



ti si que es UN ~ BOPEIXE

A ritmo de peixe e mar, PeiX amosa o bo xantar!

TEACHING UNIT Secondary Education





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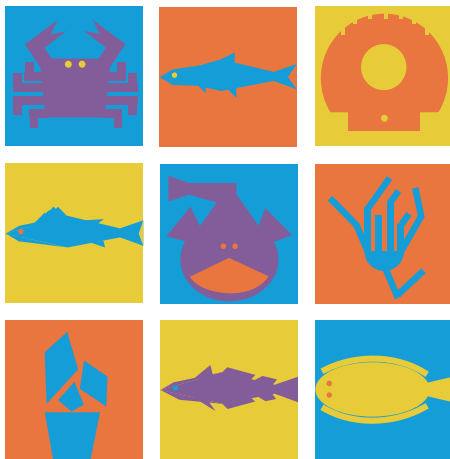


According to the general provisions of the Ministry of Education and University Organization, as set out in Decree 86/2015, of 25 June, which establishes the curriculum for Compulsory Secondary Education and the Baccalaureate in the Autonomous Community of Galicia, this teaching unit is designed to be used after the visit to the program school.

The main aspects of the educational curriculum that the teacher can address from these notebooks are:

1. OBJECTIVES

The starting objectives of this campaign focus on conveying to secondary school students the importance of fish and shellfish in the diet, in relation to their nutritional contributions, and encouraging their consumption. In addition, they will delve into the knowledge of the species and the role of consumers in preserving the resources of the sea and in enhancing the professions of the sea.





2. BASIC COMPETENCES

Mathematical competence and basic competences in science and technology MCST.



Contents related to the world of fishing, transport and preparation of seafood.

Social and civic competence CSC.

The consumption of fish as a source of health, and as an economic and social resource.



Competence in linguistic communication CLC.



Reading comprehension and written expression.

Sense of initiative and entrepreneurship CSIEE.

New knowledge about the value of consuming fish and seafood that will allow them to make decisions regarding their consumption.



Digital competence DC.

Students will acquire new knowledge of the environment and the diversity that the world of the sea entails, through the guided search for information.





3. CURRICULAR CONTENTS

Compulsory Secondary Education aims to ensure that students acquire the basic elements of culture, namely in its humanistic, artistic, scientific and technological aspects; develop and consolidate study and work habits in them; prepare them for their incorporation into further studies and for their employment, and train them for the exercise of their rights and obligations in life as citizens.

Although the contents of the teaching unit can be treated from a point of view of the different areas of knowledge, we collect below those related to the area of knowledge of the natural, social and cultural environment for being the area of greatest involvement and most directly related.



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4. CONTENTS

Block Biology and Geology

- B3.1 Concept of biodiversity.
- B3.2 Classification systems of living beings.

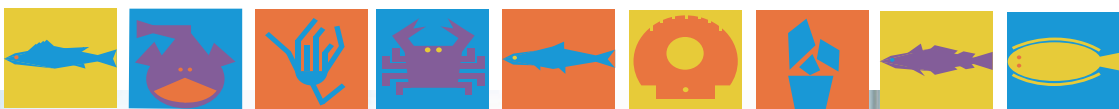
Healthy lifestyle block

- B2.1. Eating as a habit of healthy living.
- B2.3 Design of simple dietary proposals.

Gender Equality Block

- Recognition of different professions avoiding sexist stereotypes.





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5. STARTING ACTIVITY - STORY



UXÍA THE BIOLOGIST

From an early age, Uxía was always very clear that when she grew up she wanted to work with sea animals.

Her curiosity led her to study Biology, and to specialize in the marine world.

She is now researching the nutritional properties of seafood, after discovering important improvements in our body through its regular consumption in different dishes.

Investigate these improvements with the help of “Roque The Fishmonger” and its virtual assistant “PeiX”.



ROQUE THE FISHMONGER

A fishmonger by profession, he helps Uxía with her research due to her experience in the sector.

Given its profession as a fishmonger, he is located in the middle of the journey of seafood, from the time it is fished or extracted, until it reaches the final consumer.

For his work he talks both with sailors, shellfish gatherers, workers at the fish market and also with the cooks of restaurants, consumers, etc.

This gives him extensive experience in the environment, and a great knowledge of the species and products of the sea, with which he works daily.





PEIX, THE GOOD FISH!

Uxía's digital assistant and subject of virtual research tests. Delicious test designed by Roque experiencing in the virtual world the improvements of a diet based on seafood. The method of communicating with PeiX is through music and rhythms. **PeiX loves music so much that it only speaks in rhymes!**





To the
rhythm
of fish and sea,
PeiX shows
its good delicacy!





Uxía, our Biologist, is doing some final checks on her tablet before turning on PeiX and starting to work, when Roque enters the laboratory door very agitated.

- Uxíaaaa! UXÍAAAAA!



- What's up Roque? Why are you screaming? - asked Uxía.

- Because the people from the fish market have just told me that a cyclogenesis is about to enter, which will paralyze the port for several days in a row! And I don't know how that will affect our research!

- he told her very worried.



Uxía looked at Roque and after thinking for a moment he replied:

- Calm down Roque, with the data we have so far we can work for a while only with PeiX ... Also, wasn't this week that we were gonna go to the school to show our first results to the kids?

- It's true, it's true... - Roque said scratching his forehead, already calmer – and by the way, how are the results?

- Well look, at this moment I was going to connect to see how PeiX did! Why don't you sit down and print out the fish and seafood chips from the menus we've prepared for you and what's best suited for you, and see what nutrients are the ones that make it possible?

- Of course! This way we can make new recipes with those fish and seafood!





Uxía finishes checking her tablet's battery and turns on the program so she can talk to PeiX.

- **Good morning PeiX, how are you today?** - Uxía asks him.

- **BIP! Good morning Uxía! I'm wonderful! BIP!**

Whenever PeiX talks start with a **BIP!** And it ends with another **BIP!** Plus because he likes music so much he always speaks with musical rhythm and rhymes!

Roque approaches to greet PeiX as well.

- **Very good PeiX! Ready to give us the results of this week's menus?**

- **BIP! Of course Roque, if you want you can print in bulk! BIP!**

- **This PeiX is smarter every day Uxía...**



- **That's because I augmented the Sardines in its diet, Roque** - Uxía replied.

- **BIP! Sardine Sardine... for intelligence is beret!~BIP!**

- **Come on!** - says Roque. - **Let's then print the final data of the study!**





SARDINE



Help us keep
good
eyesight!



Wandering and gregarious animal. During the day it inhabits greater depths than at night, when fishing with trawls on the surface.

Source of Vitamin A, Retinol, helps us maintain good eyesight, vitamin D and omega 3 fatty acid.

Common name: Sardine or mackerel.

Scientific name: *Sardina pilchardus*

Uniform scaly body with bluish, greenish back, ventrally silvery and with a bright blue lateral line. It has a total of 5 fins, the bifid and symmetrical flow being characteristic of blue fish.

Common name: Hake, carioca or pixota.

Scientific name: *Merluccius merluccius*

White fish with a dark cylindrical body about 1 m long. It has 8 fins and a mouth with two rows of hook-shaped teeth on the lower jaw and one on the upper.

HAKE



It keeps our
heart
healthy



They are fished by trawling, especially in winter, when they live deeper, or by longline fishing in summer in coastal areas. It has **low fat, it also has omega 3 fatty acid, vitamins B12 and B3 and Potassium**, which will allow the heart muscle to function properly.



Common name: Sea bass.

Scientific name: *Dicentrarchus labrax*

White fish with a fusiform body with 7 fins adapted to swimming. Dorsal gray and ventral white are degrading in the rest of the body. It has a marked lateral line longitudinally to the body. It eats both small seafood and other fish.

SEA BASS



Gives us
energy for the
whole day

It is fished during the winter, from November to March by hook, either with reeds in the troll, or with surface longline. It provides us with very important minerals, proteins and vitamins such as **vitamin B3** that will give us energy and others in group B.



MONKFISH



It improves
our brain

Common name: Monkfish.

Scientific name: *Lophius piscatorius*

Flat fish of dark brown color without scales and with a great head where the dorsal eyes are and a fin with a form of worm that serves him to hunt its food: other fish. Long, thick tail with two pectoral fins.



B12

It is fished with nets or cane wires that are placed on the seabed, which is where it lives all year round. **It provides us with vitamin B12, calcium and potassium.** This vitamin B12 will be critical in the proper maintenance of neurons and red blood cells.





SOLE



Gives us
strength to
the body!

Common name: Sole.

Scientific name: *Solea solea*

Flat fish with small rectangular scales. Dark dorsal part with two eyes, one for migration, and white ventral part with the nostrils. It lives in the airy bottoms so that it hides between the sands when it feels threatened.



P

It lives near the coast, buried in the day sands, so as not to be hunted. In the evening he goes out to eat small shellfish. It contains vitamins and minerals such as **phosphorus that will give us body strength** by being a component of teeth and bones.

Common name: Barnacle.

Scientific name: *Pollicipes pollicipes*.

They are cirripede shellfish, crustaceans that have lost the ability to move and live fixed on a substrate. There are 2 parts: the head - composed of small nails that protect the organs - and the peduncle - which covers the muscle.

BARNACLE



Total recharge
of our body!



They are collected every month of the year from the rocks by highly prepared shellfish. We damage many **B vitamins, B1, B2, B3, B6 and B12 and minerals such as iodine, calcium, magnesium, potassium, phosphorus and selenium**, a natural recharge of components of our body.



Common name: Nécora.
Scientific name: *Necora puber*

It is a decapod crustacean shellfish. The first pair of legs with 2 pincers is more developed in males. It displays sexual deformity, that is manifested additionally to the previous one, by a more rounded abdomen in the females and narrower and triangular in the males.

NÉCORA



It protects
our body!



It lives on rocks and eats algae, fish and other animals. They are collected **at night, in traps** left on the seabed and during the months of July to December. It provides us with **minerals and vitamin E**, essential to protect the body B6, omega 3 fatty acids, iodine, phosphorus and zinc.

SCALLOP



Favors
growth!

Common name: Vieira.
Scientific name: *Pecten maximus*

It is a **bivalve mollusk** (formed by two shells). On the outside they have ripples and are colored between brown and red. It lives in the marine sandy detrital bottoms of the coast up to 100m with clean waters. They feed on phytoplankton and organic particles.



B9

They are collected by boat using the scallop trail, which is like a rake with a net behind to collect them from the seabed. They provide us with **minerals and B vitamins** such as vitamin B9, which promotes growth, and B3 and B12.





GOLDEN KELP



Helps defend
our body!



To collect them, on foot or by diving in apnea or with air from a boat, they are cut at the beginning of the tape, washed and then dried by dehydrating them to be cut and packaged. It has many **mineral nutrients, fiber, vitamins like C**, needed to defend us externally and protein.

SOME KITCHEN TIPS...



SARDINE: It is cooked in all ways if we take it fresh and also find it canned.

HAKE: From an early age we start eating it boiled and when we grow we take it on the grill or in stews with vegetables.

BASS: Although it was known as a fish for the sick, eating it only boiled it is nowadays cooked more in the oven and is also included in new recipes such as lasagna or musaka.

MONKFISH: Usually we only eat its cooked tail, grilled or baked, as it has more meat and the head is used to make soup.

SOLE: It is eaten grilled or in more sophisticated preparations with seafood or fruit sauces.

BARNACLE: They are eaten cooked, but there are also those who make them into pâté.





NÉCORA: They are eaten boiled, in pâtés and in a hodgepodge of seafood.

SCALLOP: They have always been eaten baked with a sauce but now they are also mixed with different seafood and wines.

GOLDEN KELP: It is used in Japanese cuisine in recipes such as dashi, seitan or ramen. Here the majors are also used as a condiment and in



- **BIP!** These are the results of Uxia's research !, and knowing it fills me with energy! **BIP!**

- **BIP!** All these seafood products bring us improvements in our body! I'm flabbergasted! **BIP!**



- It turns out that in addition to fish, seafood also gives work to a huge number of people who strive every day in the sea and estuaries to bring all sorts of very important species for food for adults and children! - Roque comments to PeiX and Uxia.

- If we don't eat fish, - says Uxia - not only do we go against our own health, but we also leave them without work!

- **BIP!** To fully understand all this and sound smart ..., I have prepared some activities! Let's do it! What are you waiting for? - **BIP!**





6. TECHNICAL SHEETS

ACTIVITY 1. CLASS DEBATE

After seeing the results of the PeiX research, the following questions are asked to the classes. As they respond, a debate around the different answers is encouraged.

1. Do you like fish? How many yes? How many do not?
2. Do you think you eat all the fish and seafood you need? Why?
3. Let those who eat fish raise their hands more than four times a week.
4. What about seafood?
5. Those who didn't raise it, why don't they eat so much fish and seafood?
6. Is it because they don't like it? Is it because they don't put it in the house?
7. As for those who do eat it more than four times a week, what is their favorite fish? Why?
8. How was it cooked?
9. What properties do you know

There will be a table on the board where you can quantify the answers to see the “reality” of the consumption of seafood in class.





ACTIVITY 2. FISHING AND SHELLFISH ARTS

Group research on the different types of fishing and shellfishing. The interesting thing is that each group investigates a different point.

Drag | Longline | Seine fishing | Hook appliances | Net techniques | Artisanal trawling techniques | Shellfishing on foot | Fish Trap

Some gears are more questionable than others as depending on how they are used they can more or less damage the marine environment, which should also be a topic of discussion in class.

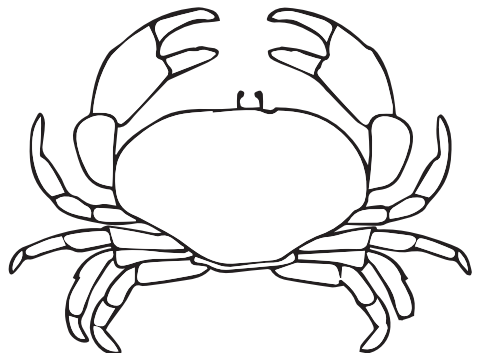
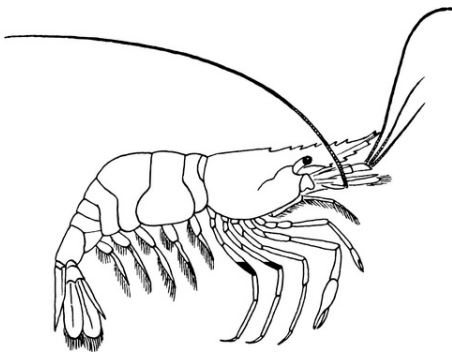


ACTIVITY 3. THE HANGING!

Draw on the board or put on the whiteboard images like the ones below. Label the different parts of the body, and play “Hanged” in groups so that they learn to differentiate and locate those parts through play.

Words to tag and play:

Cephalothorax, buccal appendages, thoracic appendages, abdomen, telson, antenna, antennae, forceps, eye...





ACTIVITY 4. WHEN YOU GO TO THE MARKET, YOU HAVE TO BE INFORMED!

Students will have time to do this activity outside the classroom. They can work in groups if deemed appropriate.

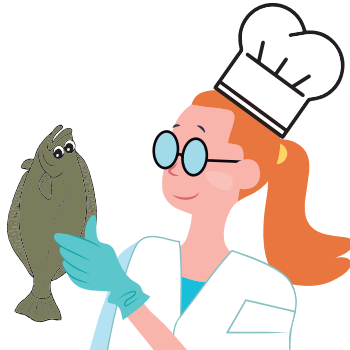
They will be asked to approach a market and observe which fish they have and do the following research work:

- How to fish the fish they buy: with what type of boat and gear.
- Where does the fish they buy come from?
- What day was it fished?

They will have to ask the fishmonger if the catch of the fish they are buying is closed and check what they were told when they get home! They need to know that there are seasons when it is forbidden to sell certain fish and invertebrates and that, for some species, there are minimum authorized sizes established to be able to sell them; for example, this happens with lobsters and bluefin tuna.

They need to think about what their fish consumption is like and how they can improve it to contribute to responsible fishing.

Once the deadline has passed, there will be a brief presentation to the rest of the class.





ACTIVITY 5. THE NEWSPAPER

Students will collect in a week all the news they find in the written press (news-papers and magazine) or on the web (and print them) of problems related to the world of the sea.

They should inquire about the problem, and make a brief explanation to their peers. They will choose the two that they think are easiest to solve and will have to justify it.

It would be interesting to make a mural-type information panel to display somewhere in the center.



6. FINAL QUESTIONNAIRE

The teacher will be able to gather the students and answer individually or in groups this brief questionnaire, which will serve to reinforce the fundamental concepts, especially of attitudes of the boys and girls.

“Now you know something more about how important a diet that includes Galician fish and seafood is. In case we have any questions, answer ...”:

Do you believe now, more than before, that fish is key in your diet?

Are you willing to change your eating habits to get the benefits that fish brings you?

Can you say three basic species of Galician sea fish in your diet?

What benefits can eating more fish have for you?

Have you learned anything new about fish in the diet that you can tell your parents or siblings?



