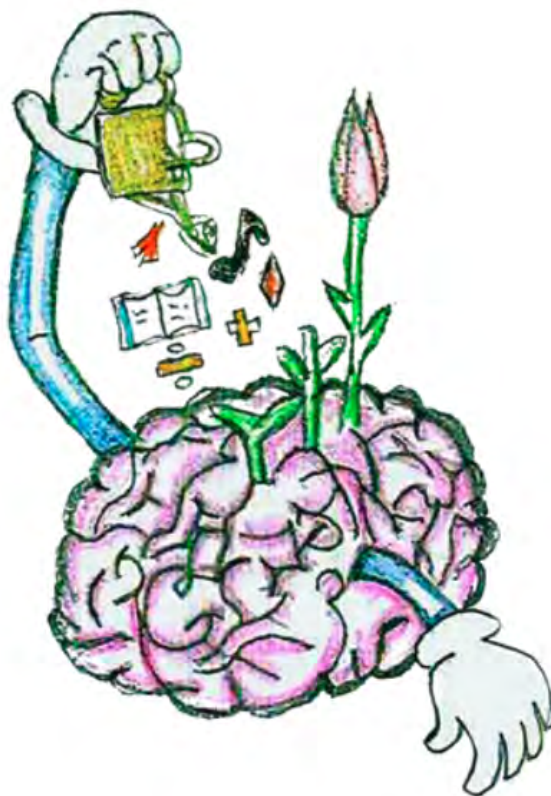


CHAPTER 1

GROWTH MINDSET:





A KEY ASSET TO BE DISCOVERED IN NARRATIVE TEXTS

Inspired by Denisa Dumitrescu, Scoala Gimnaziala "Carol I"



Growth mindset blossoms with every story, with every live lesson, every day.

The following activities for pupils will consist of narrative texts. Pupils can nurture, maintain and promote growth mindset by embracing challenges, being persisted in the face of setbacks, finding lessons and inspiration in the success of others, learning from criticism and setting effort as the path of mastery. All of the above can be further encouraged by narrative texts, such as comics, short stories, fables; fairy tales, myths, legends; novels (adventure, fantasy, realistic, historical) and biographies, novels.

Activity 1: Designing a comic strip based on the given text (embracing challenges)		
	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 7-12.
	WHAT YOU NEED	A copy of Worksheet 1 and 2 of <i>Activity 1: Designing a comic strip based on the given text</i> . Have extra tracks of paper ready if any of the pupils are going to draw more. To give pupils more options for designing techniques, we advise you to prepare pencils, markers, crayons etc.
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will do an activity with an interesting story, consisting of one main character. Read them a story (or ask if some pupil wants to read it) and have a 5-minute discussion about the plot and the main events the character has been into. Instruct them to present the story in 6 blank boxes with the desired designing technique.</p> <p>Give pupils 30 minutes time to make a comic strip in detail.</p> <p>When the comic strips are designed, make a 10-minute discussion about how did a character embraced his challenges.</p>

Worksheet 1 of activity 1: designing a comic strip based on the given text

Fairy tale **The Pig King** (by Basab Ghosh)

Once upon a time, in a faraway land lived a king and a queen. One night, three fairies visited the queen. All three of them bestowed the queen with some gifts. The first fairy told the queen that no man would ever harm her. Then the second fairy told the queen that she would be wisest of all women. And the third fairy told her that she would have a son, who would take the form of a pig. The third fairy also said that the prince would stay that way until he took three wives. As the child grew, he learned to talk like a man. Soon he was talking like a man one moment and the next moment he was wallowing in mud. Whenever he did so, he would come back and nuzzle with his parents. As a result, he made them dirty as well. Sometime later, the queen did give birth to a son. And he looked exactly like a pig. At first, the king and the queen thought of killing their own son. But their parental affection took over them and they did not do so. As the child grew, he learned to talk like a man. Soon he was talking like a man one moment and the next moment he was wallowing in mud. Whenever he did so, he would come back and nuzzle with his parents. As a result, he made them dirty as well. One day, the prince told his mother that he wanted to get married. The mother looked for a girl who was willing to marry the pig prince but none wanted to do. So, she asked a woman to let her oldest born marry her son. And in return, the girl would be the queen of the kingdom. The woman persuaded her daughter to marry the pig prince. Although the pig prince was happy to see the lovely girl, the girl was disgusted. She hatched a plan to kill the pig prince. But the prince overheard the plans and killed her with his hooves. The queen was upset that the prince had killed the girl. But he only did what she had planned for him. So, she began searching for another suitable wife for the pig prince. Now the pig prince demanded to marry the younger sister of the girl he had killed earlier. The queen did not want to ask the woman for her second daughter. But the prince was adamant. And he threatened to destroy everything if his wishes weren't fulfilled by his mother. But the same thing happened to the younger sister as well. Next, the pig prince wanted to marry the youngest daughter of the woman. She happened to be the prettiest of all. And when the prince offered to marry her, she accepted the offer with grace. When they got married, she was happy with him. She was never disgusted by the prince. One day, when the prince thought she had earned his trust, he told her his secret. The prince took off his pigskin and showed his handsome face. They kept this a secret. But soon the girl told the king and the queen about their son and his pig's skin. The next day, the pig prince's parents entered the room when the prince and his wife were sleeping and then they destroyed the pig's skin. The entire kingdom came to see the prince for who he was. Soon after, the prince and princess had a son. The pig prince sat on the throne and ruled happy. He also lived happily ever after with his family.

Worksheet 2 of activity 1: Designing a comic strip based on the given text

Make a comic strip and present the story The Pig King in 6 blank boxes with the desired designing technique.

Blank box 1

Blank box 2





Blank box 3

Blank box 4

Blank box 5

Blank box 6

Activity 2: Identifying the steps that the main character takes in order to achieve his goal (persisting in the face of setbacks)

	<p>TIME</p>	<p>This activity takes 45 minutes.</p>
	<p>AGE</p>	<p>This activity is recommended for pupils of the age 9-12.</p>
	<p>WHAT YOU NEED</p>	<p>A copy of Worksheet 1 and 2 of <i>Activity 2: Identifying the steps that the main character takes in order to achieve his goal</i>. Have extra tracks of paper ready if any of the pupils are going to need more space to write down goals.</p>
	<p>ACTIVITY INSTRUCTIONS</p>	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will do an activity with an interesting story, consisting of one main character. Read them a story (or ask if some pupil wants to read it) and have a 10-minute discussion about the plot and the main events the character has been into. Instruct them to identify the steps that the main character takes in order to achieve his goal(s).</p> <p>Give pupils 20 minutes time to write down steps and describe them that the main character takes in order to achieve his goal(s).</p> <p>When the pupils finish the worksheet, make a 15-minute discussion about how did a character persisted in the face of setbacks.</p>

Worksheet 1 of activity 2: Identifying the steps that the main character takes in order to achieve his goal

Fairy tale The hundred knot bamboo tree (by Shreya Sharma)

Once, there was a poor man named Khoai, who worked as a servant for a landlord in the village. The landlord was very mean, but he had a beautiful daughter. He was afraid that Khoai would leave his household and thus, he would lose a hard worker. So, he promised Khoai that if he worked hard for three years, he would be allowed to marry the landlord's daughter. Khoai was very honest, so he believed the landlord. He worked day and night and looked forward to getting married. However, the landlord didn't keep the promise. Instead, he offered his daughter to the son of a wealthy man in the neighboring village. When the time for marriage arrived, the landlord said to Khoai, "Khoai! Go to the forest, find a hundred-knot bamboo and cut it up into chopsticks for the wedding feasts. Then, I'll let you marry my daughter." Khoai again believed the landlord. Bringing an axe with him, he went in search of a bamboo with one hundred knots. The landlord and the wealthy man were very happy after tricking Khoai. After he left, they began secretly preparing for their children's marriage. Meanwhile, Khoai spent his whole day climbing every mountain and crossing every streaming the forest to search for a bamboo with one hundred knots. However, he couldn't find one. The tallest bamboo he could see had less than fifty knots. Tired and sad, he started to cry. Suddenly, Buddha, the supreme man who always helped good people and punished bad ones appeared. He asked Khoai, "Who are you? Why are you crying?" After listening to Khoai's story, Buddha smiled and said, "Don't worry! Go and cut on hundred knots of bamboo, put them in a row and say 'Stick Together! Stick Together!' and you'll have the bamboo you want." Then, Buddha disappeared. Filled with joy, Khoai did as Buddha said, and he soon had the bamboo he needed to marry the landlord's daughter. He set out to bring it back but it was too big and heavy for him to load onto his shoulders. Khoai started to cry again. Buddha immediately appeared and said, "The bamboo will come apart in one hundred knots when you say 'Unstick! Unstick!'" Khoai did as Buddha said and the bamboo came apart in one hundred knots. He tied up the knots and brought them back. But when he got home, Khoai saw the two families holding their wedding. He realized he had been tricked. He put the bamboo knots in the yard and asked the landlord to receive his bridal token. Looking at the bamboo knots, the landlord shouted, "I asked to find a bamboo with one hundred knots, not one hundred knots of bamboo. How stupid you are!" Both the landlord and the wealthy man burst into scornful laughter and mocked Khoai. Khoai became angry. He said nothing to the men but quietly put bamboo knots in a row and shouted, "Stick Together! Stick Together!" They turned into one bamboo with one hundred knots. The landlord was very surprised, so he came near to see the bamboo. Khoai then said, "Stick Together! Stick Together!" Immediately, the landlord stuck to the bamboo. The wealthy man came to rescue the landlord but Khoai said in a low voice, "Stick Together! Stick Together!" The wealthy man stuck to the bamboo, too. The two rich men screamed and begged for freedom. The landlord was so scared that he promised to let Khoai marry his daughter that day. Then, Khoai said, "Unstick! Unstick!" The bamboo immediately came apart and the rich men were free. The wealthy man and his son left the wedding feast in a hurry. Khoai tied the knot with the landlord's daughter that day and they lived together happily forever and ever.

Worksheet 2 of activity 2: Identifying the steps that the main character takes in order to achieve his goal



Identify and describe the steps that the main character takes in order to achieve his goal(s).

Step 1

Step 2

Step 3

Step 4





Step 5

Step 6

Step 7

Activity 3: Choosing a symbol for the character's behaviour

(seeing effort as the path to mastery)

	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 7-12.
	WHAT YOU NEED	A copy of Worksheet 1 and 2 of <i>Activity 3: Choosing a symbol for the character's behaviour</i> . Have extra tracks of paper ready if any of the pupils are going to need more space to draw a symbol for the character's behaviour. To give pupils more options for desinging techniques, we advise you to prepare pencils, markers, crayons etc.
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will do an activity with an interesting story, consisting of one main character. Read them a story (or ask if some pupil wants to read it) and have a 10-minute discussion about the plot and the main events the character has been into. Instruct them to choose a symbol (an animal, a plant, a colour etc.) for the character's behaviour and that they explain their choice.</p> <p>Give pupils 20 minutes time to draw a symbol with their desired technique.</p> <p>When the pupils finish the drawing, make a 15-minute discussion about why in how did they decided for some symbol, and how a character saw effort as the path of mastery.</p>

Worksheet 1 of activity 3: Choosing a symbol for the character's behaviour

Fairy tale **The woodcutter and the troll** (by Shreya Sharma)

Once, there lived a woodcutter in a village. He was very poor. However, he was a hard working. He used to go to the woods everyday, and cut the woods. This was his every day routine as he used to sell them in the market to earn his living. A long time passed and finally, the woodcutter saved five yen. The woodcutter walked across the mountain. He thought about what he would do. It became very dark. As the woodcutter turned around, a huge troll was standing next to him. The woodcutter was scared though he pretended not to be. "Please, master! Lend me five yen. I'll repay you tomorrow!" cried the troll. That was all the woodcutter's money. However, the woodcutter was still scared, so he gave the troll five yen. He went home with nothing. The next day, the woodcutter waited all day long for the troll. Finally, at night, the troll came and returned with his five yen. The next day, the troll came back. He gave another five yen to the woodcutter. "You paid me yesterday," the woodcutter said. "No, I didn't! I'm repaying you today," said the troll. The troll left the money and soon disappeared. The next day, the troll came again with another five yen. The troll came every day. He brought five yen every day. The woodcutter soon became rich. With so many money, he bought a new house which had a big field. He grew many vegetables in it. He also got married and soon had a son and a daughter. They were a happy family. Years passed and the woodcutter was now old. One day, he died. The troll did not know this. Every day, he took money to the house. The woodcutter's son received the money. One day, the troll realized that he was not his master. The troll became angry and used his magic stick. "Go pebbles," he cried. The pebbles flew out the the magic stick. They covered the woodcutter's son's field. "Oh, no! My field," cried the woodcutter's son. That night, he did not sleep and was thinking what to do all night. Finally, he came up with an idea. The woodcutter's son waited for the troll the next day. At night, the troll appeared. The woodcutter's son began to talk, "Pebbles helped my vegetables to grow. I'm so lucky! Manure would ruin my field!" The troll was totally confused after hearing his statement. The next morning, the woodcutter's son ran to his feet. His field was covered in manure. The troll had fallen for his trick. The woodcutter's son grew many vegetables. They were the best vegetables in the village. He grew vegetables on every season. Since then, he lived happily ever after.

Worksheet 2 of activity 3: Choosing a symbol for the character's behaviour







Choose and draw a symbol (an animal, a plant, a colour etc.) for the character's behaviour.

Drawing

Explain your choice of the symbol.

Activity 4: Writing a letter to the main character - what would you tell him about his decisions?

(learning from criticism)

	<p>TIME</p>	<p>This activity takes 45 minutes.</p>
	<p>AGE</p>	<p>This activity is recommended for pupils of the age 9-12.</p>
	<p>WHAT YOU NEED</p>	<p>A copy of Worksheet 1 and 2 of <i>Activity 4: Writing a letter to the main character - what would you tell him about his decisions?</i>. Have extra tracks of paper ready if any of the pupils are going to need more space to write a letter to the main character.</p>
	<p>ACTIVITY INSTRUCTIONS</p>	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will do an activity with an interesting story, consisting of one main character. Read them a story (or ask if some pupil wants to read it) and have a 10-minute discussion about the plot and the main events the character has been into. Instruct them to write a letter to the main character – what would they tell him about his decisions. They can also think and write down, what was the moral of the story.</p> <p>Give pupils 20 minutes time to write a letter.</p> <p>When the pupils finish the letters, make a 15-minute discussion about what and why did they decided to write in the letter for the main character.</p> <p>You can also ask, what was the moral of the story (always learn to see things in a positive way and see yourself in a strong position to help others).</p>

Worksheet 1 of activity 4: Writing a letter to the main character - what would you tell him about his decisions?

Moral story The lazy man and the God's plan (by Shreya Sharma)

A long time ago, there lived a very lazy man who always looked for an easier way to feed himself. One day, while he was searching for food, he saw a big fruit farm. As he looked around, he didn't see anyone guarding the fruits on the tree. At once, he decided to steal some fruits. As soon as he walked into the farm and started to climb the tree, a farmer saw him and chased the lazy man. The lazy man saw the farmer coming behind him with a stick. He got so afraid and ran as fast as he could. He ran for his life and reached in the forest nearby and went inside it to hide. After some time, he started to move on from the forest. While crossing the forest, he saw a wonderful scene. There was a fox that had only two legs. The fox was still crawling happily. The lazy man thought, "How can this fox stay alive in such a poor condition? The poor fox cannot even walk properly! How it must be able to feed himself or stay alive from the threat of other animals!" Suddenly, he saw the lion coming towards the fox with a piece of meat in his mouth. All the animals ran away as they saw a lion coming towards them. The lazy man climbed up the tree to save himself but, the fox stayed at its place. It was not able to run with its two legs. But what the lazy man saw was truly surprising! The lion left a piece of meat that was in his mouth for the fox. The lazy man felt happy seeing god's play. He thought the god who is the creator of all, always has a plan to take care of its people. He thought that God must have planned something for him, too. So, he left that place and sat under a tree waiting for someone to feed him, too. He spent hours waiting for his food. He waited there for two days without any food! Finally, when he couldn't bear hunger anymore, he left the place and decided to go back home. On his way, he met an old sage. The old sage was known for his wisdom. The lazy man told everything he saw throughout his journey. The sage first gave him some food and water. After that, he asked the sage, "Oh, wise sage, the god had shown his kindness on the handicapped fox, but why the god was so cruel to me?" The old sage smiled and said, "That's true! God has a plan for everyone. You are definitely a part of god's plan. However, my child, you took his sign in the wrong way. The god did not want you to be like the fox. He wanted you to be like the Lion".

Worksheet 2 of activity 4: Writing a letter to the main character - what would you tell him about his decisions?







Write a letter to the main character – what would you tell him about his decisions?

A letter

What is the moral of the story?

Activity 5: Writing a diary page from character's point of view

(find lessons and inspiration in the success of others)

	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 9-12.
	WHAT YOU NEED	A copy of Worksheet 1 and 2 of <i>Activity 5: Writing a diary page from character's point of view</i> . Have extra tracks of paper ready if any of the pupils are going to need more space to write a diary page.
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will do an activity with an interesting story, consisting of one main character. Read them a story (or ask if some pupil wants to read it) and have a 10-minute discussion about the plot and the main events the character has been into. Instruct them to write a diary page from character's point of view. They can also think and write down, what were the lessons and inspiration in the success of the character.</p> <p>Give pupils 20 minutes time to write a diary page.</p> <p>When the pupils finish the page, make a 15-minute discussion about how did they decide to write in the diary page from character's point of view (did they focus on emotion, behaviour etc.).</p> <p>You can also ask, what can be the lessons and inspiration in the success of the character. You can also discuss what is the moral of the story (Kindness is a noble virtue. Always be kind to others.).</p>

Worksheet 1 of Activity 5: Writing a diary page from character's point of view

Indian folk tale with morals **The magic crown** (by Shreya Sharma)

Bruce was a very kind man. He always helped his fellow villagers. As a result, the villagers loved and respected him. That year, there was no rain and all the fields in the village were dried up. Because of this, Bruce had suffered a huge loss. But still, he thought about the faith of the poor farmers in the village. He decided to help all of them. He used up all of his money to feed them. After a few days, Bruce realized that he had no money left. Soon, he decided to leave the village to seek his fortune. He walked and walked and finally reached a temple. The temple was very crowded. The people were standing in a queue. At the front of the queue, there was a shiny pedestal. "What is happening?" asked Bruce to a person standing next to him. "You see," said that person pointing to the crown, "that's a magic crown. It will glow brightly when a very kind man and a selfless person touches it. He will be the rightful owner of that crown. Go ahead! Try touching it." "I am not interested," said Bruce. "But why? Why don't you touch it, Sir?" People around him persuaded him to touch it reluctantly. Finally, Bruce agreed and stepped ahead to touch the magic crown. To everyone's surprise and amazement, the crown shone brightly the moment he laid his hand on it. Seeing this, the priest of the temple walked up to Bruce and embraced him. "You must be a very kind man. That's why the crown has chosen you. Here, take it," said the priest. Bruce was overjoyed. He thanked the priest and took the crown back to his village. The crown proved to be a lucky charm. As he entered his village, the rain showered. He soon regained all his lost wealth. All the people of that village including Bruce lived happily ever after.

Worksheet 2 of Activity 5: Writing a diary page from character's point of view



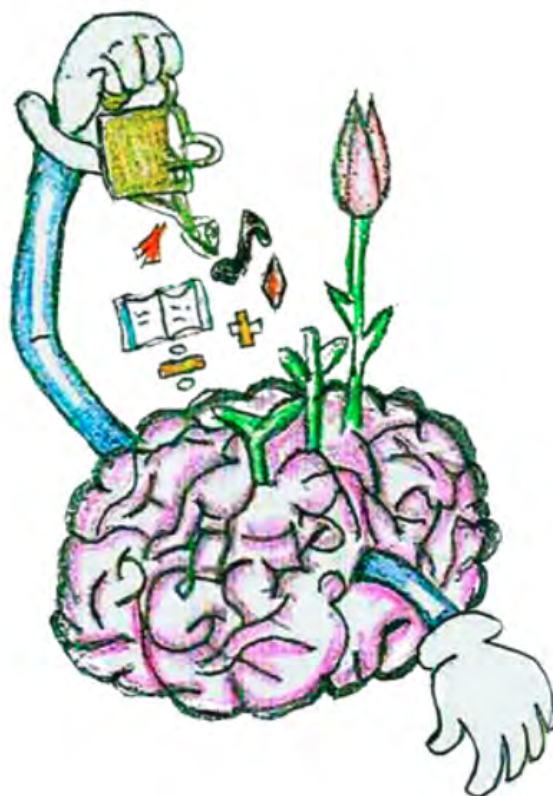
Write a diary page from character's point of view.

Diary page





What can be lessons and inspiration in the success of the character (moral of the story)?

CHAPTER 2

Inspired by Victoria Wallin and Linda Jordeskog, Fridaskolan, Sweden



Activity 1: What they say about you

	TIME	<p>This activity takes from 60 minutes or more depending of the type of craft.</p>
	AGE	<p>This activity is recommended for pupils of the age 9-15.</p>
	WHAT YOU NEED	<p>A copy of Worksheet 1 and 2 of <i>Activity 1: What they say about you</i>. Paper and pens, coloring pens, scissors, optionally sewing equipment or other craft material.</p>
	ACTIVITY INSTRUCTIONS	<ol style="list-style-type: none"> 1. Ask the students to reflect on if they ever give themselves negative "epithets" like "loser" "failing all the time" "bad at maths" "not fit for sports" " an idiot in learning languages" and so on. Tell them to write those things down on a little paper for each statement. 2. Tell them to think about what negative comments others might have given them. 3. Let them tear every paper motivating themselves to remember that growth mindset can help them challenge themselves to develop in that field. We are not losers, we just need to work harder to achieve some things. 4. Let them take new papers and write down affirmative lemas to make them keep the growth mindset. It could be like " I'm a person that keeps going" "I know practice makes perfect" "They were wrong about me. I'll keep on..." 5. Let the students make art or crafts of their lemas.

Worksheet 1 of activity 1: What they say about you



Reflect on if you ever give yourself negative "epithets". Write those things down on a little paper for each statement.




Think about what negative comments others might have given you.





Worksheet 2 of activity 1: What they say about you



Write down affirmative lemas for you.

	<p>Co-funded by the Erasmus+ Programme of the European Union</p> 	

Activity 2: Drama activity (*The mindset sculpture*)

	TIME	This activity takes 15- 30 min.
	AGE	This activity is recommended for pupils of any age.
	WHAT YOU NEED	A poster or a slide on the projector showing the picture below with statements from the fixed mindset and the growth mindset.
	ACTIVITY INSTRUCTIONS	<p>The students work in pairs.</p> <ol style="list-style-type: none"> 1. Each pair will choose one of them to be the artist and the other one to be the clay. 2. Show them the picture of the fixed mindset statements. Tell them to choose one of them and make a sculpture with that theme, the artist mouldering the clay (one person positioning the other person and instruct them how to express in the face). 3. Each pair shows their sculpture to the others telling them which statement they choose. Optionally the others have to guess with it is. 4. Repeat step 2 and 3 with the statements of growth mindset in the picture.





TIME	This activity takes 15 min.
AGE	This activity is recommended for pupils of any age.
WHAT YOU NEED	A poster with praise to the pupils for things they have done good. It can be things like <i>"Thank you for being on time for the lessons."</i>
ACTIVITY INSTRUCTIONS	<p>Show the poster for the pupils and praise them for their good work.</p> <p>After the praise the pupils can discuss what they want to be praised for next time.</p> <p>The pupils tell the teacher what they want to be praised for and the pupils and teacher agree about what they should focus on.</p> <p>Put up the poster in the classroom as a reminder of the pupils good work.</p>



Activity 4: Which zone are you in?



TIME	This activity takes 20 min.
AGE	This activity is recommended for pupils of the age 12-16.
WHAT YOU NEED	A picture of the three different zones- Comfort zone, Learning zone, Panic zone and activity suggestions.
ACTIVITY INSTRUCTIONS	<p>The students work in pairs. It's good to work with someone that they usually don't work with/talk to.</p> <p>Show the picture of the different zones and explain what they stand for.</p> <p>Give an activity suggestion, for example run a marathon and ask the couples to discuss which zone they will be in if they should run a marathon.</p> <p>To get a growth mindset you need to test new things. At the end of the lesson, ask the students for things they have never done and want to try.</p>

Growth mindset

- Failure is an opportunity to grow
- Try new things
- Feedback is constructive
- Be inspired of others success
- Get out of your comfort zone



Comfort Zone

Safe place to reflect.

Learning Zone

Where you grow and learn.

Panic Zone

Learning is beyond what you are familiar with and becomes very difficult.







Which zone are you in?

- Parachute
- Give an oral presentation in English
- Ride a horse
- Give a speech at a wedding
- Sing solo
- Run marathon
- Travel alone to New York

I like to try new things
What do you want to try?



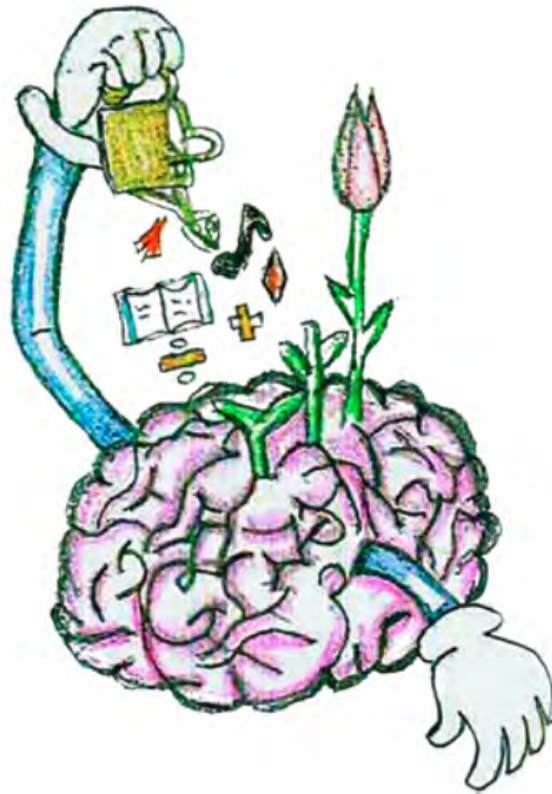
Activity 3: Improving studying culture in the classroom

	TIME	This activity takes 5-15 minutes.
	AGE	This activity is recommended for pupils of any age up to 15.
	WHAT YOU NEED	-
	ACTIVITY INSTRUCTIONS	<p>At the end of a lesson, take some time to evaluate the lesson.</p> <p>Make the pupils signing with their thumbs up, down or to the side if they think they worked hard without giving up or giving in (for distractions). They all do it in the same time showing it to the class and te teacher.</p> <p>After that they are asked to give an example of someone they "caught" being active, developing, during the lesson. They are asked to describe what that person did and give them praise for their process/work. Ask them to focus not only at outcome but on the process in a growth mindset way.</p>

CHAPTER 3





DEVELOPING A GROWTH MINDSET THROUGH ROBOTICS ACTIVITIES

Inspired by Fernando Antunez Cid, Kauno Simono Daukanto progymnasium

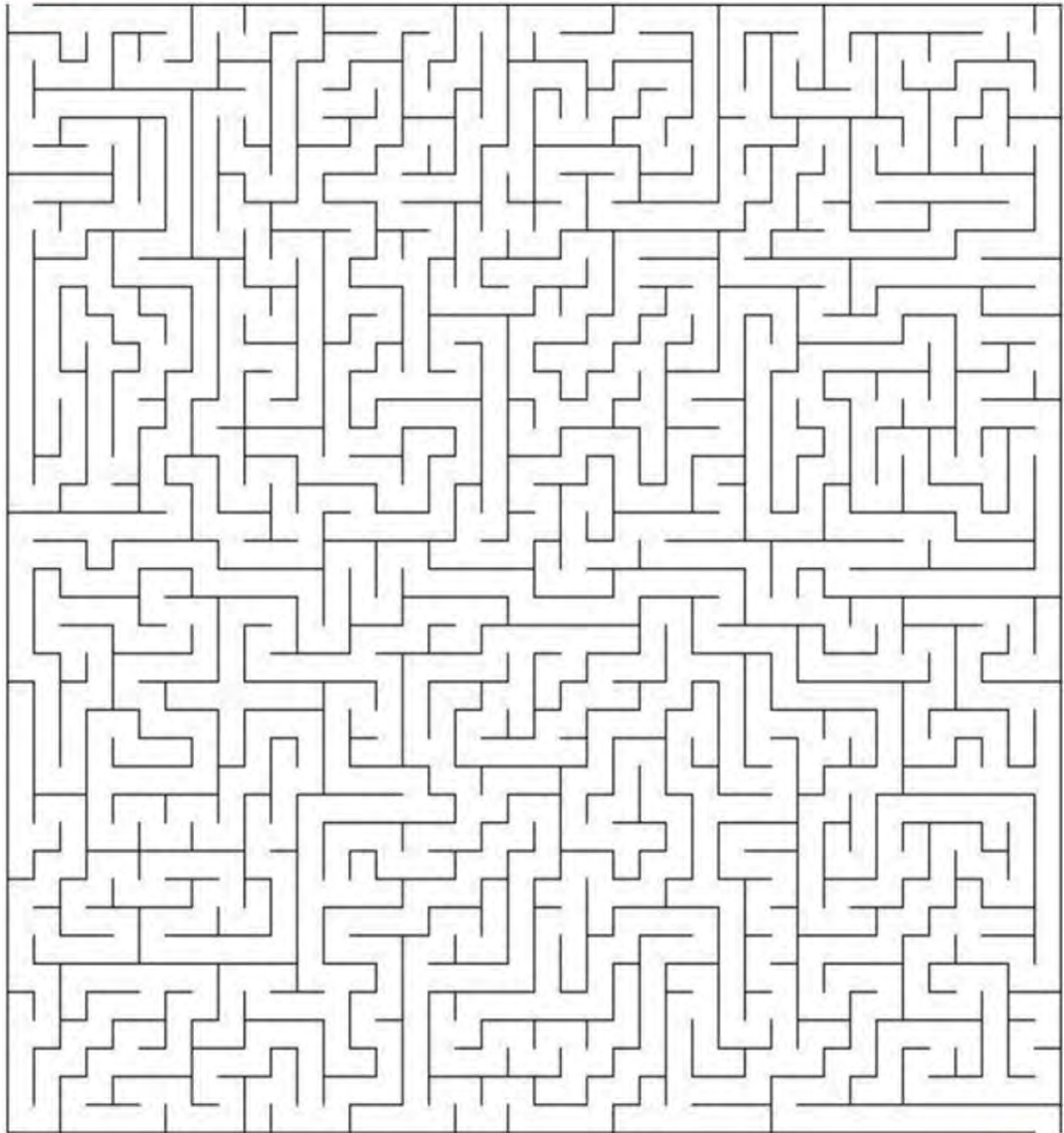


Resilience is a bet on the future. It's not a promise. With at least one certainty.

The following activities for pupils will be integrated with robotics as a curriculum subject. Pupils can nurture, maintain and promote their skills (such as creativity, computational thinking, active learning, critical thinking, decision making, troubleshooting, persistence, etc.) through robotics activities. They can also improve their knowledge in the scientific field (such as design, mathematics, physics, coding, engineering, etc.). Those activities encourage focusing on the process – embracing the challenge and acknowledge the opportunity to learn, being open minded to new possibilities, trying something new, listening to constructive criticism, learning from criticism and finding inspiration in the success of others.





Activity 1: Escaping from a labyrinth		
	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 9-12.
	WHAT YOU NEED	A copy of Worksheet 1 of <i>Activity 1: Escaping from a labyrinth</i> .
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and explain them, that you will individually try to escape from the labyrinth. Make a 5-minute discussion about finding way to escape from the labyrinth and include some storytelling for bigger motivation – they must help the robot to board on the spacecraft, when they escape the labyrinth. Instruct them, that there is only one way out of the labyrinth and that copying the way from others is not allowed. Give them a safe environment that the pupils ask you for help.</p> <p>Give pupils 30 minutes time to escape from the labyrinth and help the robot to board on the spacecraft. In the meantime, monitor their progress, motivate them, encourage them, and if any of the pupils need help, give them some guidance.</p> <p>When the finish escaping from the labyrinth, make a 10-minute time, that pupils together present and show the only way for escaping from labyrinth. You can also ask them, how did they felt, when they got this challenge and how they felt, when they accomplished it successfully.</p>

Worksheet 1 of Activity 1: Escaping from a labyrinth





HELP THE ROBOT TO BOARD ON THE SPACECRAFT.

Activity 2: Robot in the Cartesian coordinate system		
	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 9-12.
	WHAT YOU NEED	A copy of Worksheet 1 and 2 of <i>Activity 2: Robot in the Cartesian coordinate system</i> .
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and 2 and explain them, that you will individually create a robot in the Cartesian coordinate system. Make a 10 or 15-minute discussion about robot measurements on the Worksheet 1 and practice plotting the points of the Cartesian coordinate system. You can also give some other examples of numbers for plotting the point and ask pupils, where the point is coordinated. Instruct them, that there is only one way to draw the robot in the coordinate system and that copying the way from others is not allowed. Give them a safe environment that the pupils ask you for help.</p> <p>Give pupils 30 minutes time to draw the robot. In the meantime, monitor their progress, motivate them, encourage them, and if any of the pupils need help, give them some guidance.</p> <p>When the finish escaping from the labyrinth, make a 5-minute time, that pupils together present and show their robot in the coordinate system. You can also ask them, how did they felt, when they got this challenge and how they felt, when they accomplished it successfully.</p>

Worksheet 1 of Activity 2: Robot in the Cartesian coordinate system

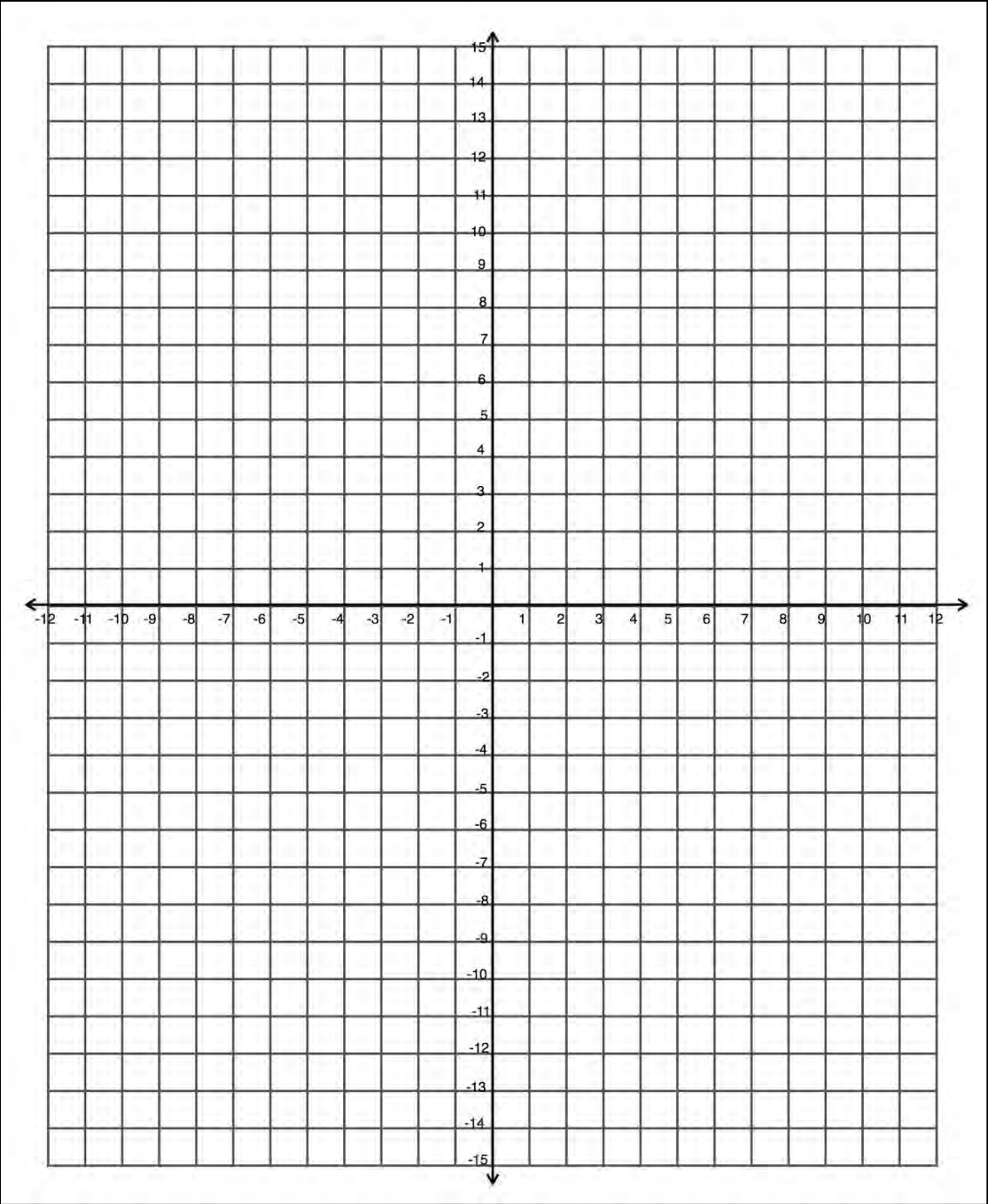


PLOT THE POINTS AND CONNECT THEM AS YOU PLOT THEM.

(-5, -6)	(-2, 13)	(5, 4)	(2, -6)	(9.5, -3.5)
(-5, -11)	(-2, 12)	(10, -3)	(2, -11)	(10, -4)
(-2, -11)	(2, 12)	(8, -5)	(5, -11)	(9, -5)
(-2, -6)	(2, 13)	(6, -2)	(5, -6)	(8.5, -4.5)
Stop	Stop	Stop	Stop	Stop
(-5, -11)	(6.5, -4)	Shade In	(-7, -4)	Shade In
(-6, -11)	(6, -2)	(1, 10)	(-7, -6)	(-1, 10)
(-6, -14)	(5, 4)	(2, 10)	(7, -6)	(-2, 10)
(-1, -14)	(-5, 4)	(2, 9)	(7, -4)	(-2, 9)
(-1, -11)	(-6, -2)	(1, 9)	(-7, -4)	(-1, 9)
(-2, -11)	(-6.5, -4)	(1, 10)	Stop	(-1, 10)
Stop	Stop	Stop		Stop
(2, 5)	(2, -11)	(-2, 5)	(-9, -5)	(10, -4)
(4, 6)	(1, -11)	(-2, 4)	(-9, -6)	(11, -4)
(4, 12)	(1, -14)	Stop	(-10, -6)	(11, -5)
(2, 13)	(6, -14)		(-10, -5)	(10, -5)
(2, 14)	(6, -11)	_____	(-11, -5)	(10, -6)
(-2, 14)	(5, -11)		(-11, -4)	(9, -6)
(-2, 13)	Stop		(-10, -4)	(9, -5)
(-4, 12)		(2, 5)	Stop	Stop
(-4, 6)		(2, 4)		
(-2, 5)		Stop		
(2, 5)				
Stop				

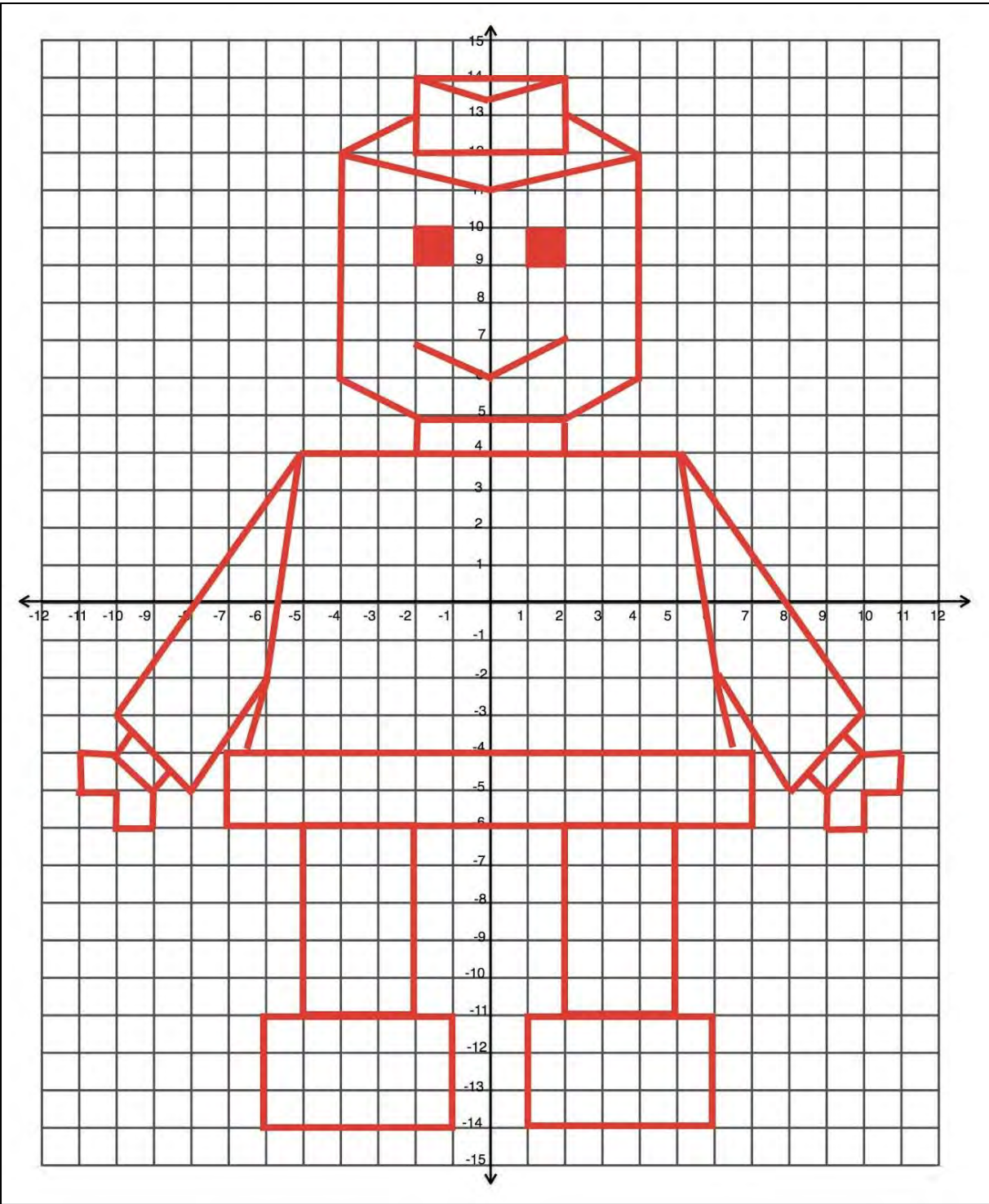
(-2, 14)	(-2, 7)	(-5, 4)	(-4, 12)	(-9.5, -3.5)
(0, 13.5)	(0, 6)	(-10, -3)	(0, 11)	(-10, -4)
(2, 14)	(2, 7)	(-8, -5)	(4, 12)	(-9, -5)
Stop	Stop	(-6, -2)	Stop	(-8.5, -4.5)
		Stop		Stop

Worksheet 2 of Activity 2: Robot in the Cartesian coordinate system







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Activity 2: Robot in the Cartesian coordinate system (Task solution for teachers)



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Activity 3: Making a Robotic Arm		
	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 9-15.
	WHAT YOU NEED	A copy of Instructions 1 of <i>Activity 3: Making a Robotic Arm</i> . Prepare chart papers, straws, transparent tape, strand of blue cotton fibers or wool for the pupils. You will also need scissors to make this kit.
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Instructions 1 and explain them, that you will make a robotic arm. Make a 5-minute discussion</p> <p>About white kind of hand does a robot have. Explain them that the principle of robotic arm is simple example of a normal human arm. You will be making similar joints and see how a human arm functions. Give them a safe environment that the pupils ask you for help, if they need any.</p> <p>Give pupils 30 minutes time to make a robotic arm. In the meantime, monitor their progress, motivate them, encourage them, and if any of the pupils need help, give them some guidance.</p> <p>This kit makes use of sharp objects like use of scissors and punching holes. As a teacher, you should assist the pupil, if needed.</p> <p>When they finish making robotic arm, make a 10-minute time, that pupils present and show their robotic arm. You can also ask them, how did they felt, when they got this challenge and how they felt, when they accomplished it successfully.</p>

Instructions 1 of Activity 3: Making a Robotic Arm



READ THE METHOD INSTRUCTIONS TO MAKE ROBOTIC ARM AND FOLLOW THE STEPS.

THE MATERIAL

FOR THIS ACTIVITY YOU NEED THE MATERIAL AS FOLLOWS: CHART PAPER, STRAWS, TRANSPARENT TAPE AND STRAND OF BLUE COTTON FIBERS/WOOL. YOU WILL NEED SCISSORS TO MAKE THIS KIT.

WORKING PRINCIPLE OF ROBOTIC ARM

THE ROBOTIC ARM IS A SIMPLE EXAMPLE OF A NORMAL HUMAN ARM. WE WILL BE MAKING SIMILAR JOINTS AND SEE HOW A HUMAN HAND FUNCTIONS.

HOW IT WORKS

THE BONES AND JOINTS MAKE OUR FINGERS AND HAND MOVE. THE FUNCTIONING IS MODELED USING STRAW PIECES AND A THREAD.

STEP 1

OUTLINE THE FIGURE OF YOUR HAND ON CHART PAPER WITH A PEN.

STEP 2

CUT THE FIGURE WITH SCISSORS.

STEP 3

MARK THE JOINTS WITH SKETCH PEN.

STEP 4

BEND THE FINGERS OF THE CUT OUT AT THE JOINT LINES.

STEP 5

TAKE STRAWS AND CUT THEM IN THE SIZE OF EACH FINGER SPACE.

STEP 6

STICK ALL THE CUT STRAWS IN THE SPACES WITH TAPE. CUT PIECES FROM WOOL LONG ENOUGH THE LENGTH OF CUTOUT AND LOOP THEM THROUGH THE STRAWS IN EACH JOINT SPACE.

STEP 7

CUT STRAWS FOR PALM SPACE AS WELL AND STICK THE WOOL END ON THE FINGER TIP WITH TAPE.

STEP 8

CUT FIVE LONG STRAWS AND STICK THEM IN THE MIDDLE OF THE PALM.

STEP 9

LOOP DIFFERENT PIECES OF WOOL THROUGH THE STRAWS FOR THE FINGERS AND THUMB. AT THE BOTTOM OF THE PALM, CUT AND STICK A SMALL PIECE OF STRAW AND LOOP ALL THE WOOL PIECES THROUGH THIS STRAW.

STEP 10

YOU CAN CHECK THE WORKING OF HAND BY PULLING ALL THE FIVE THREADS TOGETHER, IT SHOULD MAKE A FIST.

STEP 11

CUT TWO MORE RECTANGLES PIECES FROM THE CHART PAPER AND PUNCH THREE HOLES THE SIZE OF STRAW IN BOTH AS SHOWN IN THE PICTURE. IN THE FIRST RECTANGLE PUNCH TWO HOLES ON THE TOPMOST CORNERS AND THE OTHER IN THE LOWER MIDDLE. WE WILL CALL THIS RECTANGLE AS RECT 1. FOR THE SECOND RECTANGLE, PUNCH A HOLE IN THE UPPER MIDDLE AND THE OTHER TWO HOLES SLIGHTLY LOWER AND OPPOSITE OF EACH OTHER AND AT EXTREME LEFTS AND RIGHTS. WE WILL CALL THIS RECTANGLE AS RECT2.

STEP 12

TAKE THE RECT 1 AND FIX IT ONTO THE HAND. NEXT RECT 2 SHOULD BE PUNCHED WITH THE HELP OF A STRAW PIECE TO MAKE ELBOW JOINT AS SHOWN IN THE PICTURE.

STEP 13





LOOP IN CUT PIECES OF WOOL THROUGH SIDE PUNCHED HOLES OF RECT 1 AND RECT 2.

STEP 14

YOUR ROBOTIC ARM IS READY TO USE.

CONGRATULATIONS! YOU JUST MADE A ROBOTIC HAND AND ARM.

Activity 4: Deciding the design of the Robot

	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 7-12.
	WHAT YOU NEED	A copy of Worksheet 1 of <i>Activity 4: Deciding the design of the Robot</i> . For this activity, prepare A2 or A3 lists for each group of pupils.
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and A2 or A3 lists and explain them, that you will do this activity in groups of three or four pupils. Make a 5-minute discussion what would be the most important when designing a robot and what features to focus on. Explain them that the principle of designing a robot is to upgrade human capabilities with this new robot design. Encourage a safe environment that the pupils ask you for help, if they need any.</p> <p>Randomly divide pupils into groups of three or four. Give pupils 30 minutes time to make design of the robot. On the A2 or A3 list, they must make a poster with thought pattern and the drawing from the front and the back of the robot. In the meantime, monitor their progress, motivate them, encourage them, and if any of the pupils need help, give them some guidance.</p> <p>When they finish designing a robot, make a 10-minute time, that pupils present and show their robots. You can also ask them, how they accepted different proposed possibilities in the group and how was the process of work in this activity.</p>





Worksheet 1 of Activity 4: Deciding the design of the Robot



DECIDE THE DESIGN OF THE ROBOT IN A GROUP OF THREE OR FOUR PUPILS. FOCUS ON BODY, MIND AND MOVEMENT FEATURES AND DESIGN THE ROBOT WITH UPGRADED HUMAN CAPABILITIES. EXPLAIN, WHY WOULD THEY BE USEFUL.

IN THE GROUP, SHARE IDEAS AND POSSIBILITIES OF THE DESIGN OF THE ROBOT. WRITE DOWN ALL CHOSEN DECISIONS. THEN, TAKE A A2/A3 LIST AND MAKE A POSTER WITH THOUGHT PATTERN AND THE DRAWING FROM THE FRONT AND THE BACK OF THE ROBOT.

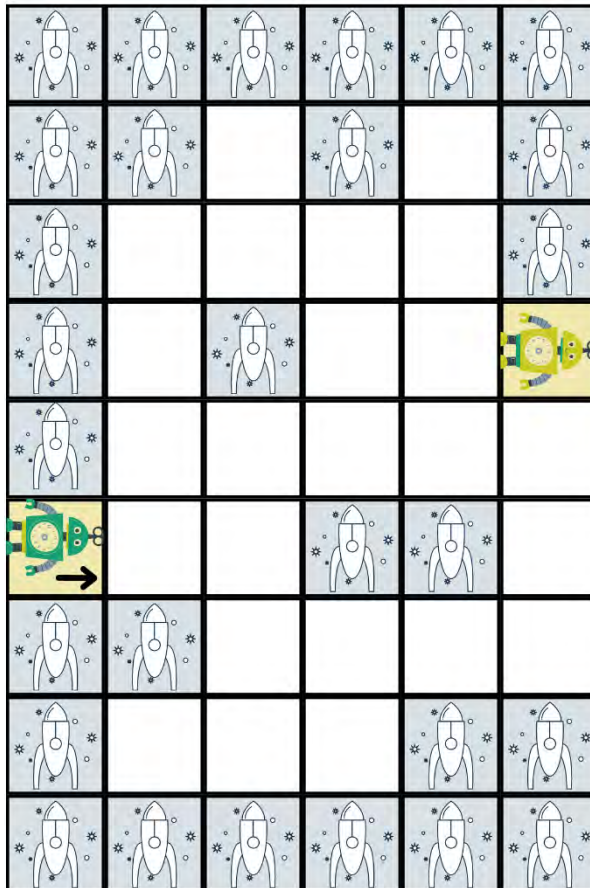
PRESENT THE DISCUSSION AND THE FINAL POSTER THAT WAS IN YOUR GROUP IN THE CLASSROOM. HOW DID YOU ACCEPT DIFFERENT PROPOSED POSSIBILITIES IN THE GROUP AND HOW WAS THE PROCESS OF WORK IN THIS ACTIVITY?

Activity 5: Decoding robot problems		
	TIME	This activity takes 45 minutes.
	AGE	This activity is recommended for pupils of the age 7-10.
	WHAT YOU NEED	A copy of Worksheet 1 of <i>Activity 5: Decoding robot problems</i> .
	ACTIVITY INSTRUCTIONS	<p>Give to pupils a copy of Worksheet 1 and explain them, that the following activity includes decoding robot problems. Pupils individually will try to help two robots reach each other through space environment. They must use codes, written on the worksheet and mark them as used. The arrow indicates the direction that robot is facing and will move. Instruct them to color the squares that show the path robot took to reach another robot.</p> <p>Move forward means to advance 1 square. Turn right means to have the robot turn YOUR right 90 degrees while staying in the same square. Turn left means to have the robot turn YOUR left 90 degrees while staying in the same square.</p> <p>When they are done, they can write down how both of the robots felt when facing this challenge to reach each other.</p> <p>Give pupils 40 minutes time to decode robot problems. In the meantime, monitor their progress, motivate them, encourage them, and if any of the pupils need help, give them some guidance.</p> <p>When they finish decoding robot problems, make a 5-minute time the right pathway that the robots could meet each other. You can also ask them, how do they think the robots felt, when they finally faced the challenge to reach each other.</p>

Worksheet 1 of Activity 5: Decoding robot problems



DECODE ROBOT PROBLEMS AND HELP TWO ROBOTS REACH EACH OTHER THROUGH SPACE ENVIRONMENT.



Use this codes*
(and mark them as used):

MOVE FORWARD

TURN LEFT

MOVE FORWARD

MOVE FORWARD

MOVE FORWARD

MOVE FORWARD

MOVE FORWARD

MOVE FORWARD

TURN RIGHT

TURN LEFT

MOVE FORWARD

MOVE FORWARD

Start



***MOVE FORWARD MEANS TO ADVANCE 1 SQUARE. TURN RIGHT MEANS TO HAVE ROBOT TURN YOUR RIGHT 90 DEGREES WHILE STAYING IN THE SAME SQUARE. TURN LEFT MEANS TO HAVE TERA TURN YOUR LEFT 90 DEGREES WHILE STAYING IN THE SAME SQUARE.**

HOW DO YOU THINK THE ROBOTS FELT, WHEN THEY FINALLY FACED THE CHALLENGE TO REACH EACH OTHER? WRITE DOWN.