TOUCHPAD

Ver. 2.2

4

Teacher's Manual

Extended Support for Teachers

ORANGE
www.orangeeducation.in

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

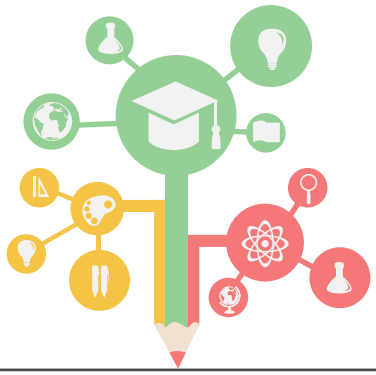
Age 11 - 20 Years

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.

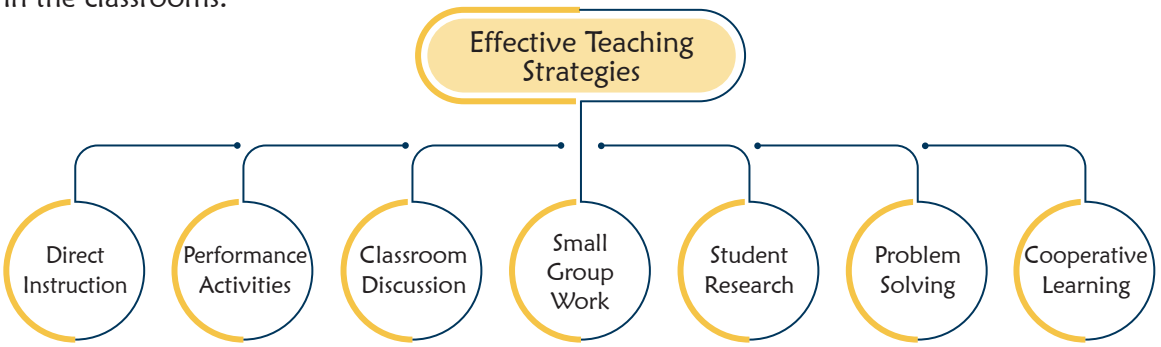
After the class

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

"Knowing yourself is the beginning of all wisdom."

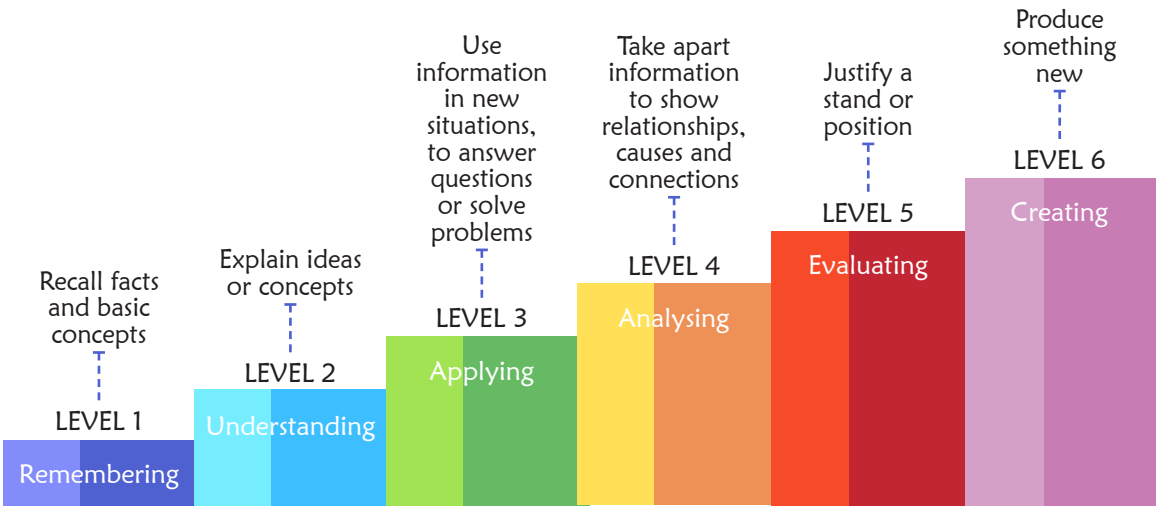
Teaching Strategies

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 4

LESSON PLAN

1 Data Storage and Memory

Teaching Objectives

Students will learn about

- Computer Memory
- Measuring the Computer's Memory

Number of Periods	
Theory	Practical
1	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 7 of the main course book.

While teaching this chapter, tell the students that like human beings, computers also have memory to store all data and instructions for performing various tasks.

Tell the students about the two types of computer memory – primary memory and secondary memory.

Share with the students that the primary memory of the computer is fixed on the motherboard of the computer.

Explain in detail about the types of Primary Memory covering:

- **Random Access Memory (RAM)** – the volatile memory.
- **Read Only Memory (ROM)** – the non-volatile memory.

Share with the students the meaning and difference between the two types of RAM – Dynamic RAM and Static RAM.

Give a brief introduction about secondary memory or secondary storage devices covering in detail:

- Magnetic Disk (Hard Disk) – Internal and External
- Optical Disc (CD, DVD, Blue-ray Disc) – ROM, R and RW
- Flash Drive (Pen Drive, Memory Card)
- Solid State Drive(SSD)

Introduce byte as the basic unit of measuring computer memory and nibble as half a byte.

Share with the students the meaning and relationship between higher units of measurement of computer memory – KB, MB, GB, TB, PB, EB, ZB and YB.

Extension

Ask the students some oral questions based on this chapter.

Q. What is computer memory?

Q. What is primary memory?

Q. Name the different types of primary memory.

Q. Expand RAM / ROM.

Q. What are the different types of RAM?

Q. What is the difference between primary and secondary memory?

Q. Name the categories in which secondary storage devices are divided into.

Q. What are the different types of CDs and DVDs?

Q. Expand CD / DVD.

Q. What is a pen drive / memory card?

Q. Define a byte.

Q. Name any three higher units of measurement of computer memory.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 13 and 14 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**—**Let's Solve**, **Let's Explore** and **Let's Get Better** given on Page 14 in the main course book to imbibe Critical Thinking, Technology Literacy and Leadership & Responsibility skills in them.

Take the students to the computer lab and let them practice the activity given in the **TECH PRACTICE** section on Page 14 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Ask the students to research and collect information about some secondary storage devices like floppy disks, which have now become obsolete.

2 Managing Files and Folders in Windows 10

Teaching Objectives

Students will learn about

- Windows 10 Desktop
- Files and Folders

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 15 of the main course book.

While teaching this chapter, tell the students that Windows is a GUI based operating system provided by Microsoft.

Make the students recall desktop as the first screen on which they can work.

Familiarise the students with the components of Windows 10 desktop covering Start button, Icons, Taskbar, and Desktop background.

Explain briefly about each of these components of Windows 10.

Share with the students the usefulness of Show Desktop button.

Tell the students about the Live Tiles.

Demonstrate the steps to resize, move and add tile.

Tell the students about Files and Folders.

Demonstrate to the students the steps to:

- Selecting a file/folder.
- Renaming a file/folder.
- Moving a file/folder.
- Creating a file/folder.
- Copying a file/folder.
- Deleting a file/folder.

Tell the students about Recycle Bin and its use.

Ask the students to solve the exercise **Let's Catch Up** given on page 19.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Windows 10?

Q. Name the components of Windows 10 desktop.

Q. Define Desktop Background.

Q. What are icons?

Q. In how many parts is the Start menu divided?

Q. What are Live Tiles?

Q. What is a file?

Q. What is a folder?

Q. What is Recycle Bin?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 25 and 26 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**—**Let's Solve** and **Let's Explore** given on Pages 26 and 27 in the main course book to imbibe Critical Thinking and Media Literacy skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 27 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Ask the students to prepare a note on any one Gadget provided by Windows 10 on an A4 sheet of paper.

3 More on MS Word 2016

Teaching Objectives

Students will learn about

- Shapes
- Pictures
- Inserting a Table
- Selecting Row or Column
- Deleting Row or Column
- Splitting a Cell
- WordArt
- Table
- Entering Data in a Table
- Inserting Row or Column
- Merging Cells
- Formatting a Table

Number of Periods	
Theory	Practical
3	4

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 29 of the main course book.

While teaching this chapter, tell the students that although MS 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.

Introduce WordArt as the special effect in Word to change the appearance of the text.

Demonstrate to the students the steps to:

- insert WordArt in a document.
- insert Pictures.

While teaching this chapter, tell the students that a table is an arrangement of data in vertical columns and horizontal rows forming a cell where they join together.

Also tell them that the individual squares in which the text, images or graphics is placed is called a cell.

Demonstrate to the students the method of inserting 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.
- add more columns to a table.
- change width of a column.
- delete rows from a table.
- delete columns from a table.

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.

Ask the students to solve the exercise **Let's Catch Up** given on page 37.

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?

Q. What is a table?

Q. Define a cell.

Q. What is the shape of the mouse pointer while 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?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 41 and 42 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve** and **Let's Explore** given on Page 42 in the main course book to imbibe Critical Thinking and Information Literacy skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 43 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

1. Ask the students to write a paragraph in in Word 2016 on 'Festivals of India'. The paragraph must be supported with relevant pictures.
2. Ask the students to create a comparative mark sheet for your marks in different subjects for last three classes.

4 PowerPoint 2016

Teaching Objectives

Students will learn about

- Starting Powerpoint 2016
- Creating a New Presentation
- Inserting WordArt
- Viewing a Presentation
- Components of the Powerpoint Window
- Slide Layout
- Inserting a Picture from a File
- Deleting a Slide

Number of Periods	
Theory	Practical
3	4

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 44 of the main course book.

While teaching this chapter, tell the students that PowerPoint is an application program that allows to create and show slides to support a presentation.

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, Placeholder, Slides / Outline Pane, Control Buttons, Speaker's Notes Pane and Status Bar.

Demonstrate the steps to:

- create a new presentation.
- enter text on a slide in title and subtitle placeholders.
- add new slide to a presentation.
- changing the font and font size of the text

Introduce slide layout as arrangement of text, image, WordArt, Charts, etc. on a particular slide.

Share with the students the names of some commonly used slide layout options.

Demonstrate to the students the steps involved in changing the slide layout.

Tell the students that WordArt allows to create text effects that are not available through font formatting.

Show to the students that the steps involved in inserting WordArt.

Similarly, demonstrate to the students that Pictures from other files can also be added to a slide just like those inserted in Word.

Introduce SmartArt as a diagrammatic representation of some information. Tell the students about different types of SmartArt diagrams and the situations when each of them is used.

Explain to the students the names of different types of slide views in MS PowerPoint covering Normal View, Outline View, Slide Sorter View and Reading View.

Ask the students to solve the exercise **Let's Catch Up** given on page 49.

Extension

Ask the students some oral questions based on this chapter.

Q. 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?

Q. Define slide layout.

Q. What is WordArt?

Q. Can pictures be inserted on a slide?

Q. What is the use of SmartArt?

Q. When is Normal / Outline / Slide Sorter / Reading View used?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 57 and 58 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve**, **Let's Explore** and **Let's Get Better** given on Pages 58 and 59 in the main course book to imbibe Critical Thinking, Information Literacy and Initiative skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 59 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

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

5 More About the Internet

Teaching Objectives

Students will learn about

- History of Internet
- Microsoft Edge
- Commonly Used Internet Terms

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 64 of the main course book.

While teaching this chapter, recall about Internet to students and explain the brief history of Internet.

Tell the students the basic common Internet terms:

- World Wide Web
- Website
- Web Browser
- Downloading
- ISP
- Web Page
- URL
- Hyperlink
- Uploading
- Search Engine

Show the students the steps involved in using the search engines.

Tell the students about the Microsoft Edge and demonstrate the steps to open Microsoft Edge.

Familiarise the students with the parts of Microsoft Edge window covering Current Tab, Back/Forward, New Tab, Refresh, Address Bar, Copilot, Favorites and Settings & more.

Ask the students to solve the exercise **Let's Catch Up** given on page 66.

Extension

Ask the students some oral questions based on this chapter.

Q. What is ARPANET?

Q. What do you understand by Downloading / Uploading data?

Q. Define URL / Hyperlink / Downloading / Uploading / Website / Web Page / ISP / Search Engine.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 71 and 72 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve**, **Let's Explore** and **Let's Get Better** given on Pages 72 and 73 in the main course book to imbibe Critical Thinking, Information Literacy and Media Literacy skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 73 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Ask the students to paste a picture of Microsoft Edge in their computer notebook / practical file and label its components and tools discussed in the chapter.

6 Visual Processing

Teaching Objectives

Students will learn about

- Picture Puzzle
- Directions and Maps

Number of Periods	
Theory	Practical
1	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 74 of the main course book.

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

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

- Odd One Out
- Find the Differences

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.

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

Ask the students to solve the exercise **Let's Catch Up** given on pages 76 and 78.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a puzzle?

Q. What is a picture puzzle?

Q. How many types of picture puzzle are there?

Q. What is a direction?

Q. What is a map?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 79 and 80 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve** given on Page 81 in the main course book to imbibe Critical Thinking skill in them.

Suggested Activity

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

7 More Blocks in Scratch

Teaching Objectives

Students will learn about

- Scratch Components
- Setting the Sprite Position
- Block Categories
- Programs in Scratch

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 83 of the main course book.

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

Explain the Block categories and its types using appropriate examples:

- Motion block
- Sound block
- Control block
- Looks block
- Events block

Show the students how to change the sprite position with suitable example.

Ask the students to solve the exercise **Let's Catch Up** given on page 86.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Scratch?
Q. What are blocks?
Q. What is motion block?
Q. What is looks block?
Q. What is sound block?
Q. What is control block?
Q. How to change sprite's position?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 89 and 90 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve**, **Let's Explore** and **Let's Get Better** given on Pages 90 and 91 in the main course book to imbibe Critical Thinking and Collaboration skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 91 in the main course book. This will enhance the ability of the students and serve as a Technology 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 Creating Shapes in Scratch

Teaching Objectives

Students will learn about

- Pen Block
- Drawing Polygons in Scratch
- Drawing a Line in Scratch
- Drawing a Circle in Scratch

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 92 of the main course book.

Tell the students about pen block and explain its use with using appropriate examples. Also, show the steps involved in creating programs using pen blocks.

Show the steps involved in drawing a line in Scratch.

Tell the steps involved in drawing polygons in Scratch.

Explain the steps involved in drawing a square in Scratch.

Demonstrate the steps involved in drawing a rectangle in Scratch. Also, show the steps involved in drawing a circle in Scratch.

Ask the students to solve the exercise **Let's Catch Up** given on page 95.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a pen block?

Q. How can you draw a line in Scratch?

Q. How can you draw a polygon in Scratch?

Q. How can you draw a square in Scratch?

Q. How can you draw a circle in Scratch?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 98 and 99 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve**, **Let's Explore** and **Let's Get Better** given on Pages 99 and 100 in the main course book to imbibe Critical Thinking, Information Literacy and Collaboration skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 100 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Ask the students to draw a triangle and circle together in a program.

9 Evolution of Artificial Intelligence

Teaching Objectives

Students will learn about

- 1950-1960
- 1961-1970
- 1971-2000
- 2000-2010
- 2010 To Present

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 101 of the main course book.

While teaching this chapter, make sure that the students are well aware about AI and related topics taught in previous classes.

Tell the students that Artificial Intelligence is the ability of a machine to think and learn.

Explain the evolution of AI to the students along with their details:

- 1950-1960
- 1961-1970
- 1971-2000
- 2000-2010
- 2010 to present

Define the inventions of all these years along with their inventor to the students and how it changes out lives.

Relate all these to their daily life routine.

Ask the students to solve the exercise **Let's Catch Up** given on page 106.

Extension

Ask the students some oral questions based on this chapter.

Q. Define the evolution of AI in the following years:

- 1950-1960
- 1961-1970
- 1971-2000
- 2000-2010
- 2010-Present

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 110 and 111 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone**– **Let's Solve** and **Let's Explore** given on Pages 111 and 112 in the main course book to imbibe Critical Thinking and Information Literacy skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 112 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Ask the students to practice more in Mystery Animal and search similar games.