

DIGICODE AI

Teacher's Manual

Extended Support for Teachers



www.orangeeducation.in www.thetouchpad.com

Teacher's Time Table

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Periods Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday



DEVELOPMENT MILESTONES IN A CHILD

Development milestones are a set of functional skills or age-specific tasks that most children can do at a certain age. These milestones help the teacher identify and understand how children differ in different age groups.

	Age 5 - 8 Years
Physical	 First permanent tooth erupts Shows mature throwing and catching patterns Writing is now smaller and more readable Drawings are now more detailed, organised and have a sense of depth
Cognitive	 Attention continues to improve, becomes more selective and adaptable Recall, scripted memory, and auto-biographical memory improves Counts on and counts down, engaging in simple addition and subtraction Thoughts are now more logical
Language	 Vocabulary reaches about 10,000 words Vocabulary increases rapidly throughout middle childhood
Emotional/Social	 Ability to predict and interpret emotional reactions of others enhances Relies more on language to express empathy Self-conscious emotions of pride and guilt are governed by personal responsibility Attends to facial and situational cues in interpreting another's feelings Peer interaction is now more prosocial, and physical aggression declines

Age 9 - 11 Years				
Physical	Motor skills develop resulting in enhanced reflexes			
Cognitive	Applies several memory strategies at onceCognitive self-regulation is now improved			
Language	Ability to use complex grammatical constructions enhancesConversational strategies are now more refined			
Emotional/Social	Self-esteem tends to rise Peer groups emerge			

Age 11 - 20 Years				
Physical	 If a girl, reaches peak of growth spurt If a girl, motor performance gradually increases and then levels off If a boy, reaches peak and then completes growth spurt If a boy, motor performance increases dramatically 			
Cognitive	Is now more self-conscious and self-focusedBecomes a better everyday planner and decision maker			
Emotional/Social	May show increased gender stereotyping of attitudes and behaviourMay have a conventional moral orientation			

Managing the children's learning needs according to their developmental milestones is the key to a successful teaching-learning transaction in the classroom.





TEACHING PEDAGOGIES

Pedagogy is often described as the approach to teaching. It is the study of teaching methods including the aims of education and the ways in which such goals can be achieved.

Lesson Plans

A lesson plan is the instructor's road map which specifies what students need to learn and how it can be done effectively during the class time. A lesson plan helps teachers in the classroom by providing a detailed outline to follow in each class.

A lesson plan addresses and integrates three key components:

- Learning objectives
- Learning activities
- Assessment to check the student's understanding

A lesson plan provides an outline of the teaching goals:

Before the class:

- 1. Identify the learning objectives.
- 2. Plan the lesson in an engaging and meaningful manner.
- 3. Plan to assess student's understanding.
- 4. Plan for a lesson closure.

During the class:

Present the lesson plan.

After the class:

Reflect on what worked well and why. If needed, revise the lesson plan.

"Knowing yourself is the beginning of all wisdom."

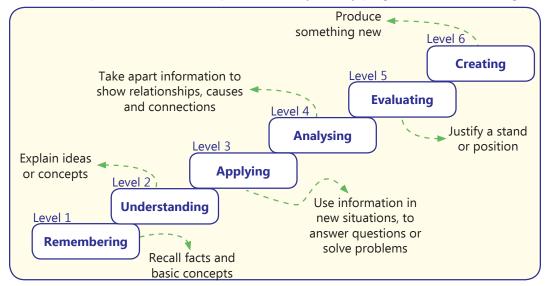
Teaching Strategies

Numerous strategies have evolved over the years to facilitate the teaching-learning process in the classrooms.



Bloom's Taxonomy

Bloom's Taxonomy was created by **Dr Benjamin Bloom** and several of his colleagues, to promote higher forms of thinking in education instead of rote learning. There are three domains of learning: cognitive (mental), affective (emotional), and psychomotor (physical). However, when we refer to Bloom's Taxonomy we speak of the cognitive domain. Bloom's Taxonomy is a list of cognitive skills that is used by teachers to determine the level of thinking their students have achieved. As a teacher, one should attempt to move students up the taxonomy as they progress in their knowledge.



Teachers should focus on helping students to remember information before expecting them to understand it, helping them understand it before expecting them to apply it to a new situation, and so on.

"If you have no confidence in self, you are twice defeated in the race of life."



Lesson Plan



More on Windows 10

Teaching Objectives

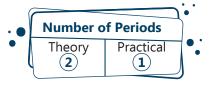
Students will learn about

Components of Windows 10
Desktop Background

🖫 Icons 🖙 Taskbar

Teaching Plan

Before starting the chapter, ask the students to Solve the question in 'Tech Set Go' given on page 7 of the main course book.



While teaching this chapter, tell the students that operating system is one of the most important software as without this software we cannot use our computer at all.

Give a brief introduction of Microsoft Windows.

Make the students aware of the concept of desktop.

Familiarise the students with some important icons on the desktop like This PC, Recycle Bin and Folder.

Demonstrate to the students the steps to sort icons on the desktop.

Introduce the students to the taskbar and its components covering Start button, Quick launch bar and clock.

Explain the use of the following to the students:

- Start Button
- Quick Launch Bar
- Changing Position of the Taskbar
- Clock
 - Changing Volume of the Speaker

Extension

Ask the students some oral questions based on this chapter.

- Q. What is the importance of an operating system?
- Q. Give examples of some popular operating systems.

- Q. Which company developed Windows operating system?
- Q. What are the important features of Windows 10?
- Q. What is desktop?
- O. Define icons.
- O. What is taskbar?

After explaining the chapter, let the students do the course book exercises given on pages 16 and 17 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister activity given on page 17 of the main course book to Critical Thinking and Information Literacy skills in them. Ask the students to answer the questions given as Competency-based/Application-based questions on page 17 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Byte Task given on page 18 of the main course book will enhance the ability of the students and serve as Information Literacy and experiential learning.

Suggested Activity

Show pictures of desktops and icons, etc. of some older versions of Windows and help students note noticeable changes in the interface of these versions of Windows over time.

2. Graphics in Word

Teaching Objectives

Shapes

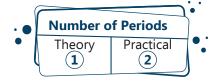
Inserting WordArt

Inserting Pictures

Inserting Symbols

Teaching Plan

Before starting the chapter, ask the students to Draw and colour any six emojis in the given space in 'Tech Set Go' given on page 19 of the main course book.



While teaching this chapter, tell the students that although Word is a word processor, yet it allows three types of graphics to work upon – Shapes, WordArt and Pictures.

Familiarise the students with various categories of Shapes under Illustrations group of Home tab explaining use of Lines, Basic Shapes, Flowchart, Stars and Banners and Callouts.

Demonstrate to the students the steps involved in the process of:

- Drawing a shape
- Adding text to the shape

Tell the students the various types of modifications that can be done on the inserted shape – changing outline color, changing fill colour, adding shape effects like 3-D rotation and bevel.

Introduce WordArt as application to create text effects which are not possible through text formatting.

Demonstrate to the students the steps to:

- Insert WordArt in a document
- Insert Pictures (from a file)
- Insert Symbols (punctuations or special characters not found on keyboard)

Ask the students to solve the exercise given on page 26 as Byte Quest.

Extension

Ask the students some oral questions based on this chapter.

- Q. Name any three categories of Shapes in Word 2016.
- Q. What do you mean by formatting a shape?
- Q. What does Add Text option do?
- O. What does Bevel do?
- Q. Define Symbols.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 28 and 29 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister activity given on page 29 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 30 of the main course book. Help the students to solve these questions.

In Creative Assignment, activities like Byte Task given on pages 30 of the main course book will enhance the ability of the students.

Suggested Activity

Ask the students to write a paragraph in Word 2016 on 'Festivals of India'. The paragraph must be supported with relevant pictures.



3. Tables in Word

Teaching Objectives

Students will learn about

Inserting a Table
Entering Data in a Table

Selecting Cells, Rows, Columns and Table 🔊 Inserting Rows or Columns

Deleting Rows or Columns
Solumn Width and Row Height

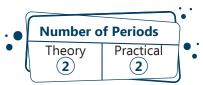
Merging Cells
Splitting Cells

Moving and Resizing Tables 🔯 Applying Border and Shading

Table Styles
Aligning Text in a Table

Teaching Plan

Before starting the chapter, ask the students to solve the exercise given on in 'Tech Set Go' given on page 31 of the main course book.



While teaching this chapter, tell the students that a table is an arrangement of text in the form of columns and rows.

Also tell them that an intersection of a row and a column is called a cell.

Demonstrate to the students the method of inserting a table and entering data in a table in a Word document.

Show to the students how to select a cell, a group of cells, a row, a column or the whole table.

Demonstrate to the students the steps to:

- Add more rows to a table
- Delete rows from a table
- Add more columns to a table
- Delete columns from a table
- Change width of a column
- Change height of a row

Introduce merging of cells as combining two or more cells in the same row or the same column into a single cell.

Show to the students the steps to merge two or more cells. Introduce splitting of cells as dividing one cell into two or more cells, Show to the students the steps to split a cell.

Demonstrate to the students the steps to move a table and resize a table. Tell the students that Word 2016 allows to apply borders to tables and cells as well as to shade the cells and table.

Make the students understand that Word offers some built-in formats as Table Styles to apply to a table.



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Make the students understand how to align the text in a table.

Ask the students to solve the exercise given on page 35 and 38 as Byte Quest.

Extension

Ask the students some oral questions based on this chapter.

- Q. What is a table?
- O. Define a cell.
- Q. What is the shape of the mouse pointer selecting a cell / row / column / table?
- Q. Can more rows or columns be added to a table?
- Q. Define merging/splitting of cells.
- Q. What is the difference between moving a table and resizing a table?
- Q. What is the use of Table Styles feature of Word 2016?
- Q. What is text alignment?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 42 and 43 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister given on page 43 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 43 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Byte Task given on page 43 of the main course book will enhance the ability of the students and serve as interdisciplinary and experiential learning.

Suggested Activity

Ask the students to create a comparative mark sheet for your marks in different subjects for last three classes.

4. Introduction to PowerPoint 2016

Teaching Objectives

Students will learn about

- Starting Powerpoint 2016
- Creating a New Presentation
- Slide Layout
- Deleting a Placeholder
- Viewing Slide Show
- Open a Saved Presentation

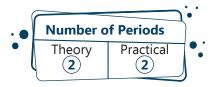
Delivering a Presentation

- Components of Powerpoint Window
- Entering Data on the Slide
- Adding a New Slide
- □ Deleting a Slide
- Saving a Presentation
- Exiting Powerpoint



Teaching Plan

Before starting the chapter, ask the students to solve the exercise given on in 'Tech Set Go' given on page 45 of the main course book.



While teaching this chapter, tell the students that PowerPoint 2016 is a part of Microsoft Office 2016 package or suite. Share with the students that it is used to create presentations. Demonstrate to the students the steps to start PowerPoint 2016. Familiarise the students with various components of PowerPoint screen covering Title Bar, Ribbon, Quick Access Toolbar, File Tab, Slide, Placeholder, Slides / Outline Pane and Status Bar. Introduce slide as a single page of a presentation.

Demonstrate the steps to:

- Create a new presentation
- Enter data on a slide in title and subtitle placeholders
- Add new slide to a presentation
- Deleting a placeholder
- Deleting a slide Introduce slide show as full screen view of the presentation.
- Show to the students the method of viewing a slide show.
- Tell the students how to:
 - ★ Save a presentation
 - ⋆ Open a Saved Presentation
 - ★ Exit PowerPoint 2016

Extension

Ask the students some oral questions based on this chapter.

- O. What is PowerPoint 2016?
- Q. Define Title Bar / Status Bar.
- Q. What do you mean by Ribbon / Placeholder?
- Q. What is a slide in a presentation?
- Q. Which key is pressed to delete a selected placeholder?
- Q. What are the various ways in which a slide show can be started?
- Q. What are the steps to exit PowerPoint 2016?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 55 and 56 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister activity given on page 56 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 56 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Byte Task given on page 57 of the main course book will enhance the ability of the students and serve as a Interdisciplinary Learning and Ethical & Moral Reasoning activity.



Suggested Activity

Ask the students to create a presentation on 'The Cartoon Character I Like The Most'.

5. More on Internet

Teaching Objectives

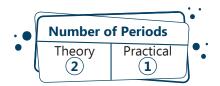
Students will learn about

- Uses of Internet

Requirements to Connect to Internet

Teaching Plan

Before starting the chapter, ask the students to solve the question given on in 'Tech Set Go' given on page 58 of the main course book.



While teaching this chapter, tell the students that computers connected to a network can share data and files efficiently without any delay.

Make the students recall that internet is a global network of millions of computers and computer networks.

Explain the various uses of internet covering:

- E-mail an online communication system
- Information through search engines like Google, Yahoo, etc.
- Online shopping

Online chatting

Downloading data

- Uploading data
- Social Networking Facebook, Instagram, X, YouTube, WhatsApp, etc.

Introduce Uniform Resource Locator (URL) as a unique address or website address used for locating websites.

Share with the students the various requirements for an internet connection covering computer system, telephone/cable line, modem, web browser and Internet Service Provider (ISP).

Explain the meaning of some common internet terms like URL, Hyperlink, Offline, Online, Surfing, Website and Web page.

Extension

Ask the students some oral questions based on this chapter.

- Q. What is a computer network?
- O. What is internet?
- Q. What are the uses of internet?
- Q. What are the requirements for an internet connection?



- Q. What do you understand by Downloading / Uploading data?
- Q. Define URL / Hyperlink / Offline / Online / Surfing / Website / Web Page.

After explaining the chapter, let the students do the course book exercises given on Pages 63 and 64 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister activity given on page 64 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 64 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Byte Task given on Page 64 of the main course book will enhance the ability of the students and serve as a Experiential Learning and Information Literacy activity.

Suggested Activity

Ask the students to prepare a report on some more uses of internet and present the observations to the class.

6. Visual Processing

Teaching Objectives

Students will learn about

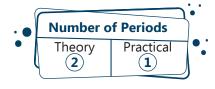
Picture Puzzle

Directions and Maps

Teaching Plan

Before starting the chapter, ask the students to solve the question in 'Tech Set Go' given on page 65 of the main course book.

Introduce Picture Puzzle to the students in details with the help of proper examples for better understanding.



Tell the students about a puzzle. Also, tell them how to solve the puzzle by giving some examples which will improve their understanding of the topic.

Tell the types of picture puzzle to the students which are:

Odd One Out

Mirror Images

Show the students what is direction and how to identify it with the help of analysis.

Explain the meaning of maps to the students and tell them how to use them with the help of directions.

Ask the students to solve the exercise Code Quest given on page 68.

Extension

Ask the students some oral questions based on this chapter.

- Q. What is a puzzle?
- Q. What is a picture puzzle?
- Q. What is a direction?
- Q. What is a map?



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IMPRINT 1

After explaining the chapter, let the students do the exercises given on page 69 in the main course book as Tech Ready. Tell the students to try sections such as Tech Twister given on page 70 in the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 70 of the main course book. Help the students to solve these questions.

Take the students to the computer lab and let them practise the activity given in the Code Task section on page 70 in the main course book. This will enhance the ability of the students and serve as a Information Literacy and Creativity activity.

Suggested Activity

Ask the students to practise to find out more types of picture puzzles.

7. Blocks in Scratch

Teaching Objectives

Students will learn about

Coding Blocks

Looks Blocks

Events Blocks

Motion Blocks

Sound Blocks

Control Blocks

Teaching Plan

Before starting the chapter, ask the students to solve the question in Tech Set Go given on Page 74 of the main course book.

Tell the students to recall about Scratch and revise the components of Scratch window components.

Number of Periods
Theory Practical
2 1

Explain the Block categories and its types using appropriate examples:

- Motion blocks
- Sound blocks
- Control blocks

Looks blocks

Events blocks

Ask the students to solve the exercise Code Quest given on page number 77.

Extension

Ask the students some oral questions based on this chapter.

- O. What is Scratch?
- O. What are blocks?
- O. What is motion block?
- O. What is looks block?
- O. What is sound block?
- O. What is control block?

After explaining the chapter, let the students do the exercises given on Pages 80 and 81 in the main course book as Tech Ready. Tell the students to solve Tech Twister activity given on page 82 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 82 of the main course book. Help the students to solve these questions.

Take the students to the computer lab and let them practice the activity given in the Code Task section on Page 82 in the main course book. This will enhance the ability of the students and serve as a Experiential Learning and Information Literacy activity.

Suggested Activity

Ask the students to create a program in Scratch to move sprite 360 degree and reverse to its original position.

8. Introduction to Kodu Game Lab

Teaching Objectives

Students will learn about

What is Kodu?

Tutorial on Kodu

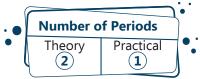
Starting Kodu

Creating a Game on Kodu

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Teaching Plan

Before starting the chapter, ask the students to Solve the question in 'Tech Set Go' given on page 83 of the main course book.



While teaching this chapter, let the students know about Kodu Game Lab.

Tell the students that Kodu software helps you to create games without knowing any programming.

Demonstrate the students about the steps for downloading and installing Kodu Game Lab.

Demonstrate the students the steps involved in starting Kodu.

Give students a tutorial on the Kodu Game Lab.

Tell the students that they can create games on Kodu. Also show the steps involved in creating a game on kodu.

Ask the students to solve the exercise given on page 88 and 93 as Code Quest.

Extension

Ask the students some oral questions based on this chapter.

- Q. Which key return to the main menu?
- Q. Which key is used to move forward?
- Q. What is an object?
- Q. Which key is used to turn right?
- Q. Name any two elements of the Kodu software.
- Q. What kind of game can you create on Kodu?



DigiCode Al-IV (Lesson Plan)

IMPRINT 1

After explaining the chapter, let the students do the course book exercises given on pages 94 to 95 of the main course book as Tech Ready. After solving the course book exercises, tell the students to solve Tech Twister activity given on page 95 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 95 of the main course book.

In Creative Assignment, activity like Code Task on page 95 of the main course book will enhance the ability of the students and serve as a Experiential Learning and Critical Thinking.

Suggested Activity

Ask the students to code your bot so that it find another bot and chase it.

9. Al Timeline

Teaching Objectives

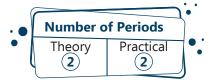
Students will learn about

Developments in AI

Pioneers in the Field of AI

Teaching Plan

Before starting the chapter, ask the students to solve the students the question in Tech Set Go given on page number 97 of the main course book.



While teaching this chapter, let the students know that since ancient times, humans have been trying to make their lives easier by innovating different machines. While creating these machines, he reached a certain stage when these machines were not capable enough to handle certain tasks without a brain.

Make the students aware of the developments in AI during different decades.

Let the students know that during 1950 to 1960, two major contributions were observed. One of them was that Alan Turing submitted a paper about the possibility of creating a machine that could think in 1950. This became a test for machines to check the thinking capability of a machine.

Make the students aware of the fact that during 1961 to 1970, two new systems were developed which became a great contribution to the field of AI. The first chatbot ELIZA was created in MIT Artificial Intelligence Laboratory by Joseph Weizenbaum in 1966.

Explain to the students that during 1971 to 2000 in 1973, WABOT was created by Ichiro Kato and constructed by Unimation. This was the first step towards building a humanoid robot.

Let the students know that in the 2000s, AI technology was successfully established with many successful attempts like:

Kismet, a robot developed by Professor Cynthia Breazeal could recognise and simulate emotions with its face.



Make the students aware of the fact that it was an era of revolution in the field of artificial intelligence with the following developments:

Microsoft launched Kinect for Xbox 360, the first gaming device that tracked human movement using a 3D camera and infrared detection.

Tell the students about Alan Turing and his contribution in the field of AI along with other subjects.

Share the information to the students about the "Father of Artificial Intelligence" – John McCarthy. Also, tell the students about his work like developing LISP and becoming a pioneer in Mathematical Logic for Artificial Intelligence.

Share the information to the students about the "Father of Artificial Intelligence" – John McCarthy. Also, tell the students about his work like developing LISP and becoming a pioneer in Mathematical Logic for Artificial Intelligence.

Tell the students about Ross Quillian and his contribution in the field of AI and electronics & communication. Also, tell the students about his work SYNTHEX which is widely accredited in the field of AI.

Share the information to the students about the "Father of Expert System" – Edward Feigenbaum.

Tell the students about Marvin Minsky and his contribution in the field of AI. Also, tell the students about his work on Artificial Neural Networks.

Share the information to the students about the company IBM. Also, tell the students about the pioneer work in the field of Artificial Intelligence with its development and creation of Deep Blue. Ask the students to solve the task given on page number 102 and 104 as AI Quest.

Extension

Ask the students some oral questions based on this chapter.

- Q. What is Alan Turing known for?
- Q. Who coined the term Artificial Intelligence?
- O. What is ELIZA?
- Q. Who created WABOT in 1973?
- Q. What is Deep Blue?
- Q. What is Kismet?
- Q. When and by which company was ASIMO released?
- Q. What is Xbox 360?
- O. What is Amazon Alexa?
- Q. What is Google Home?
- Q. Define the role of the following in the field of AI:

a. Alan Turing b. John McCarthy

c. Ross Quillian d. Edward Feigenbaum

e. Marvin Minsky f. IBM



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Encourage the students to walk-through the chapter and ask them to play the game given on page 104 on their own under the name AI Game.

After explaining the chapter, let the students do the exercises given on pages 105 to 107 in the main course book as Tech Ready. Tell them to solve the Critical Thinking and Information Literacy skills developing exercises as Tech Twister given on page 107. Ask the students to answer the questions given as Competency-based/Application-based questions on page 107 of the main course book. Help the students to solve these questions.

Take the students to the computer lab and let them practise the activities given in AI Task section on page 107 in the main course book. This will enhance the ability of the students and serve as an Technology Literacy and Experiential Learning activity.

Suggested Activity

Ask the students to search about more advanced versions of AI gadgets.

Ask the students search information about SYNTHEX, Deep Blue and LISP.

10. AI & Non-AI Robots

Teaching Objectives

Students will learn about

AI and Non-AI Robots

Differences between AI and Non-AI Robots

Teaching Plan

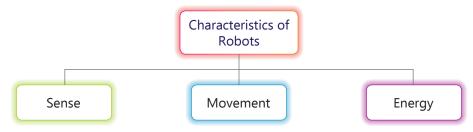
Before starting the chapter, ask the students to Solve the question in 'Tech Set Go' given on page 107 of the main course book.



While teaching this chapter, tell the students that robots are machines programmed by computers capable of automatically doing difficult or complex tasks.

Make them understand that there are some essential characteristics that a robot must possess that define whether any machine is a robot or not.

Explain these characteristics of robots in detail:



Teach the difference between AI and Non-AI Robots to the students.

Introduce to the students some of the popular AI robots. Those are:

Kuri

Sophia

Aibo

E2-DR

Handle

NASA Puffer

Snake Robot

Humanoid Shalu

Introduce to the students some of the popular Non-AI robots. Those are:

Cobots

Industrial Robots

Agriculture Robots

Ask the students to solve the task given on page 111 and 114 as AI Quest.

Extension

Ask the students some oral questions based on this chapter.

- O. What are the three characteristics of robots? Name them
- Q. Define the term robots.
- Q. Which are also called collaborative robots?
- Q. What is the main area of application of robots in agriculture today?
- O. Who is one of the most famous social humanoid?

Evaluation

Encourage the students to walk-through the chapter and ask them to play the game given on page 113 on their own under the name AI Game.

After explaining the chapter, let the students do the exercises given on Pages 114 and 115 of the main course book as Tech Ready. Tell them to solve the Critical Thinking and Technology Literacy exercises as Tech Twister given on page 115. Ask the students to answer the questions given as Competency-based/Application-based questions on page 116 of the main course book. Help the students to solve these questions.

Take the students to the computer lab and let them practice the activity given in the AI Task section on Page 116 in the main course book. This will enhance the abilities of the students and serve as a Experiential Learning and Technology Literacy Activity.

Suggested Activity

Ask the students to gather pictures of at least 10 different robots and paste them into an A3-size sheet. Also, write the names of the robots on the sheet.