

VUK

HARVEST – ESCAPING THE WHEAT FIELD (T5)

S7
T5
D10
L1 P3

In focus:

• Creativity (D10)



Task1: Solve the MAZE exercise! Imagine that during the harvest, the foxes were chased by the hunters and the harvesters. Help the foxes get out of the wheat field!

Every solution is good!

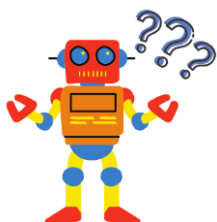
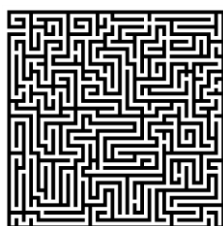
Any kind of tool and material can be used!

You can use the ideas and list of materials from the Idea Bazaar, come up with your own ideas or just let the children be creative.

Idea Bazaar – some ideas:

- Solving the maze (I2)
- Search for tracks in the woods, use the TRACKS memory card (I4)
- Make matching pair card game
- Build an animal hiding place (I6)
- Collecting information from the library on harvesting tools (I6)

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



Developmental fields:

In focus:

- Social skills
- Attention
- Creativity
- Spatial orientation

In addition:

- Nature conservation
- Attention development
- Life experience

Task2: Imagine and act out two situations: when animals show what outdoorsmen and conservationists are like in the forest, and when they show what people who are noisy and don't care about nature are like in the forest! How did your behaviour differ in the two situations?

How can we convince others of our opinions? Act it out!

Every solution is good!

Any kind of tool and material can be used!

You can use the ideas and list of materials from the Idea Bazaar, come up with your own ideas or just let the children be creative.

Idea Bazaar – some ideas:

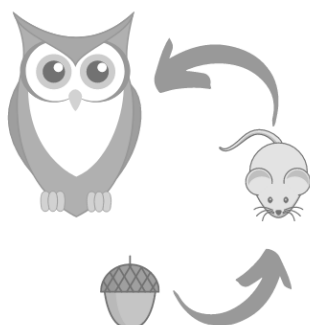
- Situation game (I5)
- Making a food chain (I1)

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

Developmental fields:

In focus:

- Social skills
- Fine motor skills
- Spatial orientation
- Creativity
- Algorithmic thinking



How to manage output:

The groups should try out the board games and other groups have made too. Make them available for other classes to try out in nature conservation/environmental education lessons or on Eco-days. Label the board games with the name of the group!

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S7
T5
D10
L2 P3



In focus:

- Creativity (D10)

Goals of the lesson:

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

Suggestions

- Discuss what tools were used for harvesting in the past and today!
- Show the children videos of different tools in motion!
- Discuss what metacommunication tools are used in a debate



It was mid-afternoon. There was only a small patch of wheat left to be harvested. The rangers were anxiously waiting for the foxes to show up.

The harvesters thought there were no foxes in the wheat field, because they would've been frightened by all the noise. They stopped working, and left the wheat field along with the rangers. They sat down to rest and eat.

Vuk, Karack and Haart crawled out from under the bush. They carefully left the cover of the wheat. Then they started running across the harvested wheat field as fast as they could. The rangers spotted them too late. The foxes ran away, into safety.

Main features and interactions of the characters

Character	Features	Interactions
man with scythe		harvests
wheat field		moves
fox	afraid	crouches

How to use the character card:

Each student fills in their 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!

**Man with scythe,
wheat field
Foxes**

**Swing his scythe
Stand guard
Escape**

Rangers, birds

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




 Your name _____
 Build _____


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


 Your name _____
 There also should be: _____


 Your name _____
 Think over: _____

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T5
D10
L3-4
P4



Suggested materials

- ArTeC Blocks (at least the 112 pcs set) and ArTeC robot set (2-3 Studuino motherboards, 4 Touch Sensor, 1 IR Photoreflector, 1 servo motor, 5 DC motors, 1 red LED, 1 Buzzer)
- Black duct tape
- Mindmap or Chart draft, Storyline
- Character cards and Robotic task card template
- Pencil

In focus:

- Creativity (D10)

Goals of the lesson:

- text comprehension
- problem solving
- decision making
- expression of movement

How to fill in the Robotic card?

- Choose the 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

Movement of the wheat field

- Using gears and blocks, the movement of a wheat field is imitated by mechanical transmission.

Harvesting man's movement

- Use blocks and accessory pieces to express the movement of the human hand and arm.

Movement of arms and legs Wheat field - blown by the wind

The name of my robot: _____

The parts I need for my robot:

Block	Servomotor	DC motor	Sound sensor	Light sensor
Touch sensor	IR Photoreflector	LED	Buzzer	Random number generator

Choose the parts you need! Check off what you use!

Blue: action
Green: sensing
Find robotics support materials in the Technical Corner!

This is how I build and program my robot:

What do I want to do?	What is it made of?	What is the code?	What is the result?	What is the next step?

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 (2.a, 2.b)
 - Turning on a small curve (2.c)
 - Random movement (2.f)
- Programming servo motor
 - Moving arm to a given angle (3.a)
 - Repeated arm movements a given number of times (3.b)
- Programming and testing IR Photoreflector (7.a, 7.c, 7.e)
 - Line-tracking robot with 1 IR Photoreflector (7.f)
- Programming and testing Touch Sensor (4.a)
 - Activating the robot by pressing the Touch Sensor (4.b)
 - Remote control from 4 Touch Sensors (4.d)
 - Use of LED (5.a)
 - Flashing (5.b)
- Use of Buzzer (6.a)
- Random numbers
 - Use of random numbers (10.a)

Figures of field, harvesting people, rangers. 3 foxes on a robot that moves forward when switched on

PROG1

The ranger walks back and forth, the foxes jump out, the ranger shoots

PROG2

The harvesting man walks around the wheat field. The wheat field sways in the wind. Birds fly around the tree.

PROG3

The foxes escape from their hiding place between the ranger and the harvester

PROG4

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Ideas for robots on different programming levels

Figures of field,
harvesting people,
rangers. 3 foxes on a
robot that moves
forward when
switched on

PROG1

The ranger walks back
and forth, the foxes
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PROG2

The harvesting man
walks around the
wheat field. The
wheat field sways in
the wind. Birds fly
around the tree.

PROG3

The foxes escape
from their hiding
place between the
ranger and the
harvester

PROG4



Harvest

P1 Building the scene

- Building landscape, figures (foxes, harvesters, rangers, etc.)

OR

- Foxes on a robot with 2 DC motors, starts automatically when switched on

P2 Sly foxes

- 3 small foxes on 1 robot (2 DC motors, 2 Touch Sensors)
- Ranger on 1 robot (2 DC motors, 1 Touch Sensor, 1 red LED)
- Both robot programs are triggered by Touch sensor
- The ranger robot moves back and forth
- One of the children activates the fox robot by pressing the Touch Sensor, timing it so it does not to meet the ranger
- The ranger stops and shoots after 5 back-and-forths - red LED lights up

P3 Building and coordinating moving figures

- The harvester walks around the wheat field, stopping at intervals to swing his scythe. The wind blows through the wheat field and birds flutter around the tree next to it.
- Harvester:** Touch Sensor starts the program.
- It uses an IR Photoreflector to track a line.
- Stops at predetermined intervals and uses servo motor to perform swinging motion.
- Wheat field:** Touch Sensor triggers the program.
- Gears driven by a DC motor move the wheat stalks and the tree with the birds.

P4 Escape of the foxes through the field

- A combination of P2 and P3
- The harvester is equipped with 2 Touch Sensors, he stops at random intervals, this is when the foxes must be switched on
- The harvester stops when the Touch Sensor is pressed, turns towards the foxes and starts shouting, waving his hands. The direction of the turn is determined by which of the 2 Touch Sensors is pressed.

