DIGICODE AI

DigiCode AI Ver. 2.1

1

Teacher's Manual

Extended Support for Teachers

ORANGE
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Teacher's Time Table

Periods / Days	0	I	II	III	IV	BREAK	V	VI	VII	VIII
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

"If you cannot do great things, do small things in a great way."

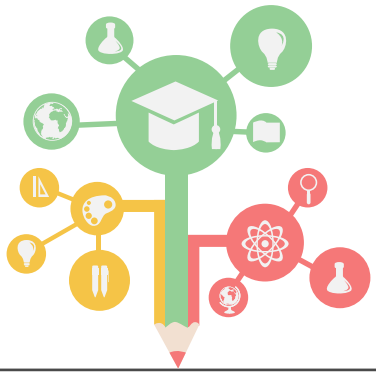
Age 9 - 11 Years	
Physical	• Motor skills develop resulting in enhanced reflexes
Cognitive	• Applies several memory strategies at once • Cognitive self-regulation is now improved
Language	• Ability to use complex grammatical constructions enhances • Conversational strategies are now more refined
Emotional/ 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-focused • Becomes a better everyday planner and decision maker
Emotional/ Social	• May show increased gender stereotyping of attitudes and behaviour • May 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.

"Family is the most important thing in the world."

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.

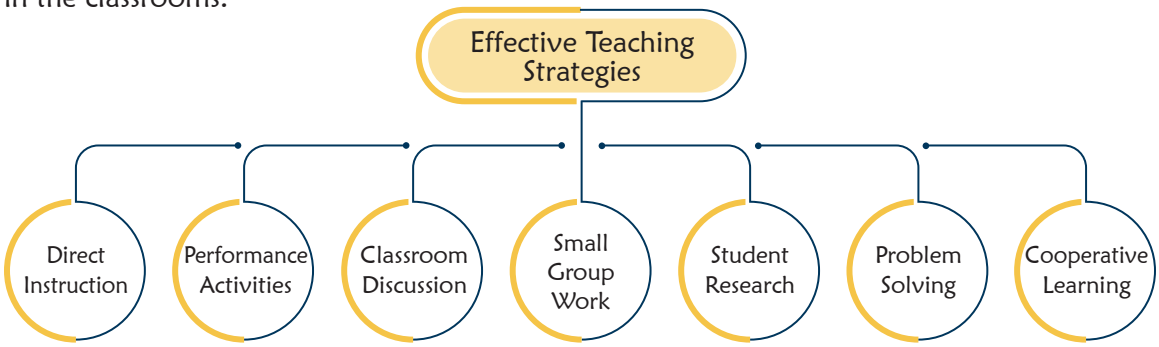
After the class

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

> "Knowing yourself is the beginning of all wisdom."

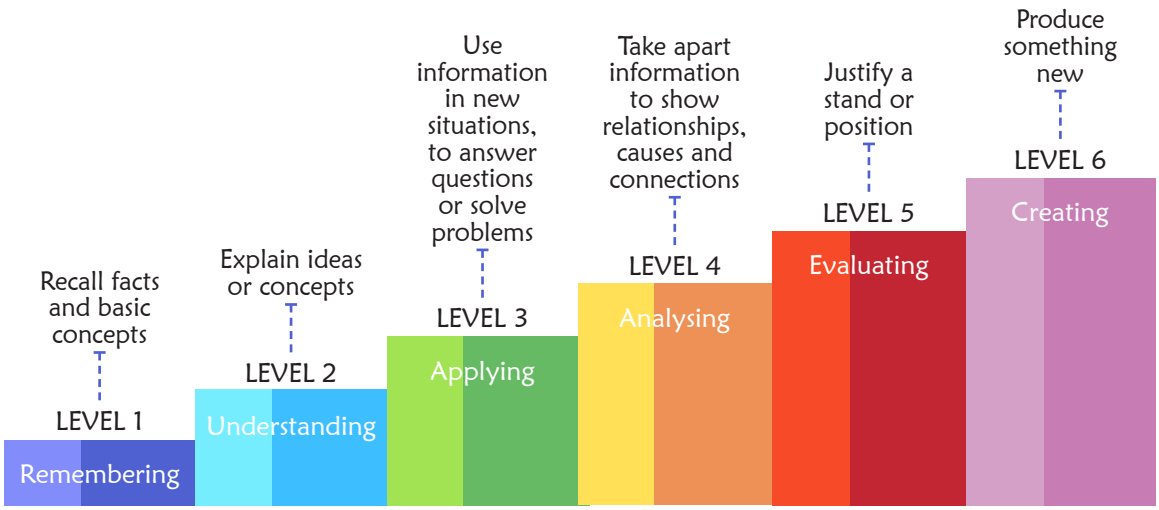
Teaching Strategies

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."

CLASS 1

LESSON PLAN

1 Computer—A Smart Machine

Teaching Objectives

Students will learn about

- Natural and Human-Made Things
- Computer—A Wonderful Machine
- Types of Computers
- What are Machines?
- Computer and Human

Number of Periods	
Theory	Practical
1	2

Teaching Plan

Encourage the students to name some things which they see around themselves.

Make them understand some of these things are natural like sun, moon, star, mountains, cat, dog, tree, boy, girl, etc. The other things are human-made like chair, table, TV, fan, pencil, eraser, board, building, washing machine, mobile, etc.

Explain to the students that machines are made by human.

Give examples of some machines around us like refrigerator, air conditioner, television, mobile phone, car, etc. and their use.

Share with them that computer is also a machine.

Tell them the various things we can do with the computer like doing sums, drawing, listening to music, watching movies, learning, etc.

Encourage them to tell why computer is different from other machines (other machines can only do the work for which they are made but computer can do many kinds of work).

Make the students understand that there are certain things which man can do better than computers, covering:

- **Feelings** – Computer does not have feelings and does not understand emotions.
- **Memory** – Computer can store a lot of information, and never forget it.
- **Speed** – Computer works very fast and can do many tasks at a time.

Explain to the students about the different types of computers covering:

- **Desktop computer** – kept on desk or table
- **Laptop computer** – can be kept on lap also and is portable
- **Hand-held computer** – smaller than a laptop and has a touchscreen, such as tablet and smartphone

Tell the students that all these types of computers are called Personal Computers or PCs.

Extension

Ask the students some oral questions based on this chapter.

Q. Is computer a machine?

Q. Name some natural things.

Q. Name some human-made things.

Q. Who makes machines?

Q. Are machines natural?

Q. Discuss briefly the use of an air conditioner/refrigerator/washing machine/television/mobile/car.

Q. What does a computer need to run?

Q. How is a computer different from other machines?

Q. State any two features of a computer.

Q. Name two things which man can do better than computers.

Q. Name any two types of computers.

Q. Can we keep all computers in our pocket?

Q. Name computer which we can keep in our pocket.

Q. Name the computer which we keep on a desk or a table.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 13, 14, and 15 of the main course book. After solving the course book exercises, tell the students to solve **TECH TWISTER** activity given on pages 15 of the main course book to imbibe Critical Thinking and Information Literacy skills. Help the students to solve these questions.

Suggested Activity

Show pictures of some machines (calculator, fan, sewing machine, set top box, cycle, clock, microwave, stapler, electronic toy, etc.) and ask the students what they are used for?

2 The Mouse and The Keyboard

Teaching Objectives

- Mouse
- Mouse Pad
- How to Use a Mouse?
- Keys on the Keyboard
- Mouse Buttons
- How to Hold a Mouse?
- Keyboard
- What is a Cursor?

Number of Periods	
Theory	Practical
1	2

Teaching Plan

While teaching this chapter, tell the students that a mouse helps us to tell the computer what to do and keyboard is used to write on computer screen.

Share with the students some uses of a computer mouse.

Show to the students that the small arrow moving on the screen is called pointer.

Show to the students the correct way of holding the mouse with reference to the position of fingers and palm (shown in the main course book).

Show to the students that a computer mouse can be used for:

- **Pointing –** by moving the pointer.
- **Clicking –** by pressing mouse buttons.
- **Single-clicking or Clicking –** pressing and releasing the left button quickly, used to select an icon.
- **Double-clicking –** pressing and releasing the left button twice quickly, used to open a program.
- **Right-clicking –** pressing and releasing the right button quickly, used to display a shortcut menu.
- **Dragging –** moving the mouse while keeping the left button pressed, used to move objects on screen.
- **Scrolling –** by placing your index finger on the scroll wheel and rolling it upward or downward, used to move the page up or down on the screen.

Show to the students that a keyboard has small buttons on it called keys.

Make the students count that a computer keyboard has 101 to 104 keys.

Tell the students that the keys on a keyboard are divided into three categories:

- **Alphabet keys –** 26 in number (A to Z)
- **Number keys –** 10 in number (0 to 9)
- **Special keys –** Enter, Spacebar, Backspace, etc.

Show to the students the position of various categories of keys on the keyboard.

Make the students understand that the alphabet keys (A to Z) on the keyboard are also used to write in small letters (a to z).

Share with the students that the number keys are used to type numbers and there are two sets of number keys on a keyboard.

Show to the students that there are some special keys also on the computer like:

- **Spacebar key –** longest key at the bottom, used to give blank space between letters and words.
- **Enter key –** also called Return key, two in number, used to move to the next line.
- **Backspace key –** used to erase what we have typed.
- **Cursor Control keys –** Show to the students the four arrow keys (up, down, left and right) on the keyboard, used to move the cursor.

Open WordPad and show to the students the small blinking line called cursor.

Make the students understand that the cursor shows the place where the typed letters will appear.

Extension:

Ask the students some oral questions based on this chapter.

Q. What is a mouse used for?

Q. Name the pointing device.

Q. Which finger must be placed on the left button / right button?

Q. What are the small buttons on a keyboard called?

Q. How many keys are there on a keyboard?

Q. Name the categories in which the keys on a keyboard are divided into.

Q. Name some special keys.

Q. What is a cursor?

Evaluation:

After explaining the chapter, let the students do the course book exercises given on pages 23 to 25 of the main course book. After solving the course book exercises, tell the students to solve **TECH TWISTER** activity given on page 25 of the main course book. Help the students to solve these questions.

In Creative Assignment, activities like **BYTE TASK** and **SDG Activity** on page 26 of the main course book will enhance the ability of the students and serve as a Information Literacy activity.

Suggested Activity:

Ask the students to draw a picture of a mouse representing single-click, double click, right-click, drag and Ask the students to paste a picture of computer keyboard in the computer notebook and label Number keys, Alphabet keys, Enter keys, Spacebar key, Backspace key and Cursor Control keys on it.

3 Introduction to Paint

Teaching Objectives

Students will learn about

- Steps to Start Paint
- Drawing Lines
- Drawing Rounded Rectangle
- Drawing Freehand
- Saving a Drawing
- Components of Paint Window
- Drawing Rectangles
- Drawing Curve
- Filling Colours
- Closing Paint

Number of Periods	
Theory	Practical
1	2

Teaching Plan

Before starting the chapter, ask the students to Join the lines of a rainbow and colour it. In **TECH SET GO** given on page 28 of the main course book.

While teaching this chapter, tell the students that Paint is a program used to draw and colour.

Familiarise the students with Paint window showing Tools group, Shapes group, Colors group and Drawing Area.

Demonstrate to the students the steps to start Paint.

Tell the students about the uses of Tools group (contains tools), Colors group (contains colour options), Shapes group (contains shapes), Drawing Area (Blank area to draw and colour) and Ribbon (Long horizontal bar).

Demonstrate the steps to:

- Draw straight lines using Line shape.
- Draw rectangles using Rectangle shape.

Tell the students that Rounded Rectangle shape is used to draw rectangles and squares with rounded corners.

Demonstrate to the students the steps involved in use of Rounded Rectangle shape.

Share with the students that Curve shape is used to draw curved lines.

Show to the students the steps involved in use of Curve shape.

Tell the students that Paint allows to draw freehand using Brushes Tool and Pencil Tool.

Explain to the students the use of Brushes tool and steps involved in using the tool.

Show the students the use of Pencil tool and steps involved in using the tool.

Demonstrate the steps to Fill colours in closed shapes using Fill with Color tool

Explain the students the steps involved in saving a drawing.

Tell the students that close button from Title bar is used to close Paint.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Paint?

Q. What is the use of Line / Rectangle shape?

Q. How can the width of the Brush be changed?

Q. Under which category is the Paint program listed?

Q. Name the groups present on Paint window.

Q. What does the Colors / Shapes / Tools group contain?

Q. What is the use of Brushes / Fill with Color tool?

Q. What is the use of Pencil tool?

Q. What is the use of Brushes tool?

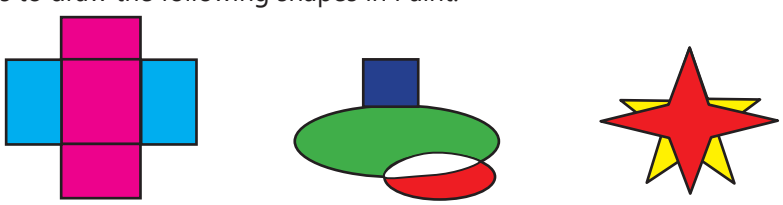
Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 35 and 36 of the main course book as Exercise.

In Creative Assignment, activity like **TECH TWISTER** and **BYTE TASK** given on the page no. 37 of the main course book will enhance the ability of the students and imbibe Information Literacy, Critical Thinking and Creativity skills.

Suggested Activity

Ask the students to draw the following shapes in Paint.



Ask the students to draw a picture of a school with its name written on a board at the top of the school building.

4 Reasoning and Critical Thinking

Teaching Objectives

Students will learn about

- Shapes
- Word Search
- Pattern
- Directions

Number of Periods	
Theory	Practical
1	0

Teaching Plan

Before starting the chapter, attempt the activity in **TECH SET GO** given on page 38 of the main course book.

Introduce Shapes to the students in details which are:

- Square
- Rectangle
- Triangle
- Circle

Ask the students to solve the activity in **CODE QUEST** given on page number 39 to imbibe Critical Thinking skill.

Tell the students about what pattern is and to identify one. Also, tell them how to solve by giving some examples which will improve their understanding of the topic.

Ask the students to draw the picture to complete the pattern in **CODE QUEST** given on page number 40 to imbibe Critical Thinking skill.

Show the students what is a word search and how to solve it with the help of critical thinking.

Explain to the students what directions are and how they help us reach a definite location.

Show examples for all the topics for better clarity of the lesson at the end.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a shape?

Q. How many shapes are there?

Q. What is a pattern?

Q. What is a word search?

Q. What are directions?

Q. How do directions help us?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 42 and 43 in the main course book. Tell the students to try sections such as **TECH TWISTER** and **SDG Activity** given on pages 43 and 44 in the main course book.

Suggested Activity

Ask the students to practise any lesson two times and compare the result.

5 Google Blockly Games

Teaching Objectives

Students will learn about

- Starting Blockly
- Maze Game
- Puzzle Game

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to attempt the activity in **TECH SET GO** given on page 47 of the main course book.

While teaching this chapter, tell the students that Google Blockly is a tool that helps the users to learn block-based programming quickly and easily; in this, blocks are dragged and dropped to give instructions.

Tell the students that it is also known as a play-way programming platform where users play games and learn programming simultaneously.

Demonstrate the steps to start Blockly.

Explain the students about the Puzzle game that teaches to:

- join the blocks.
- create stack of blocks.
- change instructions in the variable blocks.
- placing stack of blocks inside a container block.

Demonstrate the steps to play the Puzzle game to the students.

Ask the students to solve the activity in **CODE QUEST** given on page number 50 to imbibe Critical Thinking and Information Literacy skill.

Explain the students about the Maze game that teaches to:

- join the blocks.
- create loops or blocks to repeat actions.
- change instructions in the variable blocks.
- placing stack of blocks inside a container block.

Demonstrate the steps to play the Maze game to the students.

Extension

Ask the students some oral questions based on this chapter.

Q. How to start Blockly?

Q. What is Puzzle game?

Q. What is Maze game?

Q. What does Puzzle game teaches the user?

Q. What does Maze game teaches the user?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 52 to 54 of the main course book.

In Creative Assignment, activities like **TECH TWISTER** and **CODE TASK** given on page 54 of the main course book will enhance the ability of the students and imbibe Critical Thinking, Information Literacy and Technology Literacy skills.

Suggested Activity

Ask the students to play level 6 of the Google Blockly Maze game.

6 Introduction to ScratchJr

Teaching Objectives

Students will learn about

- Starting ScratchJr
- Adding a New Character
- Creating a ScratchJr Project
- Components of ScratchJr Window
- Changing the Background
- Saving a Project

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to attempt the activity in **TECH SET GO** given on page 55 of the main course book.

While teaching this chapter, tell the students that ScratchJr is a software which is used to create animated stories and games.

Tell the students about the steps involved in Starting ScratchJr.

Explain the Components of ScratchJr Window to the students like:

- Stage
- Blocks Palette
- Character
- Save Button
- Block categories
- Change Background
- Green Flag
- Reset Character Button
- Plus Button
- Programming Area

Explain the steps involved in the use of Adding a New Character to the students.

Tell them the steps of Changing the Background.

Ask the students to match the following activity in **CODE QUEST** given on page number 58 to imbibe Critical Thinking and Information Literacy skill.

Demonstrate to the students the steps involved in Creating a ScratchJr Project.

Tell them the steps to saving a project.

Ask the students to solve the following activity in **CODE QUEST** given on page number 59 to imbibe Technology Literacy skill.

Extension

Ask the students some oral questions based on this chapter.

Q. What is ScratchJr?

Q. What does Block categories mean?

Q. Name any 4 components of ScratchJr Window.

Q. How to add a new character in ScratchJr?

Q. What do you mean by changing the background in ScratchJr?

Q. Which button is used to save a ScratchJr project?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 60 and 61 of the main course book.

In Creative Assignment, activities like **TECH TWISTER**, **CODE TASK** and **SDG Activity** given on page 61 of the main course book will enhance the ability of the students and imbibe Critical Thinking, Creativity, Information Literacy and Technology Literacy skills.

Suggested Activity

Ask the student to create simple interactive stories using characters and backgrounds.

7 What is AI?

Teaching Objectives

Students will learn about

- What is AI?
- Real Life Examples of AI

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to identify the images and write their names in **TECH SET GO** given on page 63 of the main course book.

Encourage the students to name some things which they see around themselves.

While teaching this chapter, tell the students that AI stands for Artificial Intelligence. It is the process of making a machine intelligent. Artificial intelligence, or AI, refers to a computer's ability to think and learn.

Tell the students also that Artificial intelligence is used at various places in real-life.

Make them understand about the followings:

- Google Assistant
- Face Lock
- Robots
- YouTube
- Google Maps

Guide students through the steps to use Google Assistant: pressing the home button, saying "Ok Google," and asking a question.

Show images or diagrams of robots, explaining how they function without human intervention.

Explain how YouTube uses AI to suggest videos based on user preferences and interests.

Discuss Google Maps and how it utilizes AI for navigation and location services.

Ask the students to solve the following activity in **AI QUEST** given on page number 67 to imbibe Critical Thinking and Media Literacy skill.

Ask student to play the game given on page 67 as **AI GAME**.

Extension

Ask the students some oral questions based on this chapter.

Q. What does AI stand for?

Q. Can you name one example of AI you use at home?

Q. What is a robot?

Q. Do you know any device that talks to you when you ask it something?

Q. What is the use of Google Maps?

Q. What is special about the face lock feature in a smartphone?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 68 and 69 of the main course book.

In Creative Assignment, activities like **TECH TWISTER**, **AI TASK** and **TECH VALUE** given on page 70 of the main course book will enhance the ability of the students and imbibe Critical Thinking, Creativity, Media Literacy, Leadership & Responsibility skills.

Suggested Activity

Ask the students to paste pictures some real-life examples of AI in their computer notebooks and write their names.

8 Intelligent Machines Around Us

Teaching Objectives

Students will learn about

- Smart Washing Machine
- Smart Refrigerator
- Smartwatch
- Smart Vacuum Cleaner
- Smart Speaker

Number of Periods	
Theory	Practical
1	2

Teaching Plan

Before starting the chapter, ask the students to Draw a picture of your favourite smart device in **TECH SET GO** given on page 71 of the main course book.

While teaching this chapter, tell the students that Machines are all around us. We use machines every day. Now the machines have become smart. Smart machines are devices that can teach themselves how to do tasks. Artificial Intelligence makes machines as smart as humans.

Explain to the students about Smart machines and how we can access it by connecting through our mobile phones:

- Smart Washing Machine
- Smart Refrigerator
- Smartwatch
- Smart Vacuum Cleaner
- Smart Speakers

Also, discuss how a smart washing machine can make laundry easier for families and its benefits.

Describe the functionalities of a smart vacuum cleaner.

Explain the features of a smart refrigerator.

Describe a smart speaker's capabilities (voice assistance, playing music, etc.) and its usefulness in homes.

Explain the basic functions of a smartwatch (like tracking steps, telling time, etc.) and its benefits.

Ask the students to read the **AI FACT** given on page 72.

Ask the students to solve the exercise given on page 73 as **AI QUEST**.

Ask them to play the game given on page 74 as **AI GAME**.

Extension

Ask the students some oral questions based on this chapter.

Q. Can you name one smart machine you might find in your home?

Q. What does a smart washing machine do differently compare to a regular one?

Q. How does a smart vacuum cleaner work?

Q. What are the features of a smart refrigerator?

Q. What does a smart speaker do?

Q. Can you name a feature of a smartwatch?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 75 and 76 of the main course book.

In Creative Assignment, activities like **TECH TWISTER** and **AI TASK** given on pages 76 and 77 of the main course book will enhance the ability of the students and imbibe Information Literacy, Technology Literacy and Creativity skills.

Suggested Activity

Ask the students to draw or create their version of a smart device and share it in the next class.