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* للحصول على أوراق عمل لجميع مواد الصف الخامس اضغط هنا <https://almanahj.com/ae/5>

* للحصول على جميع أوراق الصف الخامس في مادة تصميم ولجميع الفصول, اضغط هنا [5design](https://almanahj.com/ae/5design)

* للحصول على أوراق عمل لجميع مواد الصف الخامس في مادة تصميم الخاصة بـ الفصل الثاني اضغط هنا

<https://almanahj.com/ae/5design2>

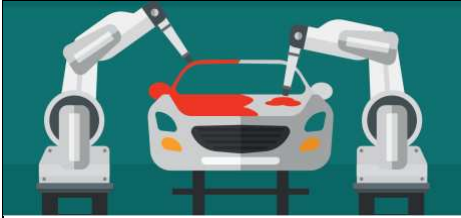
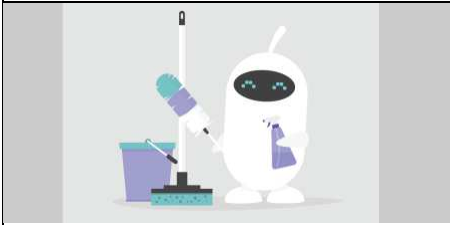

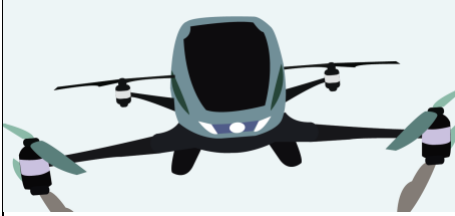
* لتحميل كتب جميع المواد في جميع الفصول للـ الصف الخامس اضغط هنا [grade5](https://almanahj.com/ae/grade5)

للتحدث إلى بوت المناهج على تلغرام: اضغط هنا [bot_almanahj/me.t//:https](https://t.me/bot_almanahj)

Grade	5	Subject	DT	Lesson number	1	Week number	1
Unit	Date		Time	Page number			
1	12 th January		45 minutes	6-16			
Equipment required			Learning objectives				
Textbook Pen/pencil			1.1 Compare robots with robotics. 1.2 Identify different types of robots and their applications.				
Keywords			robot, robotics, industrial robot				
Starter/Introduction activity							
Time: 10 minutes		<p>Start the lesson by explaining the E-safety topic and prompt students to discuss personal information in pairs.</p> <p>Complete Activity 1 by asking students to write the definition of the social network in pairs. Let students discuss the answers.</p> <p>Activity 1: What is the social network? A social network is a group of websites that connect people together using computers and mobiles.</p>					
Main							
Time: 30 minutes		<p>Go through the overview and discuss what students will be working on in this term.</p> <p>Go through the keywords, learning outcomes and overview of Unit 1. Discuss what a robot is with students. Tell students how robots have started to be everywhere in our lives. Define robot to the students. Show students some examples of robots. Talk about the application of the robots.</p> <p>Explain the type of activities in the activity book:</p> <ol style="list-style-type: none"> 1. Theory 2. Interactive 3. Lab <p>Students complete Activity 2. Go through the answers. Discuss the answers and ask students to share them.</p>					

Activity 2: Write down what each robot does in the picture. Use the words in the box to fill in the blank spaces.

Cleaning	Painting	Flying	Planting
----------	----------	--------	----------

Picture	Application
	Painting
	Cleaning
	Planting
	Flying

Encourage students to draw what comes to their imagination when you ask them to draw a robot. Discuss the drawings with students.

Complete Activity 3.

Discuss the differences between robots and robotics.

Explain the rules of robotics and why we have them.

Discuss the laws and spend three minutes explaining each one.

Complete Activity 4.

Activity 4:

It is okay if the robot injures or harms someone. **False**

A robot must always follow the instructions given to it by us. **True**

Robots should protect us. **True**

Robots can make random decisions. **False**

Robots should follow our instructions. **True**

Explain the types of robots, ask students to mention more types of robots and write them on the board. Discuss the different types.

Complete Activity 5.

Video:

<https://www.youtube.com/watch?v=pl8iShzfgns>

Activity 5: {

Match the picture with the right type of robot.

Educational



Industrial

Military




Medical

Industrial



Military

	Medical		 <p data-bbox="855 555 1018 591">Educational</p>
Plenary			
Time: 5 minutes	At the end of the lesson, discuss students' understanding of robots, types of robots, and the application of robots. Ask them direct questions.		
Assessment focus	<p>Students should understand what a robot is. Students should be able to compare robots and robotics. Students should understand the three laws of robotics. Students should be able to recognise the types of robots.</p> <p>Complete Activity 1. Complete Activity 2. Complete Activity 3. Complete Activity 4. Complete Activity 5.</p>		
Interactive activities	https://www.mauthor.com/present/4906811596603392 https://www.mauthor.com/present/4542416404217856 https://www.mauthor.com/present/5131580623421440		
LearningCurve	The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link .		

Grade	5	Subject	DT	Lesson number	2	Week number	1
Unit	Date		Time	Page number			
1	12 th January		45 minutes	17-21			
Equipment required			Learning objectives				
Textbook Pen/pencil			1.3 Discover the history of robotics				
Keywords			history, turtles, industrial, wireless				
Starter/Introduction activity							
Time: 10 minutes	<p>Talk about Robotics in the UAE with examples from the book. Explain how the UAE is considered one of the most advanced countries in technology. Videos: https://www.youtube.com/watch?v=rwyEUaID86Q https://www.youtube.com/watch?v=sjbieyxXCQg https://www.youtube.com/watch?v=SMOwP5oH9VA Complete Activity 6.</p>						
Main							
Time: 30 minutes	<p>Explain what advanced robots can do and how artificial intelligence is used in robots. Discuss the differences between humans and robots.</p> <p>Talk about the brief history of robotics and ask students to read 'History of Robotics 1' and 'History of Robotics 2'.</p> <p>Group the students into six groups to read the history of robotics. Each group should read a paragraph. Then, use the jigsaw technique.</p> <p>The jigsaw technique is a method of organising a classroom activity that makes students dependent on each other to succeed.</p> <p>For more information about jigsaw, check this link: https://www.jigsaw.org/#steps</p> <p>Complete Activities 7, 8 and 9.</p> <p>Activity 7 { True and False: The robot is a new invention. False Ancient inventors and artisans began to build the first robots. True Archytas was well known for his arm robot invention. False Flying steam device "Flying Pigeon" was able to fly 200 meters. True}</p>						



Activity 8

Activity 8 {

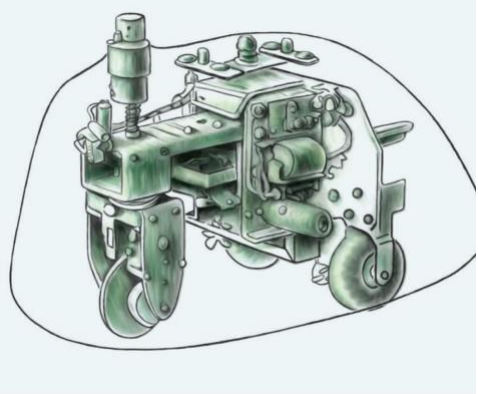
Match the statement with the correct answer:

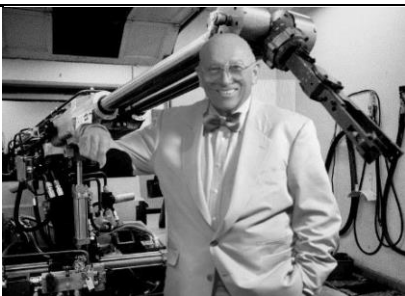

Statement		Answer
What was the book of the Muslim engineer Al-Jazari talking about?		Jacques de Vaucanson Describing 100 ways to build things that have moving parts such as moving doors
Who is the inventor of "The Flute Player"?		Describing 100 ways to build things that have moving parts such as moving doors Jacques de Vaucanson
How many songs can "The Flute Player" plays?		Jacques de Vaucanson 12 Songs

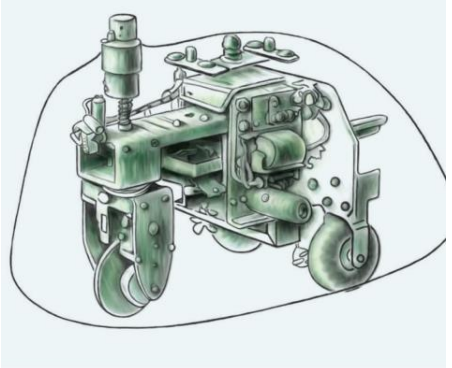
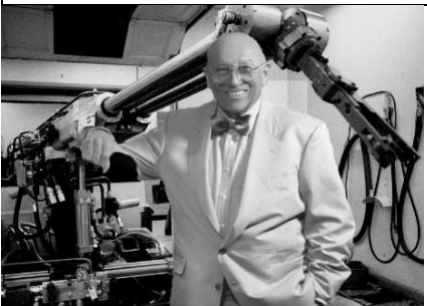

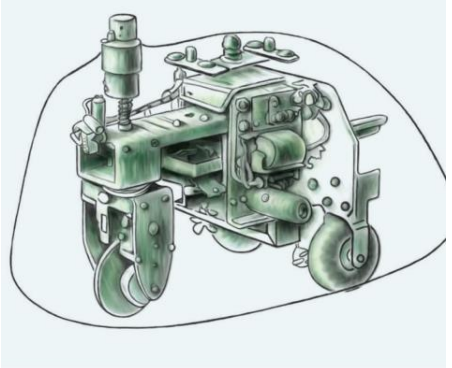
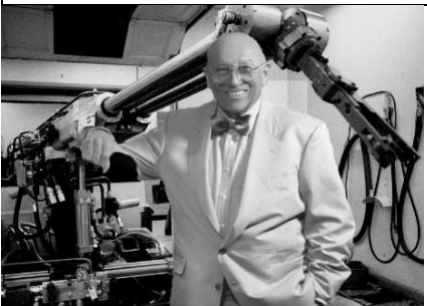

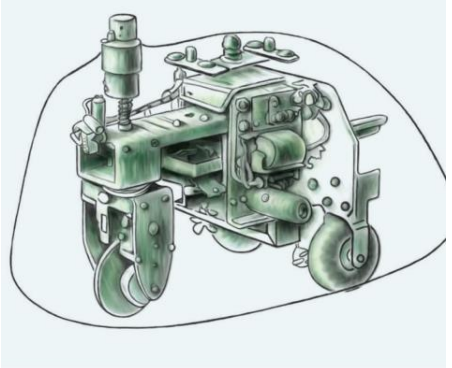
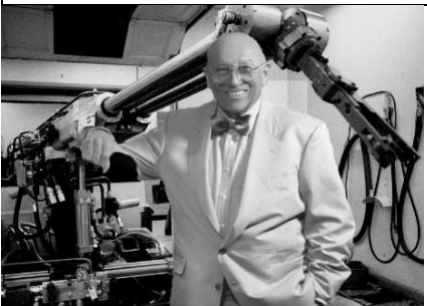

}

Activity 9 {

Match the name of the inventor to the right invention.

Name of the inventor		The invention
Nikola Tesla		 <p>Turtles robots</p>

	Grey Walters		 <p data-bbox="887 488 1262 524">The first industrial robot</p>	
	George Devol		 <p data-bbox="970 884 1177 920">Wireless boat</p>	
Plenary				
Time: 5 minutes	At the end of the lesson, discuss the future of robotics.			
Assessment focus	Students should further develop their understanding of the history of robotics.			
Interactive activities	https://www.mauthor.com/embed/6058147742613504 https://www.mauthor.com/present/5898856398192640 https://www.mauthor.com/present/6700734040113152			
LearningCurve	The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link.			

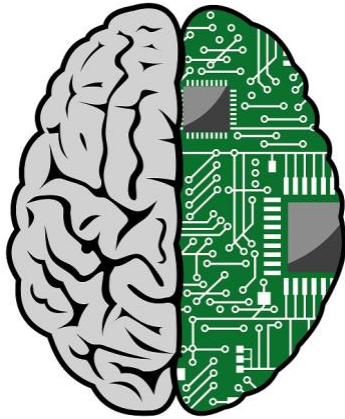
Grade	5	Subject	DT	Lesson number	3	Week number	1								
Unit	Date		Time		Page number										
1	12th January		45 minutes		22-25										
Equipment required				Learning objectives											
Textbook Pen/pencil				1.4 Identify the robot's components.											
Keywords				robot's brain, sensors, programming											
Starter/Introduction activity															
Time: 10 minutes		Recap the history of robotics and introduce the components of robots.													
		<p>Activity 9 { Match the name of the inventor to the right invention.</p> <table border="1"> <thead> <tr> <th>Name of the inventor</th> <th>The invention</th> </tr> </thead> <tbody> <tr> <td>Nikola Tesla</td> <td>  <p>Turtles robots</p> </td> </tr> <tr> <td>Grey Walters</td> <td>  <p>The first industrial robot</p> </td> </tr> <tr> <td>George Devol</td> <td>  <p>Wireless boat</p> </td> </tr> </tbody> </table>						Name of the inventor	The invention	Nikola Tesla	 <p>Turtles robots</p>	Grey Walters	 <p>The first industrial robot</p>	George Devol	 <p>Wireless boat</p>
Name of the inventor	The invention														
Nikola Tesla	 <p>Turtles robots</p>														
Grey Walters	 <p>The first industrial robot</p>														
George Devol	 <p>Wireless boat</p>														

Main

Time:
30 minutes

Show students different types of robots and discuss the common components that they have.

Define a robot's brain. Talk about the differences between the human nervous system and a robot's brain (Analogy).






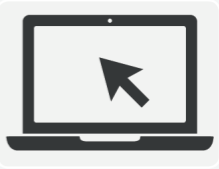


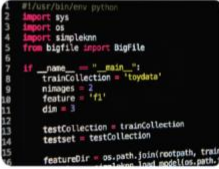






Tell students how our brain is programmed to do many things, such as driving a car. It is like we have a code to do that. We do not need to learn how to drive a car every time we drive a car.

Ask students to give you some points about the differences between a human brain and a robot brain. Discuss them.


Explain the electrical system components of a robot (sensors and motors).

Recap the concept of programming and explain manual programming. Explain the difference between manual programming, visual programming and text-based programming.

Manual programming	Visual programming	Text-based programming
<p>Easy to use</p> <p>Easy!</p> 	<p>Easy to use</p> <p>Easy!</p> 	<p>Hard to use</p> 
<p>Do not need any devices</p> 	<p>Need a computer to use it</p> 	<p>Need a computer to use it</p> 
<p>Uses push buttons</p> 	<p>Adds blocks to the program</p> 	<p>Write text to program</p> 
<p>Complete Activity 10.</p>		
<p>Activity 10</p>		
<p>Robot components</p>		<p>Picture</p>
<p>Robot Brain</p>		

	<p>Electrical System</p>		
			
			

<p>Plenary</p>	
<p>Time: 5 minutes</p>	<p>Summarise the lesson, recap the main topics and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.</p>
<p>Assessment focus</p>	<p>Students should know the function of a robot's brain. Students should be able to recognise the types of programming languages that are mentioned in the lesson.</p>
<p>Interactive activities</p>	<p>https://www.mauthor.com/present/6700734040113152 https://www.mauthor.com/present/6641471175393280</p>
<p>LearningCurve</p>	<p>The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link.</p>

Grade	5	Subject	DT	Lesson number	4	Week number	2
Unit	1	Date	19 th January	Time	45 minutes	Page number	25-28
Equipment required				Learning objectives			
Textbook Pen/pencil Engino kit 30				1.5 Program a robot using manual programming			
Keywords				Light Emitting Diode (LED)			
Starter/Introduction activity							
Time: 10 minutes		<p>Introduce Engino kit to students. Show them the mechanical parts and electrical parts.</p>  <p>Engino is an educational kit that consists of small parts that you can put together to build a robot and program it.</p>					
Main							
Time: 30 minutes		<p>Explain the function of Engino Kit brain, and how to program it.</p> <p>Engino robot brain can be programmed using five methods:</p> <ol style="list-style-type: none"> 1. Manual programming 2. Simulator 3. Flow diagram (visual programming) 4. KEIRO code 5. Engino smartphone application <p>Students will focus on two types of programming in this book. There are manual programming and visual programming.</p> <p>Manual programming is using the buttons on the robot brain.</p>					

Explain the function of the buttons on the robot brain.

The following figures show us the buttons with a description for each one.

Manual programming example

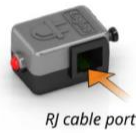
The PRO 2.0 controller allows manual control and recording by pushing the controller's membrane buttons. The user may transit gradually from physical manual programming to software control, by applying an innovative **reverse engineering method!** A recorded program on the device can be easily uploaded to a PC or tablet.

Once a motor is connected to port A (*Motor switch set in position I*):

1. Press the "Program" button to begin recording (red indicator starts flashing).
2. Push the clockwise button of motor A for 3 seconds.
3. Press the anti-clockwise button of motor A for 2 seconds.
4. Press the "Program" button again to save the program in memory.
5. Press the "Play" button once to run the program one time (green indicator flashes).



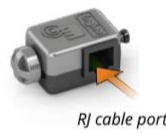
Peripherals, Cables and Ports



RJ cable port

LED

Use a **LED** lamp to add some nice visual effects to your robot.



RJ cable port

Touch sensor

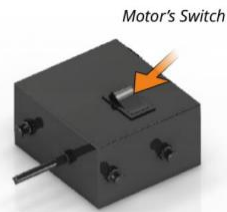
This **switch** button can cause **action** and trigger motion once pressed.



RJ cable port

InfraRed Sensor

The infrared sensor can be used either for object **detection** or for **line following!**



Motor's Switch

DC motor

A **high torque** DC motor with adjustable speed which can spin **wheels** or cause **motion** to your model.



Sensor cable

A cable that connects sensors and LEDs to the PRO controller, with both edges having an RJ connector.



Motor Cable

A cable that connects a DC motor to the controller, having one RJ edge and one jack connector.



Mini USB cable

The cable that connects the PRO controller to a PC.

Motor switch can be set at 3 different positions (**I**, **II** and **O**). At position **I** the motor works **in agreement** with the direction of the controller and the command blocks of KEIRO™ software. When switched at position **II**, the direction is reversed. Motor is OFF when switch is at position **O**.



In the following lab activities, put students into groups and have a competition between them.

Lab Activity 1 {

In this activity, we will learn how to use brain ports and buttons.
Step 1: Connect LEDs, motors, and sensors to the robot brain.



Step 2: Push the following buttons on the robot brain.
Motor control button - this button gives you the ability to control the connected motor on the robot brain.



LED control button - this button gives you the ability to control the connected LED on the robot brain.



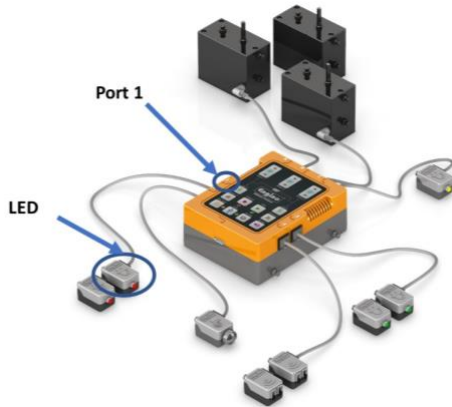
Buzzer control button - this button gives you the ability to control the internal buzzer in the robot brain.



Lab Activity 2 {

In this activity, we will learn how to use manual programming to switch the LED on and off.

Step one:



Connect the LED to Port 1.

Step two:

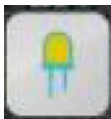
Press the 'program' button to start programming.



Step three:

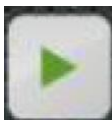
After Step two, you should start programming by pressing the LED button for 1 second. Then, remove your finger.

After you finish, try to do that five times.




Step four:

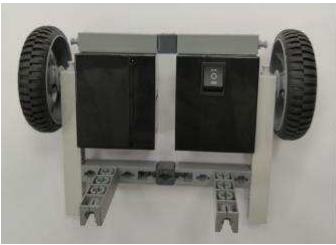
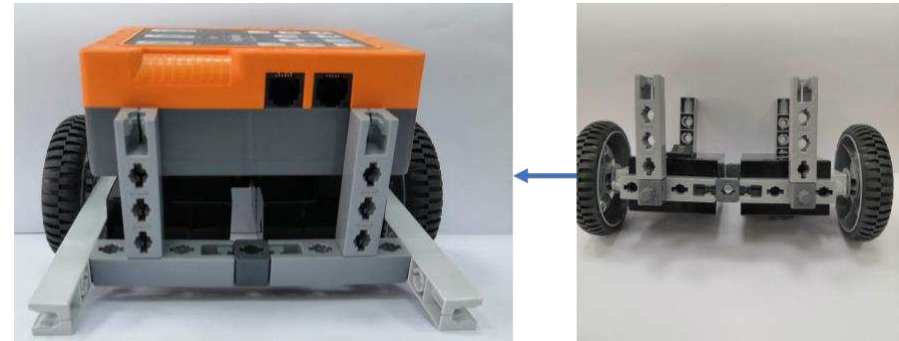
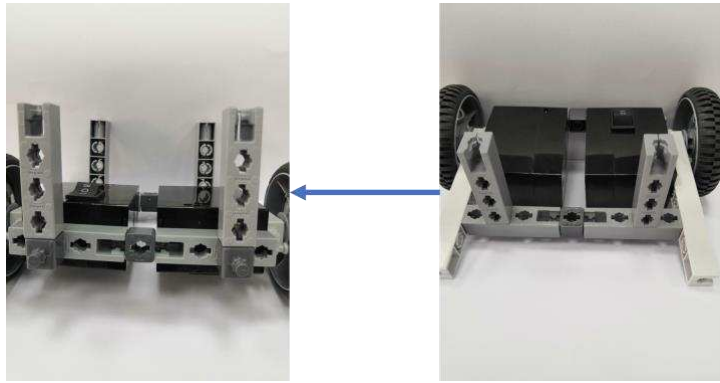
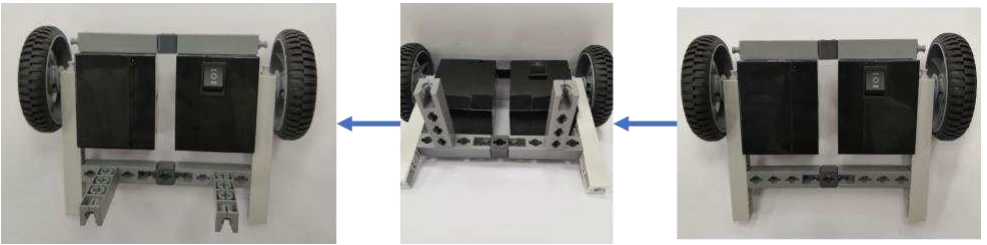
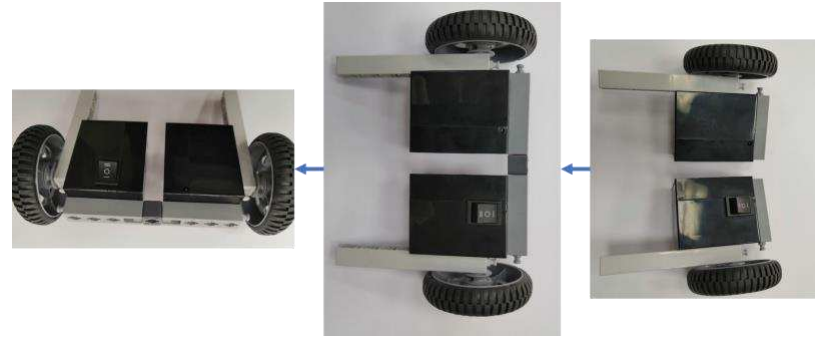
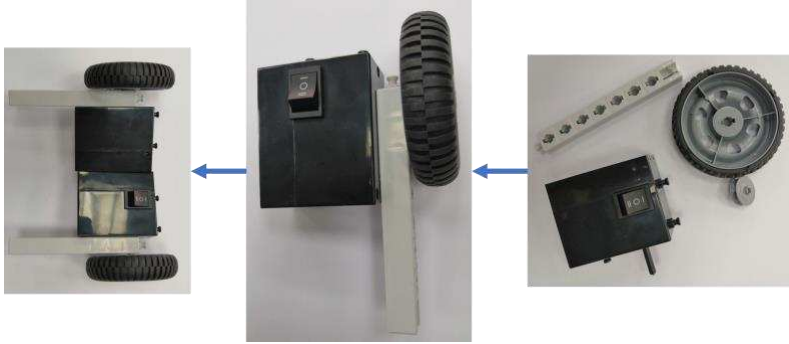
Press the Play button to start your program.



Plenary

Time: 5 minutes	Test students' robots. Ask them to identify which programming type they used.
Assessment focus	Students should be able to program the Engino brain using manual programming. Students should be able to assemble and control the LED and motor using manual programming.
LearningCurve	The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link.

Grade	5	Subject	DT	Lesson number	5	Week number	2
Unit	1	Date	19 th January	Time	45 minutes	Page number 29-31	
Equipment required				Learning objectives			
Textbook Pen/pencil Engino kit				1.5 Program a robot using manual programming.			
Keywords				manual programming			
Starter/Introduction activity							
Time: 5 minutes		Start the lesson by reminding students about Engino kit, then recap manual programming. Recap the electrical connection of the robot to students.					
Main							
Time: 30 minutes		<p>Explain the assembling of the robot to students. Complete Lab Activity 3.</p> <p>Lab Activity 3 { Build the robot using the components in the kit. You should work with your group.</p>  <p>After assembling the robot, program it to move forwards, then right. Next, turn on the LED lights. Try to change the speed of the robot.</p> <p>Follow the steps to build the robot.</p>					



Plenary	
Time: 5 minutes	Summarise the lesson, recapping the learning objectives and the key vocabulary used in the unit.
Assessment focus	Students should be able to build and program a robot using Engino kit.
LearningCurve	The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link.

Grade	5	Subject	DT	Lesson number	6	Week number	2
Unit	2	Date	19th January	Time	45 minutes	Page number	32-35
Equipment required				Learning objectives			
Textbook pen/pencil				2.1 Identify the main mechanical components of the robots.			
Keywords				wheels, gears			
Starter/Introduction activity							
Time: 10 minutes		<p>Start the lesson by explaining the E-safety topic and prompt students to discuss personal information in pairs.</p> <p>Activity 1 { True and False Technology can be used to support people of determination. True New types of chairs for people of determination do not come with a screen. False Some robots used to walk with people of determination to help them. True }</p>					
Main							
Time: 30 minutes		<p>Go through the overview and discuss what students will learn in the unit. Go through the keywords and learning outcomes.</p> <p>Introduce mechanical systems. Ask students to mention examples of mechanical systems around them.</p> <p>Introduce students to mechanical engineering and where we can find mechanical systems in life.</p> <p>Show students the importance of mechanical systems in engineering.</p>					
Plenary							
Time: 10 minutes		At the end of the lesson, discuss students' understanding of the E-safety topic and unit overview.					
Assessment focus		Students should understand that the mechanical system is an essential part of the robot.					
Interactive activities		https://www.mauthor.com/present/4726897429839872					
LearningCurve		The entire course plus specific instructional videos are available on LearningCurve via this link. Click here to open the link.					