

THE PAUL STREET BOYS SCOUTING IN THE BOTANICAL GARDEN (T5)

S3
T5
D9
L1 P3

Focus on:

- Talent development (D9)



Task7: In what situations do we use codes or signals? What kinds of codes and signals do you know?

Students create and try different types of code. They try to send messages to each other using Morse code, hand signals or creating a cipher.

Every solution is good!

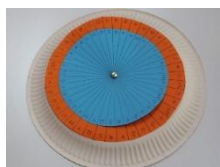
Any kind of tool and material can be used!

You can use the ideas and the list of materials from the Idea Bazaar, use your own ideas or just let the children to solve the problem using their creativity.

Idea Bazaar – some ideas:

- Using Morse code – both by writing on a paper and by stringing different colors or shapes of pearls
- Using existing sign languages like on the pictures, or creating their own system
- Creating their own cipher system eg. by using paper plates and color papers!
- Make challenge cards with „secret messages” and play with them

For details of the different solutions, see the Idea sheets!



Developmental fields:

In focus:

- Spatial orientation
- Computational thinking
- Attention

In addition:

- Subject concentration – Drawing, IT
- Creativity

Task8: Create the accessories of an expedition!

Students collect useful objects that they would use during an expedition or scouting mission. They create some of them with different arts&crafts techniques and recycled materials.

Every solution is good!

Any kind of tool and material can be used!

You can use the ideas and the list of materials from the Idea Bazaar, use your own ideas or just let the children to solve the problem using their creativity.

Idea Bazaar – some ideas:

- Creating a binocular out of plastic containers or toilet paper rolls
- Creating a whistle using straws or colour paper

For details of the different solutions, see the Idea sheets!

Developmental fields:

In focus:

- Social competences
- Fine motor skills
- Creativity

In addition:

- Life skills
- Subject concentration – Citizenship
- Talent development



How to manage output:

Store the objects in a wardrobe, to protect them from falls. Attach a label with the name of the group!

THE PAUL STREET BOYS SCOUTING IN THE BOTANICAL GARDEN (T5)

**S3
T5
D9
L2 P3**



Focus on:

- Talent development (D9)

Goals of the lesson:

- text comprehension
- problem solving
- decision making
- organizing group work



Boka, the leader of the Paul Street Boys, along with Nemecsek and Csónakos, went scouting to the Botanical Garden one evening. It was here, on an island in the middle of the lake, that the Redshirts, their sworn rivals, had their headquarters.

Once they scaled the tall fence around the garden, Csónakos climbed a tree to have a look around. Suddenly, he noticed two figures standing on the bridge leading to the island.

"Those are the guards," Boka said. "Let's crawl on our bellies, so we won't be seen!"

This way, they crawled close to the lakeshore.

Suddenly, they heard a whistle.

"They've spotted us!" Nemecsek cried.

Once again, Csónakos climbed a tree to see what happened.

"What do you see?"

"There are some figures moving around on the bridge... there are four of them now... now two returned to the island."

"Then everything is alright," said Boka, now calm.

"Come on down. The whistle meant it was time for the guards to be changed."

They continued to crawl, and soon reached the lake. Boka took out a little pack – and retrieved a pair of binoculars from it.

Boka spied the island through the binoculars. They could all see a flickering little point of light – it was a lamp.

"Dear God!" Boka cried, peering steadily into the binoculars, "the person carrying the lamp... that is..."

"Well, who is it?"

"He seems familiar... could it really be..."

Boka removed the binoculars from his eyes.

"He's gone," he said, quietly.

"But who was it?"

"I can't tell you that. I didn't see him well, and just when I wanted to take a closer look at him, he disappeared. Until I know for sure who it was, I do not want to accuse anyone..."

"Could he have been one of us?"

Boka's reply was quiet:

"I believe so."

"Why, that's treason!" cried Csónakos.

"Once we make it over to the island, we'll learn everything," said Boka. "There has to be a boat somewhere around here. Let's search for it!"

They found the boat in short order. They all boarded, one after the other: first Boka, then Csónakos, and finally Nemecsek. However, as he was about to step into the boat, Nemecsek slipped on the muddy bank, and fell right into the water. Quickly, he stood up, and sat into the boat soaking wet, as he were.

Boka and Csónakos took hold of the oars, pushed the boat away from the shore, and silently rowed over to the island.

Main features and interactions of the characters

Character	Features	Interactions
Boka, Nemecsek, Csónakos	Climb, Stalk, lie in wait Look into a binocular Row a boat Fall into the water	Whisper Listen to the whistle
Guard	Walks on the bridge	Listens to the whistle Change of the guards
Boy on the island	Walks with a lamp	

How to use the character card:

Each student fills in his/her own Character card:

- writes the name of the character
- their features, movements, reactions, etc.
- collects the elements of the environment, other accessories, things to be built
- thinks over the phases, tools and materials of the robot's building

Students can use more pieces of each part of the Character card if needed!

Boka, Nemecsek,
Csónakos
Guards

Stalk
Row a boat
Listen the whistle
Walk up and down on
the bridge
Change of the guards

Lake
Island
Bridge
Other Red Blouse boys
Boy with lamp
Trees, Wall

The main actions of
the story
Divide the text
segment into pieces
Make a list about
things needed
Media files needed




 Your name _____
 Build _____

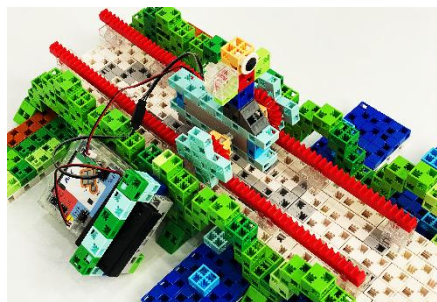

 Your name _____
 Be attentive, your robot should be able to: _____


 Your name _____
 There also should be: _____


 Your name _____
 Think over: _____

THE PAUL STREET BOYS SCOUTING IN THE BOTANICAL GARDEN (T5)

**S3
T5
D9
L2 P4**



Focus on:

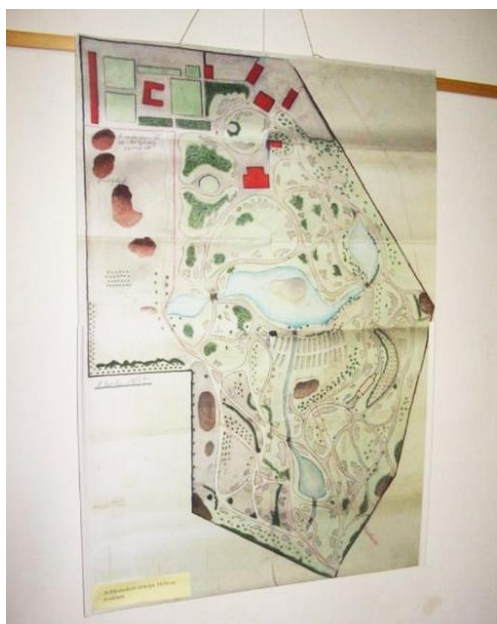
- Talent development (D9)

Goals of the lesson:

- text comprehension
- problem solving
- decision making
- organizing group work



<https://folyoiratok.oh.gov.hu/konyv-es-neveles/egy-sziget-felfedezese-budapesten>



Map of the Botanical Garden in the time of the story
<https://www.kertertalapitvany.hu/wp-content/uploads/2011/11/terkep-1850.jpg>

Suggestions

Headquarters and guards

- Discuss the features of a military headquarters (eg. base, guards, uniform)
- Discuss how and why guards patrol, what the change of guards means
- Discuss the ways of transmitting messages, signals (sound, light, codes, etc.)
- Create a poster, ppt, mindmap

The Botanical Garden

- Discuss what a botanical garden is.
- Have the students build their own botanical garden – real or virtual
- Draw the map of the Botanical Garden together

Hiding and scouting

- Talk in whispers!
- Play with a group of students: have them stand side by side. Whisper a sentence to the first student, that they have to forward in a chain, always whispering. Compare the sentence that the last student heard with the original! (Don't forget to laugh!)

Rowing a boat

- Discuss how a boat can be propelled (rowing, by wind, by motor, etc)
- Discuss what movements are used when getting onboard or rowing a boat. Make some rowing movements and imitate getting onboard a boat together with the students and analyze the phases of it.

Suggested materials

- ArTeC robot and Blocks (at least the 112 pcs set)
- Recycled materials, other building sets
- Cardboard, color papers, pencils, glue
- Computer graphics program, 3D modelling program

THE PAUL STREET BOYS SCOUTING IN THE BOTANICAL GARDEN (T5)

S3
T5
D9
L3-4
P4

Suggested materials

- ArTeC Blocks (at least the 112 pcs set) and ArTeC robotics set (1 or 2 Studuino motherboards, 2 DC motors, wheels, 1 or 3 servo motors, 1 IR Photoreflector, 1 Sound sensor, gears, drive rails, multibases, blaseplate)
- Mindmap or Chart draft , Storyline
- Character cards and Robotic task card template
- Pencil

Focus on:

- Talent development (D9)

Goals of the lesson:

- fine motor skills,
- problem solving,
- decision making
- life skills



How to fill in the Robotic card?

- Choose robot's „activity” and its programming complexity according to the Character task card, the developmental aim and the programming level that fits the child's skills.
- More Robotic cards can be filled in if needed (for clarification or for differentiation).

Suggestions

Collect ideas about how to imitate patrolling and changing guards

Collect ideas about how to represent the lamps among the trees

Collect ideas about how to imitate rowing movements

Related topics in the Technical corner

- Programming DC motor
 - Winding the motor a number of times (2.a, 2.b)
 - Winding the motor until the sensor detects change (4.b, 4.c)
- Programming servo motor
 - Repeated movement of the arm for a number of times (3.b)
- Testing and programming IR Photoreflector (7.a)
 - Using an IR Photoreflector for detecting an object (7.e)
- Using LED (5.a)
 - Blinking (5.b)

Move on the bridge
Light a lamp
Move with a boat
Row with its arm



Robotic task card

Your name _____

Build a robot that can move it's _____

Use actuators and sensors for building:
"Senses" are green
"Actions" are blue
Choose the needed parts!
(Check the boxes)

 Robotics	 Servomotor	 DC motor	 Sound sensor	 Light sensor
 Accelerometer	 Infrared	 Touch sensor	 Electronic buzzer	 LED

Build and program so that the robot _____

Use the Technical corner for finding helping materials!



Guards patrol on the bridge – mechanically or with a simple robot

Mechanical boat on the lake

PROG1

Robotic guards patrolling on the cograil bridge

Automatic boat on the lake

PROG2

Robotic guards on the cograil bridge react to the whistle

Boy rowing a boat

PROG3

Change of guards on the bridge

Boy rowing a boat to the island

PROG4

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L3-4
P5

Ideas for robots on different programming levels

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Robotic guards on the cograil bridge react to the whistle

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Change of guards on the bridge

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Guards on the bridge

P1 Build guards patrolling on the bridge

- Build the lake and the bridge
- Build small figures of redshirt guards
- OR
- Join driverails to the ramp of the bridge
- Put the guard's figure on a DC motor that is equipped with gears as wheels and plugged into a battery box
- The guard will move on the bridge

P2 Build guards patrolling on a cograil bridge

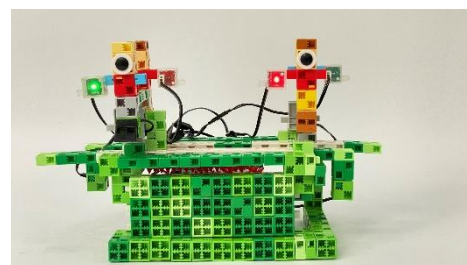
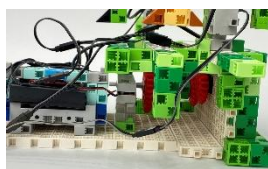
- Build the bridge like in P1
- Build the guard on a DC motor like in P1 but connect the motor to a Studuino motherboard
- Program the robot so that the guard would walk up and down on the bridge 5 times while the LED in its hand is blinking

P3 Build guards patrolling on a cograil bridge

- Build the bridge and the robot like in P2
- Add a Sound sensor to it so that the robot starts moving when it detects the whistle

P4 Build the change of guards

- Build 2-2 guards on 2 servo motors – they will act out the change of guards
- For the bridge use a baseplate, a multibase, 4 beams, 2 driverails, 1 large and 2 small gears, and 1 DC motor
- The DC motor rotates the large gear, which 1) moves one of the driverails and the beam attached to it, and 2) rotates the small gear connected to the large gear. This small gear rotates the other small gear (in the opposite direction), which moves the other driverail and its beam in the opposite direction as the first rail.
- The guards start on the two opposite ends of the bridge. They slide in to the center of the bridge, turn on servo motors („switching places”), then slide back out to the ends of the bridge.



Crossing the lake by boat

P1 Build a mechanical boat with the boys

- Build a boat on wheels

P2 Build an automatic boat

- Build a robot with 2 DC motors that looks like a boat with the boys
- Students should program it to move forward a number of times

P3 Build a boat with a rowing boy

- Build the robot boat like in P2
- Build a servo motor into the waist of the boy – it will imitate rowing by leaning forth and back
- Programme it to stop after 5 rowing movements

P4 Build a robot boat and a boy who rows up to the island

- Build the robot like in P3
- Attach an IR Photoreflexor to the front of the boat.
- The robot should move towards the island while the boy is rowing
- It should stop when the IR Photoreflexor detects the island

THE PAUL STREET BOYS SCOUTING IN THE BOTANICAL GARDEN (T5)

S3
T5
D11
L1 P3

Focus on:

- Linguistic awareness (D11)



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Students create and try different types of code. They try to send messages to each other using Morse code, hand signals or creating a cipher.

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In focus:

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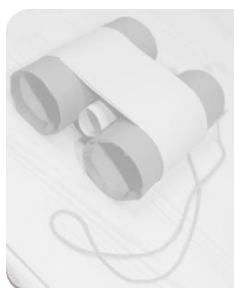
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How to manage output:

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L2 P3**



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Lake
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The main actions of
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Make a list about
things needed
Media files needed


 Your name _____
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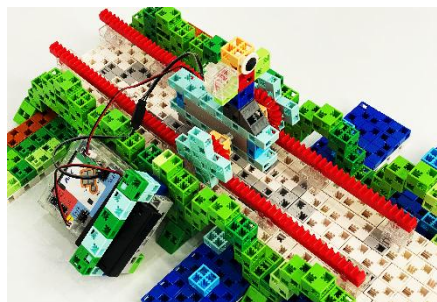

 Your name _____
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T5
D11
L2 P4



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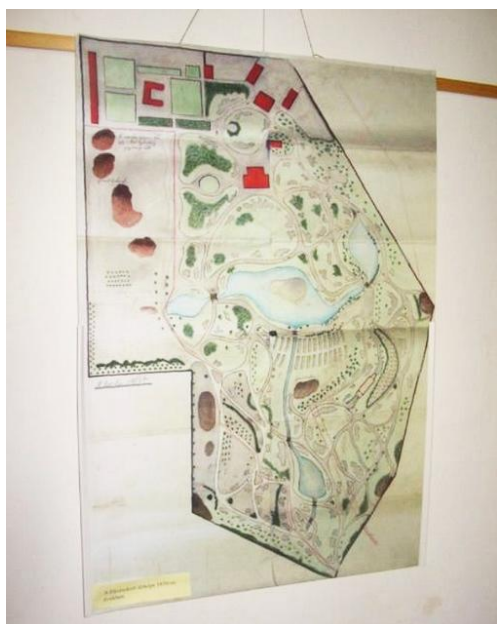
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Map of the Botanical Garden in the time of the story

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Suggestions

Headquarters and guards

- Discuss the features of a military headquarters (eg. base, guards, uniform)
- Discuss how and why guards patrol, what the change of guards means
- Discuss the ways of transmitting messages, signals (sound, light, codes, etc.)
- Create a poster, ppt, mindmap

The Botanical Garden

- Discuss what a botanical garden is.
- Have the students build their own botanical garden – real or virtual
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Hiding and scouting

- Talk in whispers!
- Play with a group of students: have them stand side by side. Whisper a sentence to the first student, that they have to forward in a chain, always whispering. Compare the sentence that the last student heard with the original! (Don't forget to laugh!)

Rowing a boat

- Discuss how a boat can be propelled (rowing, by wind, by motor, etc)
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Suggested materials

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Focus on:

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Goals of the lesson:

- fine motor skills,
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- life skills



Suggestions

Collect ideas about how to imitate patrolling and changing guards

Collect ideas about how to represent the lamps among the trees

Collect ideas about how to imitate rowing movements

Move on the bridge

Light a lamp

Move with a boat

Row with its arm



How to fill in the Robotic card?

- Based on the character card, the developmental aspect and the programming level, choose the robot activity and the complexity of the program to match the child's abilities.
- Additional robot cards can be filled in if necessary (e.g. for clarification or differentiation).
- Not all the table's columns need to be filled in, only those relevant to the robot's particular function.
- Based on each row of the table, use grammatically correct sentences to describe the robot's operation in the target language.

The name of my robot:

The parts I need for my robot:



Choose the parts you need! Check off what you use!
Blue: action
Green: sensing
Pink: robotics support materials in the Technical Corner!

This is how I build and program my robot:

What do I see?	What is it doing?	What's the robot's action?	What's the robot's sensing?	To what I see I need?	What do I see?

This is how my robot will work: Write it in complete sentences using the table above!

Related topics in the Technical corner

- Programming DC motor
 - Winding the motor a number of times (2.a, 2.b)
 - Winding the motor until the sensor detects change (4.b, 4.c)
- Programming servo motor
 - Repeated movement of the arm for a number of times (3.b)
- Testing and programming IR Photoreflector (7.a)
 - Using an IR Photoreflector for detecting an object (7.e)
- Using LED (5.a)
 - Blinking (5.b)

Guards patrol on the bridge – mechanically or with a simple robot

Mechanical boat on the lake

PROG1

Robotic guards patrolling on the cograil bridge

Automatic boat on the lake

PROG2

Robotic guards on the cograil bridge react to the whistle

Boy rowing a boat

PROG3

Change of guards on the bridge

Boy rowing a boat to the island

PROG4

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Change of guards on the bridge

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PROG4



Guards on the bridge

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- Build the lake and the bridge
- Build small figures of redshirt guards
- OR
- Join driverails to the ramp of the bridge
- Put the guard's figure on a DC motor that is equipped with gears as wheels and plugged into a battery box
- The guard will move on the bridge

P2 Build guards patrolling on a cograil bridge

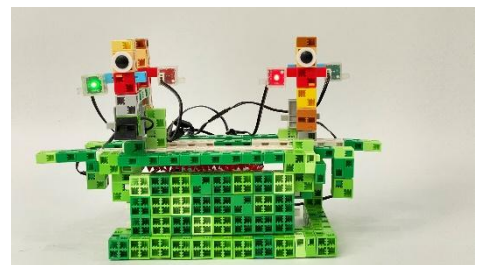
- Build the bridge like in P1
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P3 Build guards patrolling on a cograil bridge

- Build the bridge and the robot like in P2
- Add a Sound sensor to it so that the robot starts moving when it detects the whistle

P4 Build the change of guards

- Build 2-2 guards on 2 servo motors – they will act out the change of guards
- For the bridge use a baseplate, a multibase, 4 beams, 2 driverails, 1 large and 2 small gears, and 1 DC motor
- The DC motor rotates the large gear, which 1) moves one of the driverails and the beam attached to it, and 2) rotates the small gear connected to the large gear. This small gear rotates the other small gear (in the opposite direction), which moves the other driverail and its beam in the opposite direction as the first rail.
- The guards start on the two opposite ends of the bridge. They slide in to the center of the bridge, turn on servo motors („switching places”), then slide back out to the ends of the bridge.



Crossing the lake by boat

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- Build the robot like in P3
- Attach an IR Photoreflexor to the front of the boat.
- The robot should move towards the island while the boy is rowing
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