RIDEX

Co-funded by the Erasmus+ Programme of the European Union

SULTAN OF ELEPHANTS AND GIMPY RED BEARDED ANT SULTAN OF ELEPHANTS MEETING THE ANTS (T1)

S18
T1
D3
L2 P3

Focus on:

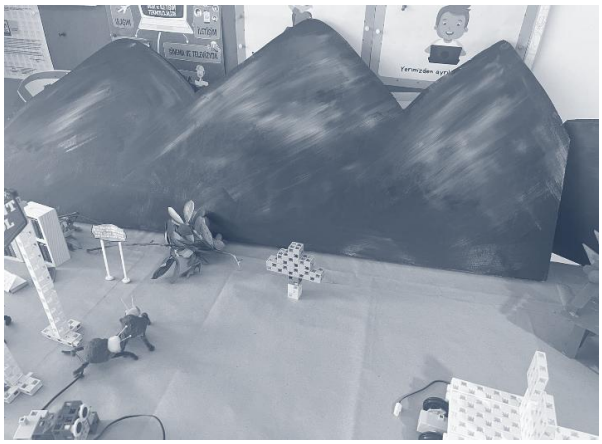
- Spatial orientation (D3)

Task 1: What does the landscape look like?
Students create elements of the landscape.
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:

- Building environment out of ArTeC Blocks
- Building environment out of recycled materials
- Drawing
- Creating computer graphics with ai

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



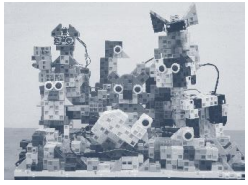
Developmental fields:

In focus:

- Text comprehension
- Spatial orientation
- Fine motor skills
- Creativity

In addition:

- Attention concentration
- Subject concentration – Natural Sciences
- Talent development



Task 2: What does a puppet with movable limbs look like?

Students create a animal figure with movable limbs.
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:

- Building a puppet out of ArTeC Blocks
- Cutting and binding a cardboard puppet
- Drawing series
- Animation editor

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

Developmental fields:

In focus:

- Text comprehension
- Fine motor skills
- Spatial orientation
- Creativity

In addition:

- Attention concentration
- Subject concentration – Drawing, IT
- Talent development

How to manage output:

Hang the pictures on the wall, on a big poster, and ask the children to arrange them according to a rule they decide.
Store the objects in a wardrobe, to protect them from falls.
Attach a label with the name of the group!

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Focus on:
- Spatial orientation (D3)

Goals of the lesson:
- text comprehension
- problem solving
- decision making
- organizing group work

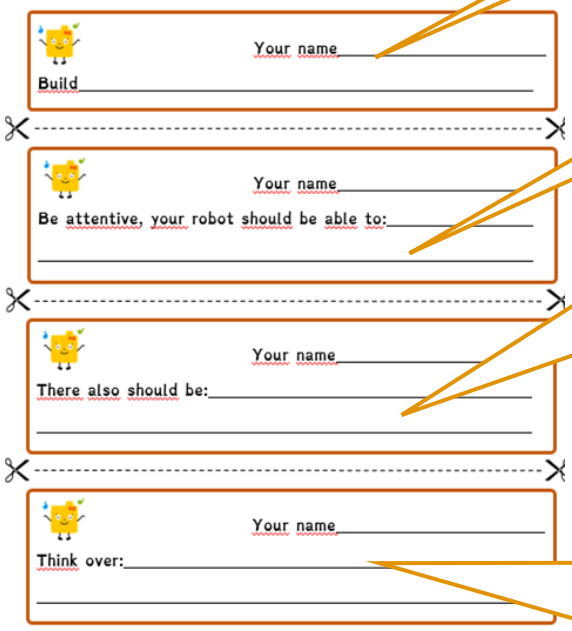
Once upon a time, there was an Sultan of Elephant who heard about the amazing world of ants from his friend Ulukepez. Excited to see it himself, the Sultan of Elephant and his elephant army went to the land of the ants. However, instead of making friends, the Sultan of Elephant wanted the ants to be his slaves so he declared war on the ants.
To everyone's surprise, the ants didn't fight back. Ulukepez, who could speak both elephant and ant languages, explained that the ants had given up even before the battle. The Sultan of Elephant, being so huge, couldn't see or hear the tiny ants, so Ulukepez brought their leaders for a talk.
The Sultan of Elephant, not understanding the peaceful nature of ants, demanded that they build a grand palace within a year. Red-Bearded Lame Ant, a brave ant leader, didn't like this idea, but they had no choice but to agree to avoid destruction by the elephant army.
As the ants started building, they felt sad because they had to give up their freedom to do what they wanted. The wise Red-Bearded Lame Ant was worried about their independence, but they had to keep working on the palace. Little did they know, this was just the beginning of their unexpected adventure

Main features and interactions of the characters

Character	Features	Interactions
Sultan of Elephants	Walks, talks	3 characters talk to each other and act according to the story.
The red-bearded gimpy ant	Walks, talks	
Ulukepez	puppet shaped, speaks	3 characters talk to each other and act according to the story.

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!



Sultan of Elephants
The red-bearded gimpy ant
Ulukepez

Walk
Talk

Palace
Mountain
Ant's land
Elephant's land
Elephant School

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

Suggestions
- Discuss how elephants and birds movements are made
- Make some movements with the children to imitate the movements of elephants, birds, ants
- Show movable anatomical models to the children
- Build a simple figure with movable legs, arms or wings from ArTeC Blocks

Suggested materials
- ArTeC robot and Blocks (at least the 112 pcs set)
- Anatomical models or pictures of mouth, arms and legs
- white paper, pencil, folder

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SULTAN OF ELEPHANTS AND GIMPY RED BEARDED ANT SULTAN OF ELEPHANTS MEETING THE ANTS (T1)

S18
T1
D3
L3–4
P4

Focus on:
- Spatial orientation (D3)

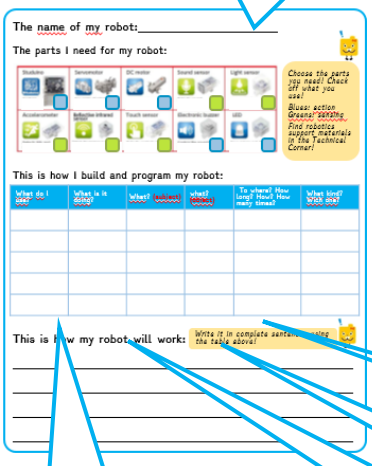
Goals of the lesson:
- fine motor skills,
- problem solving,
- decision making
- body image,
- simple machines

Suggested materials
- ArTeC Blocks (at least the 112 pcs set) and ArTeC robotics set (at least Studuino motherboard, 2 DC motors, wheels, 2-10 servo motors, 1, 2 or 5 Touch sensors, 1 IR Photoreflector, 1 Sond sensor)
- Photos, videos about elephants, ants, hoopoes
- Mindmap or Chart draft , Storyline
- Character cards and Robotic task card template
- Pencil

Suggestions
- Discuss how to imitate ants' movements
- Discuss how fear and anger can be expressed by robots
- Discuss how interpretation can be demonstrated with robots

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).
- Fill in the robot cards in the target language!
- Not all columns of the table need to be filled in, only those that are relevant to the robot's particular operation.
- Based on each row of the table, use grammatically correct sentences to describe the robot's operation in the target language.

Elephant
Trunk
Ant
Ulukepez



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 obstacle (4.b, 4.c)
- Programming servo motor
  - Moving the arm to a given angle (3.a)
  - Repeated movement of the arm for a number of times (3.b)
  - Synchronous movement of 2 or more servomotors (3.d)
- Testing and programming Touch sensor (4.a, 4.b, 4.c)
  - Remote control made of 4 Touchsensors (4.d)
- Testing and programming IR Photoreflector (7.a, 7.c, 7.e)
  - Using an IR Photoreflector for detecting an object (7.d, 7.e)
- Testing and programming Sound sensor (9.a,b)

PROG1
The main actors are mechanically or DC motor driven, but not yet programmed.

PROG2
Static and position-changing robots are included, with 1-1 Buzzer for communication.

PROG3
Exciting solutions for servo motors are appearing on robots, two of which are already working together.

PROG4
Robot designs that are challenging not only to program but also to build.

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SULTAN OF ELEPHANTS AND GIMPY RED BEARDED ANT SULTAN OF ELEPHANTS MEETING THE ANTS (T1)

S18
T1
D3
L3–4
P5

Ideas for robots on different programming levels

PROG1	PROG2	PROG3	PROG4
The main actors are mechanically or DC motor driven, but not yet programmed.	Static and position-changing robots are included, with 1-1 Buzzer for communication.	Exciting solutions for servo motors are appearing on robots, two of which are already working together.	Robot designs that are challenging not only to program but also to build.

SULTAN OF ELEPHANTS MEETING THE ANTS

P1 Puppeteering

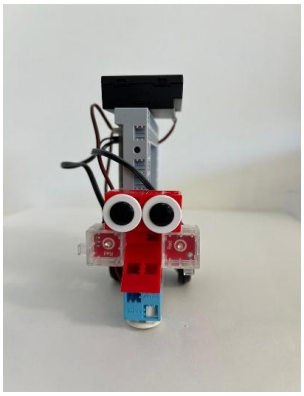
a.) The Sultan of Elephant, the ant and the bird are directly powered by 1 DC motor, they are already moving but not yet programmed. Thanks to the differently mounted DC motors and the differently mounted gears, each figure moves in a different direction and in a different way. Their movement can be controlled by switching the battery holder on and off.

b.) The ant is built as shown in version a), but Ulukepez the bird and the sultan of elephants are now built on a programmable trolley. The bird approaches, then moves with the elephant, then moves away from it, reflecting the dynamics of the scene.

P2 Remote control robots

a.) Sultan of elephants: 4 touch-sensor controlled robots, 2 DC motor driven. The touch sensors on the console make the remote-controlled robot move in 4 directions (back and forth-right and left).

- Ulukepez the bird: static robot with 1 servo motor to move the figure and 1 touch sensor to start the program. It moves back and forth 4 times and then stops. Press the touch sensor to start the program again.
- The ant: moves back and forth on 1 DC motor, automatically on power up. 2 LEDs flash simultaneously, positioned as eyes during the movements.



b.) Sultan of Elephants: 2 touch sensors, 2 LED, 2 servo motor static with 1 buzzer. One touch sensor moves the elephant's head and tail to the right by 1 servo motor and the LEDs alternately flash in its eyes while the buzzer sounds. The other touch sensor moves the elephant's head and tail to the left and the LEDs flash simultaneously in its eyes, the buzzer sounds again, imitating a conversation.

- Ulukepez the bird: a robot with 5 touch sensors and 2 DC motors. The 4 touch sensors on the console move the remote-controlled robot in 4 directions (back and forth-right and left). On the 5th button, the buzzer sounds like a bird talking to an elephant.
- The ant: as in version a).

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S18
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P6

Ideas for robots on different programming levels

PROG1	PROG2	PROG3	PROG4
The main actors are mechanically or DC motor driven, but not yet programmed.	Static and position-changing robots are included, with 1-1 Buzzer for communication.	Exciting solutions for servo motors are appearing on robots, two of which are already working together.	Robot designs that are challenging not only to program but also to build.

SULTAN OF ELEPHANTS MEETING THE ANTS

P3 Introduction of Infrared sensor

The special installation of servo motors makes the scenes even more exciting

a.) Sultan of elephants: static robot with 4 servo motors, 2 LEDs, 1 sound sensor and 1 buzzer. The robot can be activated by clapping when the bird is in front of it. The robot is then programmed to move its ears back and forth, its trunk up and down and its tail left and right. Its eyes flash simultaneously in a "fearful" way. The buzzer sounds, as if speaking to Ulukepez.

- Ulukepez, the bird: 2 actors mounted on a DC motorised robot base, with 1 buzzer and 1 IR photoreflector. When switched on, it automatically moves forward until the IR photoreflector detects the sultan of elephants. Then it stops and the buzzer is activated.
- The ants: each ant figure consists of 2 -2 servo motors, so you can build 4 ants on 1 programmed basemount. The ants start moving automatically when the battery holder is switched on. Since the movements of each of the 4 figures are slightly different, they give the effect of a real anthill. The ant figures can move either simultaneously or one after the other.

b.) Sultan of elephants: the robot structure seen in version a), which can be controlled by 2 Touch sensors. One of the touch sensors moves the robot's ears back and forth, its trunk up and down, and its tail left and right, while the LEDs alternately flash and the buzzer sounds. The other button does the same thing, but the LEDs flash simultaneously.

- Ulukepez, the bird and ant co-operating robot: the bird has a drive rail on its back, 1 buzzer and 1 sound sensor. The buzzer on the bird is activated when its sound sensor detects the ant's buzzer. The 1 DC motor mounted in the ant has small gears built into it, which allow the little robot to climb on the bird's back. When it reaches the top, it stops and the sound from its buzzer turns on the bird's sound sensor, causing it to sound, symbolizing the bird's translation between the ant and the elephant.

P4 Robot cooperation, servo motor coordination

- Sultan of elephants: the robot is driven by 8 servo motors, has 2 LEDs for the eyes, 2 push buttons to control its movements and 1 buzzer. One touch sensor makes the whole structure move, the LEDs light up. The other touch sensor is used to move the servo motors mounted in the head and neck, the LEDs are also lit and the buzzer sounds.
- Ulukepez, the bird: 2 figures mounted on a DC motorised robot base, the program starts when you press 1 button and advances until the elephant is detected by 1 IR Photoreflector on the front of the robot. It then stops, the buzzer sounds, then backs up for a while, stops and the buzzer sounds again.
- The ants: structurally identical to p3/a), but their program is not triggered automatically, but by 1 IR Photoreflector. When Ulukepez passes the ants, he turns them on. Here the ants are now switched on one after the other.