

# What do I teach?

**Theme:** The Honey Bee, a pollinator essential for our ecosystem.

**Driving question:** How can we help prevent the extinction of the Honey bee? What can we do in our school?

## **Learning goals:**

There is disturbing evidence that bees are in trouble! They are under assault from pesticides, climate change, mites and habitat destruction. Our native bees are at risk of extinction.

We want to help the bees by making our school bee-friendly. We want the children to work with us on this project.

We want our children to

- be able to choose a bee friendly plant that is easy to maintain;
- be able to describe a plant using the right vocabulary when describing the different parts of the plant; (repetition of subject matter)
- be able to grow two or more plants from one plant;
- see and calculate the financial benefit of growing your own plants. (practice time tables)

## **Context of the children**

### ***Background***

What do the children bring to the project?

The children of our school live in the countryside. Vorselaar is quite rural. Therefore most children already know something about different plants and flowers. Most of the children have a garden at home. That makes it easier to help them find out which flowers and plants are bee-friendly.

### ***Prior Knowledge***

This does not mean that the children know why bees are important to us and why it is important that we help them. So during the first two weeks of the project we taught our children everything they need to know about bees (I will show you what I taught them using this booklet)

- Pollination: how does pollination work and why are bees and insects important for pollinating plants?
- Flower anatomy: Parts of a flower. What does a flower look like? What parts do you see?
- The honey bee: honey bee colonies consist of a single queen, hundreds of male drones and 20,000 to 80,000 female worker bees. Honey bee colonies depend upon diversity of population for survival, as each caste of bee performs specific tasks.
- Honey / Honeycomb: How is honey made? How is a honeycomb made?
- Anatomy of the honey bee: what does a honey bee look like? Why does the bee have a pollen sac on its lower leg?
- The beekeeper: How does the beekeeper keep bees? What do you need to do as a beekeeper? How does a beekeeper help the bees?
- What is the life cycle of the bee from birth to death?
- Waggle dance: How do bees communicate with each other? Why do they dance?
- Bee sting: How do I treat a bee sting? What can happen when stung by a bee?

## **Context of the school**

Our school believes strongly in the power of outdoor learning. We always try to make use of our outdoor environment to teach and to let the children experience things. We will also be doing that for this lesson. We have a lot of plants and trees so the children should not experience any problems locating bees.

In this lesson it is important that the children use their prior knowledge and everything they learned so far. They have to work in groups. The children are paired up according to their prior knowledge and personal backgrounds: farmers' children with children that live in the centre of the town, children that have a garden at home with children that live in a flat...

Have I considered everything: I probably forgot to consider the time of year... this lesson would be better presented in April or May in Belgium.

## **Age-related expectations**

We expect our children to have the skills to take cuttings from a plant and grow a new plant. In addition, we expect them to be able to calculate how much it would cost to purchase the plants they now grew themselves. In this way they learn that there are cheap solutions to the problem and that everyone can contribute.

### **21<sup>st</sup> C. skills:**

The children practice their problem solving skills and communication skills in collaborating with each other.

The children practice their research skills when looking for a bee-friendly plant that is easy to maintain.

## **How do I teach it?**

### **Lessonplan (Delivery)**

#### **Step1: activate prior knowledge**

Present a picture of a flower and a bee – picture 1

Probing questions: class discussion (5 min)

- Who can tell me what this is? What do you see?
- Do you know what kind of a flower it is?
- Who likes chives? How does it taste?
- Can you describe the different parts of the chives plant?
- What parts don't you see but do you know are there?
- Is that a female or male bee? How do you know that?
- What is the bee doing?
- Why is it doing that?
- How do you think she will transport the nectar to the hive?
- ...

By having the children look at the picture, and asking them all these questions related to what they learned last week, we activate their prior knowledge. When they don't know the answer to the question we ask them to look it up in their notes.

The last questions are:

- Do we have chives in our school garden?
- Do we have other bee-friendly plants? How do you know whether a plant is bee-friendly?

### **Step2: new knowledge: what are the characteristics of bee-friendly plants? (10 min)**

**Method: 1 – 2 – 4 :** The teacher lets the children think about the question and lets them write down what they think are characteristics of bee-friendly plants.

The children pair up and discuss what they wrote down with their neighbour.

Two groups pair up and discuss their notes again. The children add new characteristics to their notes.

Then the teacher asks what they wrote and makes a list of characteristics on the board, based on the notes of the children.

The children now have a list of characteristics they can use to examine the school garden. The teacher hands out worksheets and asks what do you have to do when you go outside? The teacher has the children explain what they have to do and how they should do that.

### **Step3: Examining the school garden (15 min)**

The children go outside to look for bee-friendly plants. They use their list of characteristics to decide whether a plant is bee-friendly or not.

They take the worksheet with them and fill it in outside.

**Note:** if possible, the children can take a tablet to scan the plants using a plants identifying app.

When back inside, the teacher hangs up all worksheets for everyone to see.

### **Step 4: Class discussion about a bee-friendly environment. (5min)**

Did the children find bee-friendly plants? Where did the children find bees? On what plants?

The children tell about the bee-friendly plant they drew.

(if the children don't find any bee-friendly plants, examine together why that is the case. )

Can we conclude that our school is a bee-friendly place? Yes -no the children vote.

What can we do, in our school, to help the bees?

### **Step5: How to grow a new plant. (outside – 15 min)**

The teacher asks if anyone knows how to take cuttings from a plant to grow new plants.

If someone knows, he or she can demonstrate otherwise the teacher demonstrates how to do it.

The children choose a plant and try to grow a new plant. They experiment with different kinds of plants.

All experiments are noted on a map of the school (in different colours depending on the species) so the children can follow-up where new plants are growing.

#### **Step6: calculating the financial benefit**

The children look up the prices of different plants. They make a list using a spreadsheet. The teacher helps them when they can't find a price online.

The children count the plants per colour on the map of the school and they calculate how much money they saved the school by growing their own plants.

In the next lesson, the children will make a video on bee-friendly environments, how to grow a new plant and how to maintain it.

#### ***Assessment:***

The teacher gives feedback to the children on their efforts.

The children assess their own work: did I manage to grow a new plant? Did I contribute to the lesson?

#### ***How will I sustain it?***

The children now know how they can grow plants and we encourage them to do the same at home. We will maintain the plants in our school and use some of them in other projects (for example for cooking).

#### ***What resources will I use?***

<https://weekvandebeij.be/bijvriendelijke-vaste-planten>

<https://www.bijenclub.com>

<https://www.wwf.org.uk/learn/fascinating-facts/bees>

booklet

worksheets