Using Bee-Bot in Mathematics

Many thanks to Anita Baglyosné Németh, who has kindly shared one of her recent maths lessons which uses Bee-Bot to support learning around fractions, unit conversions and operations.

We hope you enjoy using it.

About Anita

My name is Anita Baglyosné Németh, and I work as a primary school teacher in a small village called Kék, in Hungary. I've been teaching lower primary students for four years, with great passion and dedication.

I strongly believe that learning should be joyful, hands-on and filled with discovery. I'm especially interested in using interactive and digital tools that help children develop critical thinking, creativity, and problem-solving skills from an early age.

I was introduced to Bee-Bot during a teacher training course, and I immediately saw how it could bring programming and cross-curricular learning to life for my students. Since then, I've been using it with great success across different subjects – and the children absolutely love it.

I truly believe that every child deserves the chance to learn with joy – and it's our job as teachers to make that possible.

Bee-Bot Maths Lesson

A practice lesson for fractions, unit conversions and written operations.

Teaching objective: Students will revise and practice their previously acquired knowledge about fractions, unit conversions, and written operations, and apply these in new, playful problem-solving situations using the Bee-Bot robot in group work.

Educational objective: Students will develop cooperation, creativity, problem-solving skills, and the ability to learn from one another. They will experience the joy of collaboration, using digital tools, and independent thinking.

Skills and Learning	Resources
• Develop mathematical thinking and logical reasoning. • Strengthen spatial orientation and algorithmic thinking. • Improve digital competence through the use of Bee-Bot. • Enhance cooperation and communication skills through group work.  	• Bee-Bot • Bee-Bot mat • Student-created cards and maps • Tablet or laptop (if needed) • Stopwatch • Whiteboard materials

Task Structure	Didactic tasks of the lesson
• Identifying the topic area based on a riddle (fraction, unit conversions, written operations) • Designing a map and task cards in groups based on the given topic. • Testing another group's map using the Bee-Bot. • Observation, error correction, and shared feedback. • Verbal reflection on experiences and lessons learned.	- Motivation - Activating prior knowledge - Practice - Application - Developing independence - Evaluation and reflection

Introduce	Begin lesson by explaining task and sharing objectives. Divide pupils into three teams of mixed ability so that pupils can support one another. The teams are the Fraction Team, Converters Team and the Maths Experts Team. Give each team a sealed envelope containing a secret puzzle- a riddle (See resource sheet). By solving the contents of the envelope, the teams will figure out what their specific topic will be for today's task creation. Students will read the content of their envelope aloud together, then discuss the solution within their teams. This playful introduction helps them get into the mindset of their topic, which they will use to design the Bee-Bot path and related tasks.
Learn and Explore	**Main Phase:** Each group will create a Bee-Bot map based on their assigned mathematical topic and prepare task cards to go along with it. The team that finishes first will choose which group's tasks they want to try first. Before the testing begins, the two other team leaders will compete—whoever solves a quick challenge faster will have their team go first in the trial round. The task cards may contain problems of varying difficulty levels, allowing each student to find one suited to their own abilities. **Trial and Task Solving:** The groups will now try out each other's maps. The team that won the quick challenge (based on mental calculation or a logic question) will get to solve a map first. The winner also gets to choose which group's map they would like to try. The team testing the map will: • Read the task cards, • Calculate the solutions, • Use them to program the Bee-Bot to move to the correct squares. The team that created the map will observe, provide feedback, and help if needed. During the trial phase, each team will solve at least one map created by another team.
Review and Reflect	At the end of the lesson, we will discuss the experiences together. Students will give feedback on their own work and that of the other teams. **Guiding questions:** • Which task did you like the most? • What was difficult? • What did you learn from the other team's map? **Form of evaluation:** • Verbal round of responses or a quick "thumb vote" about their experience of the lesson. • The teacher will highlight good teamwork and creative solutions.

Resource Sheet

The Riddles		
Fraction Team's Envelope	**Converter Team's Envelope**	**Maths Expert's Envelope**
"I'm often shown with pizza, cake, or chocolate. Sometimes I'm half, sometimes a third, sometimes more. I'm made of parts, yet I form a whole. *What am I?"*	*"I turn meters into centimeters, kilograms into decagrams, minutes into hours. Yet I'm no magician – just a precise calculator.* *Who am I?"*	*"I work from right to left, in columns. I carry digits, leave remainders and often work in multiple rows. You write with a pen but calculate in your head.* *What am I?"*