto alto deste projeto, com várias visitas interessantes, todas, de certa maneira, relacionadas com o tema em discussão. Outras partes do projeto que eu de facto adorei foram a realização das **atividades lúdicas de cada país e também os tempos que tínhamos mais livres**, pois assim pudemos conviver com os outros estudantes (tanto de outras cidades como de outros países) e pudemos conhecer um pouco das suas diferentes culturas e costumes. Fizemos também novas amizades e recordações que com certeza guardaremos com carinho nas nossas memórias.

Confront the results with your expectations.

I wasn't really sure what to expect from this conference, but **i thought it went really well.** Personally i learned a lot not only about our oceans but also about new cultures and new people.

In the future, I would love it if during the day **we could sit in on/ listen to one of the classes going on in the school**, as it would provide another layer of cultural experience.

The meeting wasn't organized professionally as most of the **speeches were in a language I couldn't understand.**

I have very good expectatives about this meeting and it doesn't disappointed me, **the results were good**

My expectations were higher that the result because the language that many students were speaking also during the presentation (Portuguese or Spanish) limited the internationalism of this event.

For the oceans, I did not expect that the ocean was In such grave danger, if we continue the whole planet will soon risk its existence

I think **the results were even better than my expectations** because I didn't expect to make so many meaningful connections, but I did.

Yes, **the results confront with my expectations.**

I expected the meeting to be a bit more organized, yet often students did not know what they had to do, and there was a lot of dead time. Furthermore, I expected the meeting to be in english, as it is an international conference, so i was quite disappointed that some presentations were in portuguese.

I was very excited to visit Portugal, and even though we only had a few days to explore and see the city, I was very happy with the conference. I wasn't sure what to expect from the other students and conference members, but they were all very kind and **I had a great time.**

The results didn't quite meet my expectations.

I was not sure what to expect coming into the conference, but **I really enjoyed it.**

I had good expectations going into this meeting, but I feel that **the planning and organizing was not done well.** We spent a lot of time waiting around, and the instructions were confusing or delivered in Portuguese which many of us couldn't understand.

Since I have been lucky enough to attend this conference before **all expectations were met.** I did love how additionally there was more effort to translate things in English. This helped my students be able to take more out of the conference.

The results **were better than my expectations**

The event **fulfilled my expectations**

I had expected the meeting to be much more scientific and work based on UNESCO but it was more social. I also expected the days to be very packed and busy but a lot of the time was spent waiting around for the next activity.

I hadn't expected that the main language spoken would be Portuguese as many of the participants have no understanding of this language meaning that when many of the instructions were given it lots of people were unable to understand.

I had expected that we would have been in a larger conference room where we had done everything in including group work, however this was not the case. Although, I feel as though it did not affect my experience and the conference room was excelente.

Yes, of course

The **conference met all of my expectations!** It was an amazing experience to learn from my peers and from individuals who are equally passionate about Oceans. I learned so much in such a condensed period of time!

I have **learned more things that I think that I would** learn

Everything **was as I expected**, except from the accommodation since we couldn't enjoy hot water many times.

Everything **was as I expected**, except the acomodation since we couldn't enjoy hot water many times.

I believe that despite all the knowledge I have gained at the end of this meeting, I have made myself **more friends than what I could've imagined.**

At the end of this meeting I realized that we did not just learnt a lot about this theme but **made new friends.**

Não esperava fazer tantas amizades e que no final iria sentir falta de tudo que passei esses dias. Considering that I was extremely nervous before coming, as I didn't know what to expect, I believe **it surprised in a very positive way.** I learned more than I thought I would and it made me realize how important it is to share ideas in order to create a better world. The reception was also great which made me way more comfortable.

todo este encontro **correspondeu às minhas expectativas.** Conhecer novas pessoas e debater o tema estiveram sempre dentro das minhas expectativas

At the end i realized that we don't have just some issues, we have a bunch of them. And **working with a team like this one was awesome** to have that vision.

In general, **everything was according to my expectations** as we were able to learn even more about the oceans and meet new people

Os resultados superaram as minha expectativas. Fiz novas amizades, conheci novas culturas e aprendi várias coisas acerca do tema Oceanos.

Eu acho que este encontro **correspondeu às minhas expectativas,** tanto a qualidade dos trabalhos e projetos apresentados como a simpatia das pessoas que conheci.

Sinceramente os resultados da experiência **corresponderam às minhas expectativas.** Adorei todas as atividades que realizamos ao longo deste quatro dias e se fosse possível voltaria a fazer tudo outra vez.

This meeting, in general, was what I expected, except for the fact that **I thought that we would discuss more the communications.**

I really liked the meeting, and on some aspects it was even better than I was expecting. However **I thought we would discuss more and different things about the communications.**

Quando me falaram do projeto, fiquei bastante entusiasmada com o que se iria passar, pois desde o início me pareceu uma experiência muito interessante. E de facto foi; devo dizer que **passou as minhas expectativas.** Inicialmente, inscrevi-me apenas porque me interessei pelo tema abordado, no entanto, quando entendi melhor no que consistia o projeto e quando vi o programa completo, vi que seria uma experiência inesquecível e muito especial. Durante o projeto comprovei o que imaginei. **Foi efetivamente tão bom ou melhor do que eu imaginei**

Major conclusions of the 21th International Meeting of Young Scientists:

This was **an amazing experience** for me to travel but more importantly to begin getting involved in my community and a topic I really care about. I hope to continue moving with the work we have done with the elementary schools and really make a difference in the way we treat our oceans.

In the end, I took away that students from around the globe not only are concerned with the various issues plaguing our oceans, but they also are well informed on them and have proposed possible solutions to the issues. Now, we need to act on those solutions because it seems we have come to consensus enough to do so.

The meeting was interesting but **should've been organized better**.

I think that this meeting is very good to raise awareness the young people that if we doesn't change some things the world like we know would disappear

Interesting and useful, but **it could be definitely Improved by making English the main and only language spoken during presentations and communications**

The next/our generation has to start doing something if we want to keep the planet alive, as the conditions are getting worse every second.

It was a great learning experience both in terms of education about human pollution and experiencing new cultures. **I have grown my appreciation for this meeting and all the event planners that put in so much work to make this meeting run smoothly.**

My conclusions of the 21th Internacional Meeting of Young Scientists are a good opportunity for learn a lot of things, concrecly about oceans. It is an opportunity for meet a new guys too.

The meeting was very informative and interesting, and allowed students to exchange their ideas on global issues regarding the ocean. However, **the meeting was not very well organized, and the language limited the internationalism of the meeting.**

I think some of the major conclusions that we reached from the conference include the **need for action, the need for education, and the need for responsibility**. This generation is facing one of the most challenging crises of our time, and we need to be able to handle the challenge of cleaning our world and preserving it for future generations.

One must change their habits and, most of all, their mentalities, so as to preserve our unique planet and enable a simillar life quality as the current one to the following generations of living creatures, including but not only of the human kind.

It was an incredible experience and uplifting to see that all the students understand that it is our job to act now and educate others on the major problems facing the oceans such as acidification and pollution from microplastics.

The event **was a good experience** and the presentations were interesting. It was also good to hear other students opinions on issues with the ocean. However, **I expected the planning to have been better and found it quite poor.**

I loved the experience. Thank you very much for inviting us again :)

The Oceans are the most important part of our world, and if the humanity don't preserve it they won't have a good place to live in the future

In this event **we got the opportunity to be in contact with a lot of different cultures and opinions about the oceans**

I believe that the presentations and work done by the students was to a very high quality, but **more of the meeting should have been discussing the issues at hand**. The games played and the cultural visit to Lisbon was very enjoyable.

For next time, the language spoken should have been English, as the Portuguese demoted international mindedness.

I took away from this conference that yes, there is a problem out in the oceans, but not everyone in the world knows about it right now. In order to improve the current state of the oceans, we must educate everyone on the matter in order to help them make changes to their daily lives. With this, we can reduce plastic consumption and keep our oceans clean.

We have to take care about our planet

The 21st international meeting of Young scientists was **an invaluable experience** that I am so grateful to have been a part of! It was incredible to see young people interested in remediating the world's addiction to consumption in order to cleanse our oceans of macro and micro plastics, reduce our carbon footprints to mitigate ocean acidification, fish more sustainably in order to reduce overfishing, and empower marginalized people in order to make our world one more units with its environment. I can't wait to see what all of these young scientists and activists achieve!

it was **very good idea do this** because the students meet people and learn the importance to take care the oceans

As I said before, **it was a great experience** and I would only change a few things. In this meeting I learned that together we can achieve many things. **We need to take care of the oceans.** Think locally, act globally. Every drop counts. Thanks and I hope you continue with this project many more years.

As I said before, **it was a great experience** and I would only change a few things. In this meeting, I learned that together we can achieve many things. **We need to take care pf the oceans.** Think locally, act globally. Every drop counts. Thanks and I hope you continue with this project many more years

Seeing so many young intelligent and determined people made me realize that we are part of the generation that is transforming the knowledge we have about our planet into actions that, if they become habits, will change the world.

It's awesome to work as a team, once we can face the same problem with a lot of different perspectives.

Foi um **encontro maravilhoso** em que pude ter a oportunidade de conhecer varias pessoas e saber mais sobre a situação dos oceanos.

I have in mind that this generation of young people is the generation of the people who get to realize all of the different problems around the world, and besides that, we discuss and share ideas. However, sometimes o feel guilty because it seems that we talk to much but don't do anything about it. Fortunately, this meeting made me realize that this is actually the first step. We can't do much if we don't talk about and analyze the world according to different perspectives. Because of that. **I believe this meeting was important for making me realize that even though there's pollution, animals dying and chaos, we give hope to each other, and hope gives us strength to change the world.**

Mesmo sendo um pequeno grupo de jovens **temos capacidade de mudar o mundo** se assim o quisermos, ficamos com uma melhor percepção dos problemas que realmente afetam os oceanos e que apesar de todas as nacionalidades presentes neste encontro, da diferença cultural quando nos juntamos para uma mesma causa tudo é possível.

When you work with a team you end up understanding the problem a lot better and having a lot more conclusions and solutions of what it would be if we did it by ourselves.

Education has an extremely important role in the relation people have with the oceans as many of them still don't know the impacts human activity has on them. Additionally, although the future is in the hands of young people, it is everyone's responsibility to make an effort and work hard enough to solve several current problems related with the oceans.

To sum up, the future starts now and it's time to put everything we learned into practice.

Temos de começar a Agir, esta é a hora! Os nossos oceanos são bastante vulneráveis e precisam da nossa atenção. Penso que implementar um projeto que envolvesse os nossos alunos e os educasse para a correta sustentabilidade dos oceanos seria ótimo. Assim obteríamos melhores resultados. Foi um excelente encontro e espero que, com ele, se possa finalmente começar a agir com medidas de prevenção adequadas. Obrigada pela oportunidade que nos foi dada.

Neste encontro concluí que todos nós, a geração seguinte, importa-se com problemáticas como esta, dos oceanos, e que estamos todos a tentar fazer a diferença apesar de termos todos nacionalidades diferentes. Este encontro ajudou-me bastante a perceber que a nossa geração está atenta e que está a tentar fazer melhor que pode.

Pessoalmente, a maior conclusão que tiro de todo este projeto será talvez o facto de que **o oceano está num estado crítico** do qual algumas pessoas não estão bem informadas. Existe uma enorme quantidade de microplásticos nos locais mais improváveis e de que nós não temos menor ideia. A construção ou a destruição de infraestruturas mesmo que não directamente pode influenciar a poluição dos oceanos... No entanto, não é tarde demais para começar a fazer a diferença e com um simples ato, como por exemplo, alterar o material das palhinhas que são servidas nos cafés, podemos fazer uma grande diferença, porque com muitas pequenas ações podemos fazer a diferença para um futuro melhor.

Ocean pollution is a serious matter that concerns everyone. This is why each one of us needs to take action, as well as spread awareness so we can keep our oceans clean and maintain its biodiversity.

It is our duty to protect our oceans. We were the ones who destroyed them, it is our responsibility to fix them. If each person who participated on this meeting does something to spread awareness, we're taking the first step to change the world. "Individually we're just a drop, together we're an ocean."

Com este projeto, podemos concluir várias coisas. Antes de tudo, pudemos partilhar opiniões, curiosidades e factos sobre um tema muito importante na atualidade. Depois, tivemos oportunidade de conhecer novas pessoas e culturas, que nos alargaram bastante os horizontes. Adquirimos então muitos conhecimentos a diversos níveis, desde o nível de conhecimento até ao nível social e de comunicação. É sem dúvida uma experiência inesquecível e que irei guardar na minha memória com muito carinho.



Unforgettable moments

The soirees

The meals

The trip

The people

The places

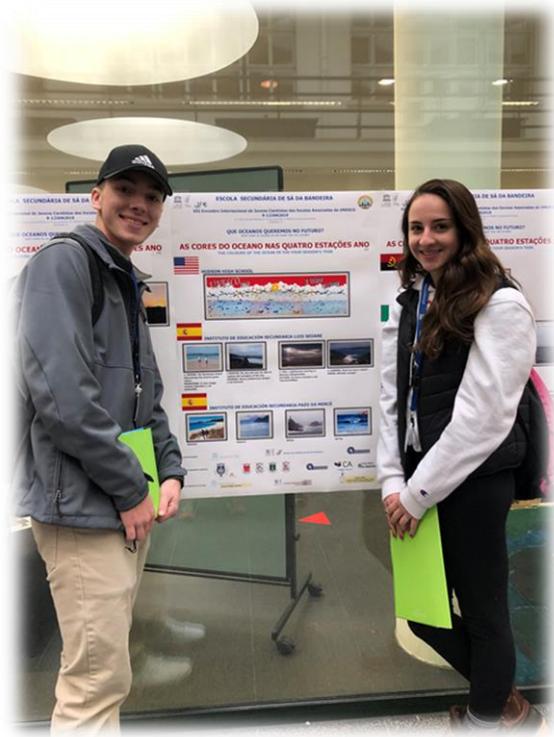




"Sou aquilo que faço,
faço aquilo que sou"



I AM WHAT I DO
I DO WHAT I AM



AS BEATAS UM PERIGO NOS OCEANOS

OS CIGARROS CONTÊM QUÍMICOS QUE POLUEM OS OCEANOS E O SOLO

Nicotina (venenoso)
 Mercúrio (contaminante)
 Amoníaco (gasoso que penetra de águas)
 Cloreto de Vinila (utilizado em tubos e plásticos, utilizado para fabricar)
 Arsénio (venenoso)
 Alcatrão (venenoso)
 Ácido clorídrico (ácido)

Estes químicos ao serem libertados a partir dos cigarros, após serem fumados, através das BEATAS, vão contaminar os oceanos, levando a que os peixes MORRAM ENVENENADOS, originando uma EXTINÇÃO MASSIVA DE ESPÉCIES MARINHAS.

Se os PEIXES comem as BEATAS, estes químicos entram directamente no seu organismo, o que levará a sua MORTE.

Quando as BEATAS são deixadas na praia, vão poluir a areia, lançando produtos químicos que podem ser ingeridos por aves ou crianças.

AS BEATAS DEMORAM CERCA DE 20 MESES A DECOMPOR-SE!



