TOUCHPAD

Prime Ver. 2.2

7

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

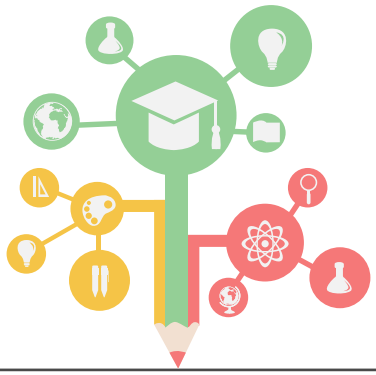
Age 11 - 20 Years

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.

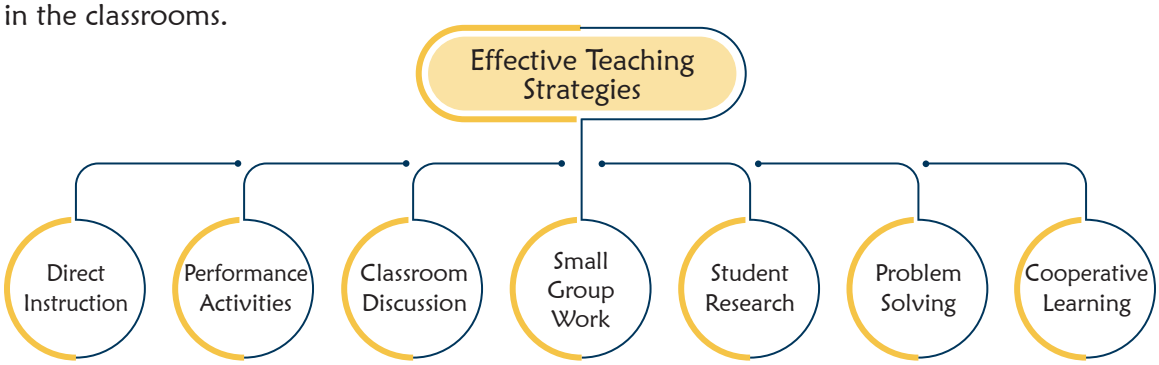
After the class

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

"Knowing yourself is the beginning of all wisdom."

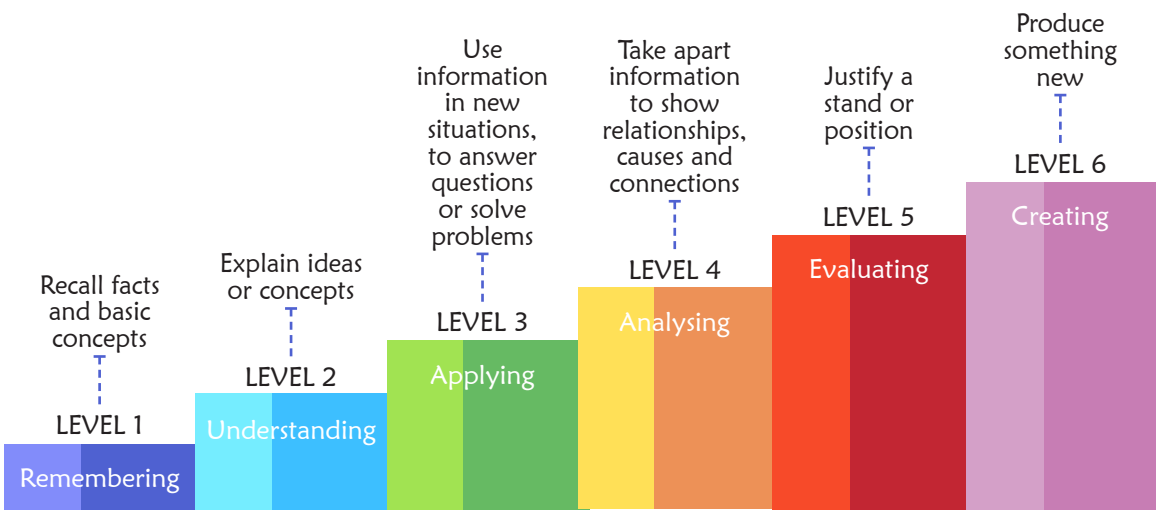
Teaching Strategies

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 7

LESSON PLAN

1 Number System

Teaching Objectives

Students will learn about

- What is a Number System?
- Number System Conversion
- Operations on Binary Numbers

Number of Periods	
Theory	Practical
1	3

Teaching Plan

While teaching this chapter, tell the students that a number system is simply a method of counting.

Introduce base or radix as the total number of digits used in a number system.

Inform them that there are four important types of number systems – Decimal (base 10), Binary (base 2), Octal (base 8) and Hexadecimal (base 16).

Make the students recall the method of writing expanded form of a number under Decimal number system.

Inform them that:

- In decimal number system, the numbers are expressed using ten digits, 0 to 9 and expanded with base 10.
- In octal number system, the numbers are expressed using eight digits, 0 to 7 and expanded with base 8.
- In hexadecimal number system, the numbers are expressed using fifteen digits, 0 to 9 and A to F, and expanded with base 16.

Show to the students the method of converting:

- Decimal number to Binary number by successive division by 2 and arranging the remainders in reverse order.
- Binary number to Decimal number by multiplying digits with 2 raise to the power of place of that digit starting from 0 on the left.
- Octal number to Decimal number by multiplying each digit of the number with the increasing powers of 8 starting from right-hand side.
- Hexadecimal number to Decimal number by multiplying each digit of the number with the increasing powers of 16 starting from right-hand side.

Share the rules of binary addition, subtraction and multiplication.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a number system?

Q. What is the radix of decimal / binary / octal / hexadecimal number system?

Q. Which digits are used to express a decimal / binary / octal / hexadecimal number?

Q. What is the value of addition of binary digits 1 and 1?

Q. What is the value of subtraction of binary digits 0 and 1?

Q. Which number system is used by computers?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Page 12, 13 and 14 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Pages 14 and 15 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **Group Task** and **In the Lab** section on Page 15 in the main course book. This will enhance the ability of the students and serve as Communication and Technology Literacy activity.

Suggested Activity

1. Convert the last four digits of your parent's mobile numbers into binary number.
2. Ask the students to prepare a comparative chart with four columns, the first one listing the digits used in Hexadecimal number system and in the remaining three columns, their equivalent value under decimal, binary and octal number systems.

2 Advanced Features of Excel

Teaching Objectives

Students will learn about

- Charts in Excel
- Filtering Data
- Sorting Data
- Conditional Formatting

Teaching Plan

Number of Periods	
Theory	Practical
2	3

While teaching this chapter, tell the students that a chart is an effective way to display data in pictorial form.

Show the different components of an Excel chart.

Familiarize the students with the different types of chart options available.

Explain each chart type to the students with examples:

- Line chart
- Column chart
- Pie chart
- Bar chart
- Area chart
- Scatter chart

Demonstrate the steps of:

- Creating a chart.
- Modifying a chart by changing its type, layout and design.

Introduce sorting as arranging the data in ascending or descending order.

Demonstrate to the students the various steps involved in sorting of data in an Excel worksheet.

Share with the concept and use of Custom Sort feature.

Introduce filtering as hiding unwanted data from a set of data.

Show to the students the various steps involved in applying Filters in a worksheet.

Share with the students that Filters once applied can be easily removed and tell them the method of removing filters.

Introduce Conditional Formatting as highlighting the required information.

Demonstrate the steps to apply conditional formatting in Excel.

Extension

Ask the students some oral questions based on this chapter.

Q. Define charts in Excel.

Q. When is a Line / Column / Pie / Bar / Area chart used?

Q. In Excel, can we change the type of an existing chart?

Q. What is the difference between sort and custom sort features?

Q. What are filters?

Q. How can filters be removed in a worksheet?

Q. What do you understand by conditional formatting feature?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 25 to 27 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 27 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **Find Out** and **In the Lab** section on Pages 27 and 28 in the main course book. This will enhance the ability of the students and serve as Communication and Technology Literacy activity.

Suggested Activity

From the previous mark sheets of Grade 1 to 6, collect data about your attendance in various Grades. Plot a Line Chart in Excel from the data.

Ask the students to enter their height and weight along with similar information for their nine friends. Sort the data with primary criteria as heights in ascending order and secondary criteria as weights in descending order.

Highlight the cells where the heights are less than the height of the student or weight is more than the weight of the student preparing the worksheet.

3 Building on Animate CC

Teaching Objectives

Students will learn about

- Creating a Motion Tween
- Creating a Classic Tween
- Creating a Shape Tween
- Working with Layers
- Using Masking
- Formatting Text in Animate CC

Teaching Plan

Number of Periods	
Theory	Practical
2	4

While teaching this chapter, tell the students that in Animate CC, the movement of an object in-between the frames is called **Tweening**.

Explain the concept of animation using Tweens.

Familiarise the students with the types of Tweens covering Motion tween, Classic tween and Shape tween.

Show to the the students the various steps involved in creating a Motion Tween.

Demonstrate to the the students the various steps involved in creating a Classic Tween.

Explain to the the students the various steps involved in creating a Shape Tween.

Make the students understand the Working with the Layers and the actions that can be performed on it like:

- Renaming a Layer
- Deleting a Layer

Show the steps to the students the use of Masking with help of proper pictures of the output.

Demonstrate the steps to the students to format text in Animate CC.

Extension

Ask the students some oral questions based on this chapter.

Q. Define Tween.

Q. What is Motion Tween?

Q. What is a Classic Tween?

Q. What is a Shape Tween?

Q. How to work with layers?

Q. How to rename a layer?

Q. How to delete a layer?

Q. What is masking?

Q. What are the steps to format text in Animate CC?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 41 and 42 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 43 in the main course book.

Take the students to the computer lab and let them practice the activity given in the **Find Out** and **In the Lab** section on Page 43 in the main course book. This will enhance the ability of the students and serve as Information Literacy and Initiative activity.

Suggested Activity

Ask the students to create an animation where two cars are coming on a road from opposite directions and crash in the center.

4 HTML—Lists and Tables

Teaching Objectives

Students will learn about

- Creating Lists
- Creating Tables

Number of Periods	
Theory	Practical
1	2

Teaching Plan

While teaching this chapter, tell the students that HTML tags are used to create a web page.

Introduce list as a collection of related items.

Tell the students that there are three types of lists – Ordered List (Numbered List), Unordered List (Bulleted List) and Definition List (Description List).

Explain the use of <OL> tag to create ordered lists, <UL> tag to create unordered lists and <DL> tag to create definition lists.

Explain the concept of Nested list to the students.

Explain the use of <TABLE> tag and its child tags covering <TR>, <TD>, <TH> and <Caption>.

Explain the use of different CSS properties used with <TABLE> tag covering Border, Border-style, Border-color, Border-spacing, width, padding, Background-color and Color.

Discuss the use of different attributes of <TD> tag explaining about ROWSPAN and COLSPAN attributes.

Demonstrate the code to create a table and its data in HTML.

Extension

Ask the students some oral questions based on this chapter.

Q. Define List / Table.

Q. How many types of Lists can be created in HTML?

Q. Name the different types of Lists that can be created in HTML.

Q. What is an Ordered / Unordered / Definition List?

Q. Name the attributes of <OL> tag.

Q. Name the tags used to create Definition List.

Q. Name the CSS properties that can used to create different kinds of tables.

Q. What are the attributes of <TABLE> / <TD> tag?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 56 and 57 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 58 in the main course book.

Take the students to the computer lab and let them practice the activity given in the **In the Lab** section on Page 58 in the main course book. This will enhance the ability of the students and serve as Creativity activity.

Suggested Activity

Ask the students to create:

- List of favourite games of 10 friends
- Table of car names and their models.

5 Algorithmic Intelligence

Teaching Objectives

Students will learn about

- Information Processing
- Conditions in a Program

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Begin with introduction of algorithm as a step-by-step instructions in a sequential manner to solve a problem.

Let them know that a flowchart is a pictorial representation of an algorithm.

Make the students aware of information processing.

Make the students understand that Binary code is the fundamental form of the programming data that is directly interchanged by a computer.

Explain about conditions in a program that are required to make certain decisions based on the logic of the program.

Also let them know about if-then-else statements and conditions related to them.

Extension

Ask the students some oral questions based on this chapter.

Q. What is algorithm?

Q. What is a flowchart?

Q. Name the base to write a program.

Q. What is information processing?

Q. What is the importance of processing of information?

Q. What is binary code?

Q. Define conditions in a program.

Q. Why are conditional statements used in a program?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 62 and 63 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 63 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **In the Lab** section on Page 63 in the main course book. This will enhance the ability of the students and serve as Technology Literacy and Critical Thinking activity.

Suggested Activity

Ask the students to write any if-then-else conditional statements.

6 More on Python

Teaching Objectives

Students will learn about

- Operators in Python
- Conditional Statements
- Operator Precedence

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that Python is an object-oriented programming language.

Explain the operators used in Python stating the common arithmetic operators (+, -, *, /, //, %, **), relational operators (= =, !=, >, <, >=, <=) and logical operators (&, ||).

Familiarise the students with the categories of Arithmetic operators covering unary operator and binary operator.

Demonstrate with the help of programs:

- Relational operator
- Logical operator

Introduce Precedence as the priority assigned to each operator in python.

Introduce conditional statements as the statements used to change the default flow of a program.

Explain that Python offers three decision making statements:

- if statement
- if...else statement
- if...elif...else statement

Explain the situation when these statements are used and demonstrate the use of each statement.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Python?

Q. What is the use of arithmetic operator?

Q. What is the use of conditional statements?

Q. Name the conditional statements used in Python.

Q. What is precedence?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 76 to 78 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Pages 78 and 79 in the main course book to imbibe Critical Thinking skill in them. Take the students to the computer lab and let them practice the activity given in **In the Lab** section on Page 79 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy activity.

Suggested Activity

Write a program in Python to:

- Input 5 numbers and check which of these numbers are prime or composite.
- Input age of a person and check whether he or she is a senior citizen or not.

7 Computer Virus

Teaching Objectives

Students will learn about

- What is a computer virus?
- How does a computer get infected with a virus?
- How do you know your PC has a virus?
- Malware
- Firewal
- Types of computer virus
- How to Prevent your computer from a virus?
- Antivirus

Number of Periods	
Theory	Practical
1	1

Teaching Plan

While teaching this chapter, tell the students that a computer virus program developed to corrupt the data or program files stored in the computer system.

Introduce with students the type of viruses covering Program File Virus, Boot Sector Virus, Macro Virus, E-mail Virus.

Explain the students about various methods by which a computer system may get infected with virus.

Make the students aware of the symptoms that tell that a computer system is infected by a computer virus.

Explain in detail to the students the various methods by which prevention can be taken from a computer virus.

Introduce the students with malware and its types like Worms, Trojan Horse, Spyware, Ransomware, Rootkit, etc.

Introduce the students to the concept of antivirus as a program developed to detect and remove virus from a computer system.

Share the names of some commonly used antivirus programs.

Tell the students about Firewall.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a computer virus?
Q. State any two harms caused by a computer virus.
Q. Give two examples of virus.
Q. State any two methods by which a computer may get infected by Computer Virus.
Q. State any two symptoms that show that a computer system has been infected by a virus.
Q. State any two ways in which the user can prevent from a computer virus.
Q. What is malware. Discuss about any two types of malware.
Q. What is antivirus program?

Q. What is the main purpose of an antivirus program?

Q. What is firewall?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 85 to 87 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 87 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in **Find Out** and **In the Lab** section on Pages 87 and 88 in the main course book. This will enhance the ability of the students and serve as Information literacy and Technology Literacy activity.

Suggested Activity

Ask the students to collect information about any computer virus and narrate it in the class.

8 Cyber Safety

Teaching Objectives

Students will learn about

- What is Internet?
- Cyber Crimes
- Cyber Safety
- Digital Footprints

Teaching Plan

Number of Periods	
Theory	Practical
3	0

While teaching this chapter, tell the students that internet is used for a wide variety of services including communication, shopping and banking.

Tell the students that internet services allow us to perform different types of operations over the internet.

Explain to the students the advantages and disadvantages of Internet.

Introduce cyber-crime as a criminal activity in which computers are used to do crimes.

Explain the different ways to commit cyber-crimes covering E-mail spoofing, spamming, E-mail account hacking, cyber troll, social engineering, cyber bullying, etc.

Tell the students that Cyber safety refers to the safe and responsible use of the Internet in order to safeguard one's personal information while not misusing anyone else's personal information.

Explain the safety measures of working with Computer/Internet.

Explain Digital footprints to the students.

Extension

Ask the students some oral questions based on this chapter.

Q. Name some internet services.

Q. Define Cyber safety.

Q. What are the safety measures of working with Computer/Internet?

Q. Define Cyber Crime.

Q. What are the different types of cyber-crimes?

Q. Define digital footprint.

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 100 and 101 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Pages 101 and 102 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **In the Lab** section on Page 102 in the main course book. This will enhance the ability of the students and serve as Creativity and Leadership & Responsibility activity.

Suggested Activity

Ask the students to collect information about different types of major cyber-crimes committed in last one year.

9 Internet Services

Teaching Objectives

Students will learn about

- Social Networking
- E-Banking
- Blogging
- Skype
- Newsgroup
- Cloud Computing

Teaching Plan

Number of Periods	
Theory	Practical
2	1

While teaching this chapter, brief the students about Internet.

Introduce Social Networking to the students using examples.

Explain to the students the concept of Facebook in detail and also tell the steps involved in creating account on Facebook.

Demonstrate to the students the function of **X (formerly known as Twitter)** in detail and also tell the steps involved in creating account on X.

Demonstrate to the students the steps involved in using Quora and Skype in details.

Explain the Internet services like:

- E-Banking
- Newsgroup
- Blogging
- Cloud Computing

Tell the students the benefits of using cloud computing.

Explain to the students the risks of using cloud computing.

Explain to the students about OneDrive and the steps to access it.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Social network?

Q. What is Facebook?

Q. What is Twitter?

Q. What is Quora?

Q. What is Skype?

Q. What is E-banking?

Q. What is a newsgroup?

Q. What is blogging?

Q. What is cloud computing?

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 117 to 119 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Page 119 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **In the Lab** section on Page 119 in the main course book. This will enhance the ability of the students and serve as Technology Literacy and Collaboration activity.

Suggested Activity

Ask the students to learn how to use the internet services.

10 Concept of Smart Living

Teaching Objectives

Students will learn about

- Smart Homes
- Devices Used in Smart Homes

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Begin with introduction of a variety of gadgets that have made people's life easier than before.

Make the students aware of smart homes.

Explain to students the benefits of smart homes.

Let the students know about the devices used in smart homes like:

- Smart TV
- Video door wells
- Smart cameras
- Smart smoke detectors
- Smart lights
- Smart speakers

Extension

Ask the students some oral questions based on this chapter.

Q. What are smart homes?
Q. What are the benefits of smart homes?
Q. What are smart home owners always connected to?
Q. What kind of devices are used in smart homes?
Q. Name the various domains of AI that the smart home devices use.
Q. What is smart TV?
Q. What are video doorbells?
Q. What are smart cameras?
Q. Define smart smoke detectors.
Q. What is smart lightening?
Q. Define smart speakers.

Evaluation

After explaining the chapter, let the students do the **Mind Drill** given on Pages 123 to 125 in the main course book as **Rapid Fire** and **Evaluation Time**. Tell the students to try sections under **Activity Time** given on Pages 125 in the main course book to imbibe Critical Thinking skill in them.

Take the students to the computer lab and let them practice the activity given in the **In the Lab** section on Page 126 in the main course book. This will enhance the ability of the students and serve as Technology Literacy activity.

Suggested Activity

Ask the students to find more devices that are used in smart homes.