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## **TEACHING SCENARIO FOR IMPLEMENTATION OF THE INTERDISCIPLINARY PROJECT FOR STUDENTS**

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<b>Project title:</b>	<b>Explore and save the planet! Bees and the Environment</b>
<b>Correlating subjects:</b>	Science, Mathematics, Information Technology, Technology and Entrepreneurship, Physical Culture and Sport, Fine Arts, Music
<b>Key terms:</b>	bee, environment, pollination, grazing, fact, team, regulation, insect, insect, hive, bee colony, workers, honey, queen, drone, nectar, pollen, honey plants, beekeeping, beekeeper, sting, life cycle, pollination, biology, health, organic food

<b>Activity Title:</b>	<b>Guidelines for research, collection of information from different sources. Organizational part. (First stage of the project)</b>
<b>Duration of activity/ exercise (min):</b>	40 mins

**Detailed description of the activity:**

***Creating a positive attitude and motivating the students - getting acquainted with the essence, advantages and stages of creation and presenting the project.***

Play the song - [The Voice of the Bees](#)

Assign students a task to perform appropriate movements.

Ask them what animals make this sound, what they know about bees, do they know that bees talk to each other.

Explain that bees talk through a dance that they can understand even in total darkness. By describing circles they provide extremely common information about the type, distance, and direction of grazing. Circular dance means food up to 100 m, eights – over 100 m to 6 km. The direction depends on the angle relative to the sun when the bee dances. This also signals dangers when the bees are out and the hive is poorly guarded. If the dance is in straight lines aimed at the top of the hive, then the source of food is exactly in the direction of the sun. If the flowers are located in the opposite direction, then the bee makes lines to the bottom of the hive.

Offer students to play a game. Explain that bees have different roles in the beehive. Some are scouts, some are workers. Divide the class into two groups – the 1<sup>st</sup> group - the scouts, the 2<sup>nd</sup> one - the workers.

/In the room are located in different places paper flowers. Scouts must find the flowers and, with movements of eights or circles, show the workers where they are.

For the successfully found flowers on the hands of the students, a stamp is placed on the hand of the students.

[/Annex 1/](#)



***Introduce the topic.***

Explain that the students are going to learn more about the life of bees. Use the **brainstorming method** – What do I expect to learn about bees?

Tell the class that bees have a very complex organization and that they are very important for nature, so the next few hours will dedicate themselves to familiarize ourselves with their lives and find out if they are important to nature.

**Main part.**

Present the multimedia product with which students gain a general idea of the life of bees – a presentation in **Genially**. (follow the link [Explore the Planet](#))

Offer students the next **game** "Find a flower and take it to your hive".

/Chairs are ordered in the room. On each backrest is glued pink, blue or yellow flower. In the three corners of the room there are three tables, and on each table there is one paper beehive with a flower of the corresponding colour. */Annex 2/*



Explain the role of bees. Upon a signal from the teacher, they will "fly" around the room, upon repeated signal each child must choose a chair and sit down. At a third signal, he must find the hidden flower and quickly take it to the table with the corresponding color. Three teams are formed.

The fastest team is greeted with applause. All the kids get gifts. Boys receive badges with a bee, and girls tiaras – bee. */Annex 3/*



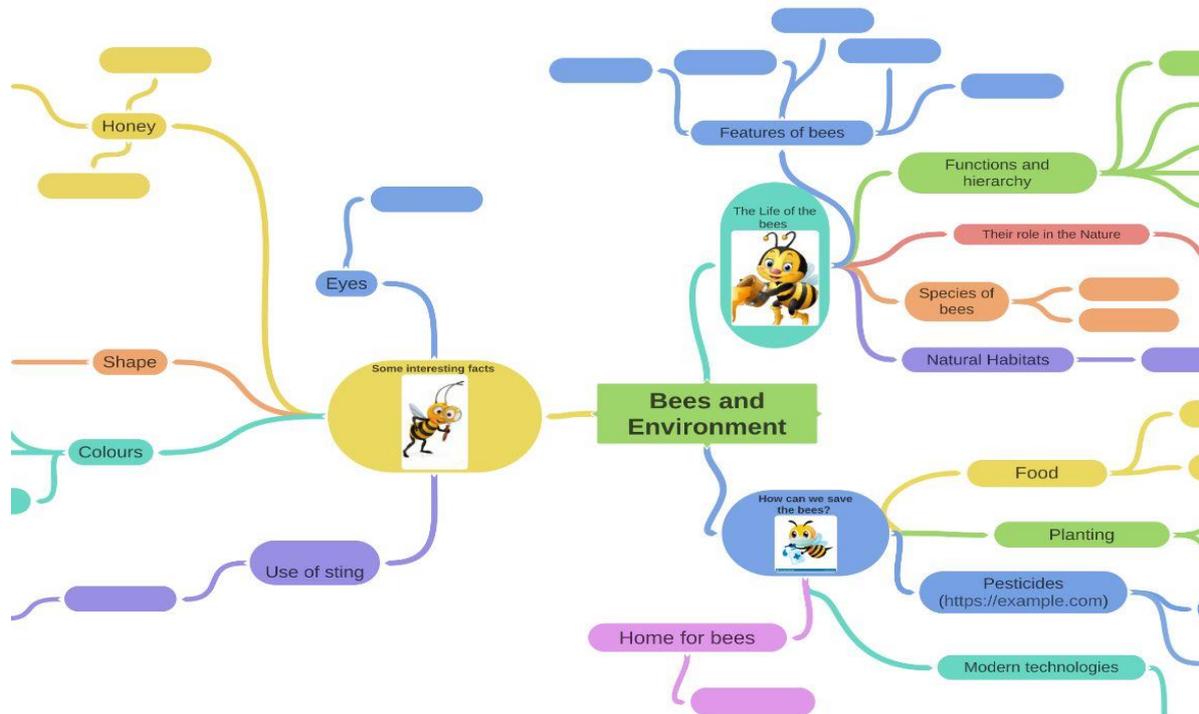
Explain to students that due to climate change and human activity, bees have declined a lot in recent years. Ask them if they know what would happen if the bees disappeared.

Note that the created three bee teams will have the important task, in the next 4 days to collect "honey" in the form of knowledge.

Explain that they will be able to support their research with the card in **COGGLE**. Provide guidance for research, gather information from different sources and offer shared work to each team to fill in the thought card in the [Coggle - an interactive card](#)

/In pocket hives are offered the same mental cards for those wishing to work otherwise/

/ Annex 4/



**First team** - gathers information about the life of bees.

**Second team** - collects interesting facts about bees.

**Third team** - gathers ideas on how to help bees.

Explain that you need to work as a team and decide who will search the information and how.

(Ask your loved ones, read in a book, search the Internet), to decide how the information will be presented (such as a poster, such as mini projects or presentation) and to assess who will be the spokesman for the group.

Instruct students that those who are struggling to find information may use [The bees - an information card](#) access links. / Annex 5 /

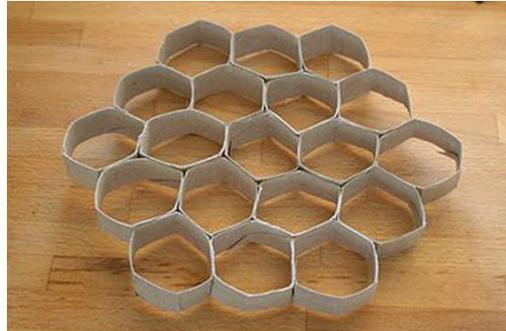


Continue the lesson with a game – "Build your ...".

/Annex 6/

"Group One - "Build yourself ... honeycomb" / Annex 6 a/

/Necessary materials - cut round elements of empty rolls of household paper. Students measure and fold a hexagon so that a bee cell is obtained. Individual cells stick to make a honeycomb./



Second group - "Build yourself ... (Annex 6 b)



Necessary materials - yellow paper, black paper, blue paper, black marker, scissors, glue, stickers for moving eyes. Cut strips of yellow and black paper. Add a little glue on one strip of paper, at one end. Glue the other strip of paper on the first at right angles. Start folding them on top of each other. Repeat until you get to the end. Glue the last fold. Cut out a pointed triangle of black paper and glue it to the bottom of the bee accordion. Cut out a head with a neck (fold the neck and apply glue on it). Decorate the head. Glue it on the paper - accordion. Cut out a heart shape from blue paper. Glue it to the back.

Third group - "Build yourself ... beehive" / Annex 6c /





/Materials needed – discs of thick cardboard of different diameters, the first 6 discs with a cut-out part. They are placed with glue on top of each other, starting with the largest and requiring that the cut part coincides./

**Final part**

Have a talk about what they learned about bees during class. Have students repeat each team's survey tasks again. Congratulate students on their successful work [with Song for the Bee.](#)

**Adapting/involving students with difficulties**

Teamwork allows students with difficulties to be assisted by successful students. The suggested links for seeking information are to support students who find it difficult to navigate in the recruitment of information. Traditional worksheets with a mental scheme have also been proposed.

**Adapting/engaging gifted students and those wishing to learn more**

Students are offered variability to search for and present the information, which allows for the expression of gifted students.

<b>Activity Title:</b>	<b>Bees and the environment.</b>
<b>Duration of activity/exercise (min):</b>	40 mins
<b>Detailed description of the activity/exercise:</b>	
<p><b>Introductory activity:</b></p> <p>In the first (previous) lesson – the operational stage of the project, the students are organized into three teams. Each team is asked a topic and questions on which to do a survey and gather information. Students have assigned activities and tasks on the topic they work on in the team.</p> <p><b>First team- The life of bees.</b></p> <p><b>Second team - interesting facts about bees.</b></p> <p><b>Third team - How to help bees?</b></p> <p>Students make suggestions, offer new activities, gather information on the topic that their team is working on. Each activity will be preceded by a brief explanation and description of the objectives, opinions of the participants.</p> <ul style="list-style-type: none"> <li>* The team's activities are implemented on their own or are implemented in the classes on: Man and Nature, Fine Arts and Technology and Entrepreneurship in the week preceding the presentation of the topic.</li> <li>* Students update their knowledge of topics, collect information and materials.</li> <li>* Students produce a product on the topic that they will present to the other teams in the class – electronic poster or brochure in FlipSnack, e-booklet in FlipSnack, presentation or others.</li> </ul> <p><i>In the hall where the projects will be presented, a song about the bees sounds – video from the multimedia screen.</i></p> <p style="text-align: center;"><a href="#">Here Is The Beehive</a> <a href="#">Bee Song</a> <a href="#">The Bees Go Buzzing</a></p> <p><b>Main activity:</b></p> <p><b>1. Preparing to present the products to the teams: (carried out in advance, not in class during the lesson)</b></p> <p>The teacher prepares the third graders to present the final product to the class. There is a discussion (may in Class Class) about the process of work, about student self-observation. Questions are raised about:</p> <ul style="list-style-type: none"> <li>* the process of work (for interesting, pleasant moments, difficulties, problems, etc.);</li> <li>* about the way of communication (communication skills in the team, manifested or manifested tolerance, etc.);</li> <li>* for the final product (wealth of ideas, poster layout, booklet, presentation).</li> </ul>	

## 2. Presentation of the information on the topics on which the three teams were researched. (25 minutes)

(Finalize the work on the final product of the study on the topics set.)

Each team partner has completed their tasks and prepared the information that will be presented to the other teams in the class. This can be done differently, depending on what the team participants have decided, but the information must be systematized and presented so that everyone in the class can access it.

Students from the three teams present the products of their surveys on the topics they have chosen. They use familiar, favorite apps to present their concepts.

Each team has **only 8 minutes** to present their project on the topic.

### Performance assessment criteria:

*Criterion 1.* Logical consistency and style of the exhibition.

*Criterion 2.* Clarity, firmness and confidence in presenting the results of the topic examined.

*Criterion 3.* Demonstrating an understanding of the topic explored.

*Criterion 4.* Correct answer to the questions posed by the other teams.

Each team listens to the presentation of the researched information by the other teams in the class.

A clear explanation and presentation of the activities carried out by the three teams and all materials that created the teams are retained (stored) in the application that the students have chosen. The link to the finished product is published online and allows other students in the class to access the finished products from the project activities at any time.

**Final activity:** Finalize the lesson. (10 minutes)

Repetition of basic concepts and aggregation of knowledge – hardening knowledge by repeating by the teacher the basic **concepts of the topics**. (Follow the link in [ProProfs– Bees – basic concepts](#))

The teacher expresses praise and gratitude for the work of the students and the successful presentation.

The winning team receives a diploma and a gift (praise). /[Annex 7](#)/



### Adapting/involving students with difficulties

Children with learning difficulties are assigned an individual task (activity) that is as they can and can be involved in the presentation of the team. Worksheets are prepared on the themes of the different teams.

### Adapting/involving students and those wishing to learn more

Gifted students can be the team leaders, they can present the finished product to the team.

Set an individual additional task – making a **greeting card** for the Beekeeper in [FlipSnack](#) (the specimen [here](#)) and present it to the class, within the framework of the presentation of their team.

<b>Activity Title:</b>	<b>Bees – mathematicians.</b>
<b>Duration of activity/exercise(min):</b>	40 mins
<b>Detailed description of the activity:</b>	
<p><b><i>Creating a positive attitude and motivating students.</i></b></p> <p>Give students a bee riddle:</p> <p>Who am I?</p> <p><i>I can fly but I'm not a helicopter I'm an insect but I'm not an ant I'm yellow and black but I'm not a butterfly I can sting but I'm not a wasp I can often be found near honey but I'm not Winnie The Pooh</i></p> <p>Share with students the curious information that readers understand mathematics. Scientists have found that bees are the only animals that always calculate the shortest path to each flower. So, if they have to tour dozens of flowers today, they always find the most effective and short route between them. Without using Google Maps! They can collect and subtract colored figures.</p> <p><b><i>Paste the theme.</i></b></p> <p>Explain to students that this class will peek with the magnifying glass of researchers and mathematicians in the bee world to discover the secret of their amazing life! Explain that bees differ only three colors – yellow, white, and blue.</p> <p>The teacher places a flower with a bee for each child - a bee perched on a white flower of hard-working students, a bee with a blue flower of fast-growing students and a bee with a yellow flower for all other students.</p> <p><a href="#">/Annex 8/</a></p> <div style="text-align: center;">  </div> <p><b>Main part</b></p> <p>Show the students the bee cells they prepared in a previous class. Explain that the mathematician bees hid a honey treasure that can only be found if the tasks they have prepared are faithfully solved.</p> <p>/In each cell there is a coloured sheet curled into a roll with a task, the solution of which gives us curious information about the life of bees. There's a letter on the task. Students are told that the bee sends them to the colour of her flower. Students take a colour sheet with a task of colour the same as that of their flower, <a href="#">/Annex 9/</a> finds their answer in the table on the board <a href="#">/Annex 10/</a>, write the letter from their sheet and read the curious information.</p> <p>Thematic pictures have also been prepared. A representative from each group is involved and a math book is compiled. The table on the board reads "Help, help for the bees" <a href="#">/Annex 9/</a></p>	



The bee has inhabited the Earth for millions of years. The oldest bee fossil has been found embedded in amber in the US state of New Jersey. How many million years have bees survived on Earth?

$$50 \cdot 3 =$$

The place where Uncle Ivan breeds bees has a square shape of 50 meters. How many meters of rope does it take to surround it?

$$4 \cdot 50 \text{ m} =$$

The bees are so precise that they can distinguish hundreds of floral species from each other and determine from a few meters away whether a flower has pollen or nectar.

$$/1000 - 490/ : 3 =$$

Lena owns a collection of bee stickers that she arranged on an album. It contained 25 pages with 3 stickers per page and 14 pages with four stickers per page. How much does Lena have in common with bees?

$$25 \cdot 3 + 14 \cdot 4 =$$

You will find out how many wings the bee has, if you faithfully solve the task:

$$/1000 - 500/ - 496 \cdot 1 =$$

The bee flies at an average speed of 15-20 km/h. Find the unknown number to find out when it is unladen what speed it can develop?

$$X + 185 = 250$$

How mm is the body length of the smallest bees?

$$50 : 5 - 4 \cdot 2 =$$

How much mm does the largest female bee inhabit Indonesia reach?

$$/100 - 70/ + 9 =$$

For tv advertising, honey producers paid in 8 seconds BGN 840. How much would they pay for a five-second ad?

A bee-eater is a bird that is the enemy of bees. Solve the task to find out how many bees can destroy a bee-eater daily.

$$600 + 58 + 300 + 42 =$$

Gogo and his sister bought 600 grams of honey. They separated the half, and the rest divided into 3 equal parts. Find out how many grams each part is?

To collect honey, the bee performs a flight over circular fields, with each field up to 10 km. How much honey will he receive if he flies over 1,600 circular fields will find out in a true solution to the task:

$$575 - /500 + 5 \cdot 9/ =$$

Thematic pictures are also prepared. A representative from each group is included and a mathematical booklet is drawn up. In the table on the board is given the inscription "Help, help for bees".

Invite students to read the inscription together. Make an invitation: **Save the bees, be their superhero!**

150 2 200 , 39 170 525 131 4 65 82 30 2 215 100 100 200 !  
S O S , S O S f o r t h e b e e s !

/Annex 10/

Explain to students that there are bees on every continent except one. Ask if they know what this place is. Antarctica, because there are no flowering plants/.



Explain to students that one of the biggest threats to bees is the lack of a safe habitat where they can build their homes and find a variety of food sources. Planting a bee garden is one way to help bees by creating a habitat corridor with plants rich in pollen and nectar.

/3 workstations are prepared in the room/

Invite students to create a flower garden by taking their seats at workstations. Remind them that in each workstation there should be of all colours flowers. /Thus, in each team there are representatives of both fast-succeeding and hard-to-fix students.

After they get to the honeycomb with properly solved tasks, they receive a link to perform a fun task to construct with geometric shapes and color:

First team - bee in **Paint**.

Second team – hive in **Paint**.

Third team – jar of honey in **Paint**.

**Final part**

A bee left a basket for every team. The task is done. Give a prize to each student – candy in the form of a bee. Declare the winning team and the result achieved. Evaluate the work done.

**Adapting/involving students with difficulties**

The teacher places a flower with a bee for each child - a bee perched on a white flower of hard-working students, a bee with a blue flower of fast-growing students and a bee with a yellow flower for all other students.

*/Annex 8/*



Students choose the same color task, which is respectively – white color – with low difficulty, blue flower – with high difficulty, yellow flower – with medium difficulty.

**Adapting/involving gifted students and those wishing to learn more about the**

Additional tasks are provided in the first part for students who are fast working and tasks with increased difficulty.

<b>Activity Title:</b>	<b>Reporters.</b>
<b>Duration of activity/exercise(min):</b>	40 min.
<b>Detailed description of the activity:</b>	
<p><b>Creating a positive attitude and motivating students.</b> Have a talk with students about what they learned about the life of the bee. Explain to students that the bees have prepared maps for them that will remind them how they could help them. Instruct students to use the <a href="#">ProProfs</a> to access <b>flashcards</b> and each team to familiarize themselves with them.</p>	



Ask them what the bee would ask if they had the opportunity to get an interview from her, where they could look for her, who would give us the most information about bees.

***Paste the theme.***

Explain to them that at this hour they will have the opportunity to observe the life of bees in a real environment.

Introduce them to upcoming activities.

***A main part***

Students visit an apiary. They meet a beekeeper. As reporters, students ask him questions that the beekeeper answers and practically shows the life of bees.

Students observe a transparent beehive and get acquainted with the organization in the bee family.

They get acquainted with the equipment and protective clothing of the beekeeper.

Give students the task of doing an interview with a bee.

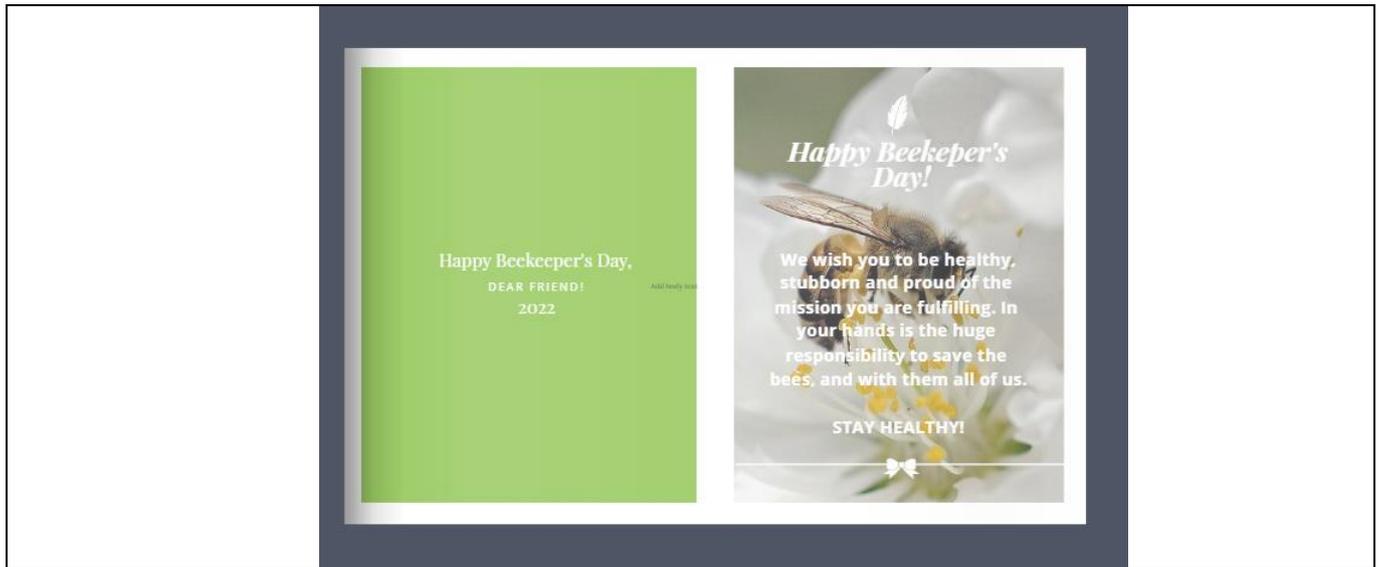
/Role play is played. One student is a reporter and another is a bee. On a large cardboard is painted a bee with a head opening/. [/Annex 11/](#)



Set a new task for the students – "**Photolov**" – in 10 minutes to discover and with their mobile devices to take pictures related to the life of the bee /bees, hive, flowers, beekeeper, ... / to create a clip about the life of bees using the Flex Clip tool.

***Final part***

The visit ends with a delicious treat from the bees – a scoop of honey and a photo of remembrance in the role of a bee. Students promise the bees that they will be looked after and will share with loved ones ideas how to help them to have them. They give the made card in [FlipSnack to the](#) beekeeper.



**Adapting/involving students with difficulties**

All students participate in the game reporter. Struggling students are given the opportunity to choose to be in the role of trainee reporters, enabling them to seek support from their mentor. They get help with ideas and the wording of questions.

**Adapting/involving gifted students and those wishing to learn more about the**

Gifted students and those wishing to learn more participate in the role of consultants and editors in shaping the clip. They also receive a task to search for additional information.