TOUCHPAD

Ver. 2.2

5

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

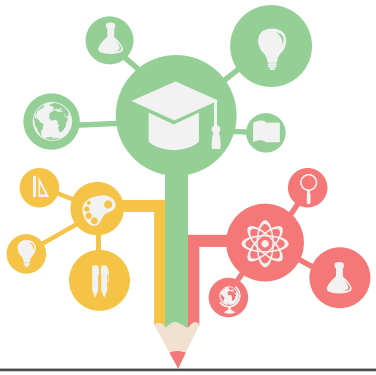
Age 11 - 20 Years

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.

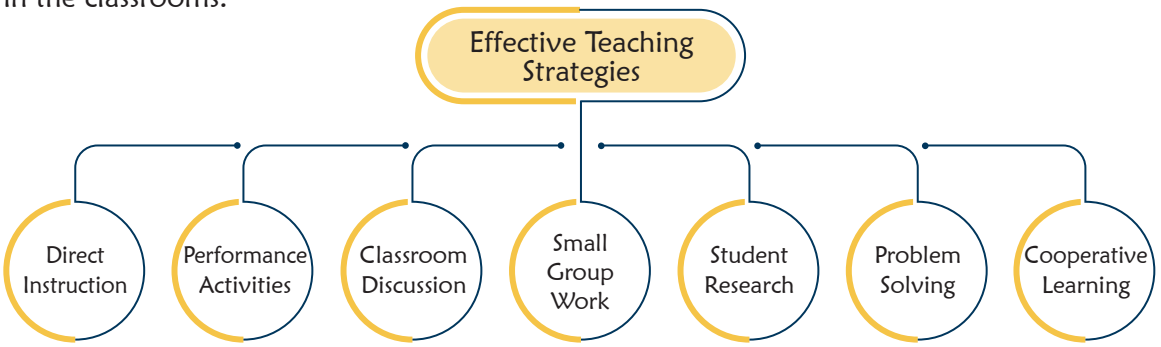
After the class

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

"Knowing yourself is the beginning of all wisdom."

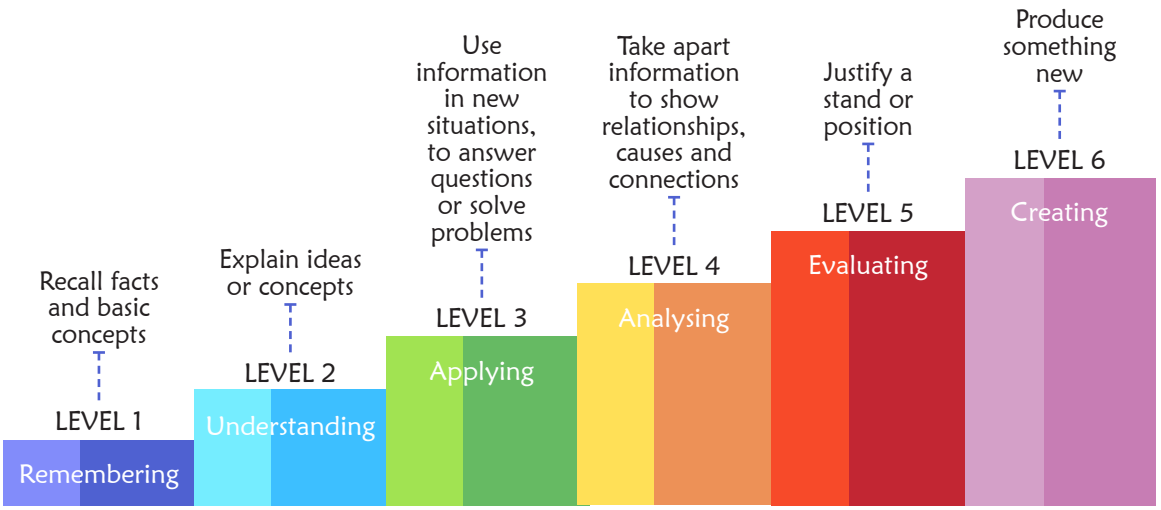
Teaching Strategies

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 5

LESSON PLAN

1 Evolution of Computers

Teaching Objectives

Students will learn about

- Early Counting Tools
- Pascaline Adding Machine
- Charles Babbage's Analytical Engine
- Herman Hollerith's Tabulating Machine
- Abacus—First Calculating Device
- Leibniz Step Reckoner
- Lady Ada Lovelace's Programs
- Computer Generations

Number of Periods	
Theory	Practical
2	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 the computer is an outcome of labour of a number of minds.

Tell the students about the early counting tools like knots tied on a rope, marks carved in clay, fingers, pebbles, etc.

Explain to the students about invention of Abacus – the first calculating device.

Share with the students the importance and usefulness of Abacus even today and is being taught in schools also.

Give a brief account of these calculating machines:

- Pascaline Adding Machine
- Leibniz Step Reckoner

Tell the students about Charles Babbage, the father of computers, and his invention of Difference Engine which was later improved by him into Analytical Engine, the first working model of a mechanical computer.

Inform the students about Lady Ada Lovelace, accredited as the first computer programmer as the programmer to the Analytical Engine of Charles Babbage.

Share with the students about Herman Hollerith who built Tabulating Machine and later his company became a part of IBM.

Explain to the students about the concept of generations of computers and need for classification on this basis.

Share with the students the characteristic features of the different generations of computers covering:

- First Generation (1940-1955) – MARK-I, ENIAC, UNIVAC.
- Second Generation (1956-1964).
- Third Generation (1965-1975).
- Fourth Generation (1976-1985).
- Fifth Generation (1986-Present).

Ask the students to solve the exercise **Let's Catch Up** given on page 14.

Extension

Ask the students some oral questions based on this chapter.

Q. Name some early counting tools.

Q. What is Abacus?

Q. Who invented Adding Machine?

Q. Which is the first mechanical calculator?

Q. Which is the first mechanical computer?

Q. Who is called the Father of Computers?

Q. Why is Lady Ada Lovelace famous?

Q. How many generations of computers are there?

Q. What was the technology used in First / Second / 1 Third / Fourth / Fifth generation of computers?

Q. Give three characteristic features of First / Second / Third / Fourth / Fifth generation of computers.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 15 and 16 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 17 in the main course book to imbibe Critical Thinking, Communication 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 18 in the main course book. This will enhance the ability of the students and serve as a Creativity activity.

Suggested Activity

Ask the students to prepare a collage of different models of computers depicting its evolution over the generations.

2 Advanced Features of Word 2016

Teaching Objectives

Students will learn about

- Spelling and Grammar
- Find and Replace Text
- Column Formatting
- Mail Merge
- Thesaurus
- Page Formatting
- Paragraph Formatting

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 19 of the main course book.

While teaching this chapter, tell the students that Word allows to type text to create and edit documents using various features.

Introduce the students to Spelling and Grammar Check feature of Word.

Show to the students the representation of spelling and grammar mistakes with different colored wavy lines.

Demonstrate to the students the method of using Spelling and Grammar Check feature of Word.

Introduce Thesaurus as a collection of words with their synonyms.

Demonstrate to the students the steps to use Thesaurus tool.

Tell the students that a particular word or phrase in a document can be looked for with the help of Find feature.

Tell them that Word can go one step ahead and can replace that particular word or phrase by another word or phrase as required by the user using the Replace feature.

Demonstrate the steps to use Find and Replace features.

Tell the students that Page formatting is the arrangement of text and all the elements on a page so that it looks appealing to the reader.

Tell the students that Orientation of a paper means the direction in which the text or image appears on a page. Also tell them, there are two types of page orientation- Landscape and portrait.

Demonstrate the steps to change the orientation of a page.

Introduce paper size as the actual length and width of the paper in cm.

Demonstrate to the students the steps to change paper size.

Demonstrate to the students the steps to insert a page break.

Familiarise the students with column formatting and demonstrate the steps to layout the text in column.

Tell the students that Paragraph formatting is used to change the appearance of paragraphs.

Tell the students the method to change line spacing and paragraph spacing.

Introduce to the students Mail Merge as the feature used to create personalised letters to be sent to many persons.

Tell them the various steps involved in creating a mail merge.

Ask the students to solve the exercise **Let's Catch Up** given on page 23.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the use of Spelling and Grammar check feature?

Q. Which button is pressed to skip errors and continue working during Spelling and Grammar check?

Q. What is page formatting?

Q. What is the meaning of Line Spacing?

Q. What is the meaning of Paragraph Spacing?

Q. What do you mean by page orientation?

Q. What do you mean by Mail Merge?

Q. How is mail merge helpful?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 31 and 32 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 32 in the main course book to imbibe Critical Thinking and Technology 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 33 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 an electronic invitation (personalised) for inviting middle school teachers to a thank you performance organised by Grade 6-8 students.

3 Formatting a Presentation

Teaching Objectives

Students will learn about

- Applying Themes
- Changing the Background
- Animations
- Working with Slide Master
- Inserting SmartArt
- Slide Transitions

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 35 of the main course book.

While teaching this chapter, tell the students that a theme is an in-built feature which offers a quick way of change the layout and background design of the presentation.

Demonstrate the steps to apply themes to the presentation.

Explain to the students how to modify themes.

Introduce students with Slide Master and the steps involved in using this action into a presentation.

Demonstrate to the students the steps to change the background.

Show to the students how to insert SmartArt and the steps involved in adding it into a presentation.

Introduce animation as the special visual effects that can be added to the text and different objects on a slide.

Demonstrate the steps to add animation, modify timing, open animation pane and removing an animation.

Explain to the students that transitions are used to determine how the presentation moves from one slide to the next.

Tell the students about the various categories of slide transitions available in MS PowerPoint.

Demonstrate the application of transitions to slides in a presentation.

Share with the students that running a presentation is called Slide Show.

Ask the students to solve the exercise **Let's Catch Up** given on pages 38 and 42.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a theme?

Q. What do you mean by customising a theme?

Q. Can you change background, colour, fonts, etc. of a theme?

Q. What is Slide Master?

Q. What is SmartArt?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 45 and 46 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 47 in the main course book to imbibe Critical Thinking and Creativity skills in them.

Take the students to the computer lab and let them practice the activity given in the **Tech Practice** section on Page 47 in the main course book. This will enhance the ability of the students and serve as a Creativity activity.

Suggested Activity

Divide the class into two teams. Ask one team to prepare charts on various types of pollution.

Ask the other team to prepare a PowerPoint presentation on the same topic. Make the students share the benefits enjoyed and limitations faced by each team while working on their project.

4 Introduction to Excel 2016

Teaching Objectives

Students will learn about

- Excel 2016
- Starting Excel
- Changing the Active Cell
- Entering Data
- Saving a Workbook
- Closing a Workbook
- Features of Excel 2016
- Components of Excel 2016 Window
- Creating a New Workbook
- Working with Worksheet
- Opening a Workbook

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 49 of the main course book.

While teaching this chapter, tell the students that a spreadsheet can be defined as text and numbers that have been organised in rows and columns.

Explain to the students the features of MS Excel 2016.

Tell the students the steps to start Excel.

Familiarise the students with the components of Excel 2016 covering Title Bar, Quick Access Toolbar, Ribbon, File Tab, Status Bar, View Bar, Sheet Tab, Row/Column, Cells, Worksheet, Active Cell and Formula Bar.

Explain to the students how to change active cell and show them the keys and their function to change active cell.

Demonstrate to the students the steps to create a new workbook.

Explain to the students how to work in a worksheet.

Demonstrate to the students the steps to rename a worksheet, adding a new worksheet and removing a worksheet.

Explain to the students the students to save, open and close a workbook.

Ask the students to solve the exercise **Let's Catch Up** given on page 52.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Excel 2016?

Q. What are the features of Excel 2016?

Q. Name any five components of Excel 2016.

Q. Define Formula Bar / Name Box / Row / Column / Cell / Active Cell / Cell Range.

Q. State the situation when Number / Text / Date and Time data type used for.

Q. State the shortcut key to save an Excel worksheet.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 58 and 59 in the main course book as **Test Your Skills**. Tell the students to try sections under **Tech Zone– Let's Solve** and **Let's Get Better** given on Pages 59 and 60 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 60 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 design their class time-table in Excel 2016.

5 Editing Cell Contents in Excel 2016

Teaching Objectives

Students will learn about

- Selecting Cells
- Changing Cell Contents
- Copy and Move Data
- Using Auto Fill Feature
- Entering Date and Time
- Undo and Redo Commands
- Deleting Cell Contents

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to solve the question in **Let's Plug-in** given on Page 61 of the main course book.

Tell the students that to enter data in a cell, simply click on the cell and enter data.

Tell the students the methods to select a cell, row and column by using mouse and keyboard.

Demonstrate to the students the steps involved in selecting multiple cells and selecting the whole worksheet.

Demonstrate the steps to change the format of date and time.

Introduce editing as the process of changing the data either partially or completely.

Tell the students that cell content can be edited in two ways

- Replacing cell contents .
- Using the formula bar.

Also demonstrate the steps

Explain the undo and redo commands to the students.

Explain to the students the steps involved in copying and moving the data.

Demonstrate to the students the steps to delete cells and entire row or column.

Introduce to the students AutoFill feature of Excel as automatically filling a series of data in the worksheet and the steps involved in the same.

Ask the students to solve the exercise **Let's Catch Up** given on page 63.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the difference between Cut and Copy options?

Q. How to select a cells?

Q. Name any three number formats available in Excel.

Q. What is meant by border of a cell?

Q. What is the use of AutoFill feature?

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, Technology Literacy and Social Interaction 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 prepare a table in this format for their family members.

S.No.	Name	Relation with Me	Date of Birth	Age

6 Internet and E-mail

Teaching Objectives

Students will learn about

- Internet
- Types of Internet Connection
- Using URLs
- Requirements to Connect to Internet
- Using Web Browser
- E-mail

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 77 of the main course book.

While teaching this chapter, tell the students that the internet is a global network of millions of computers and computer networks all over the world.

Familiarise the students with the requirements to connect with the Internet covering computer system, telephone/cable lines, modem, web browser and ISP.

Explain to the students the types of Internet connection such as- Dial-up connection, Broadband connection, Wi-Fi and Mobile Internet.

Introduce web browser as software application designed to find hypertext documents on the web.

Show to the students the steps involved in the process of launching the web browser.

Tell the students about Uniform Resource Locator or URL (unique internet address) and their use while navigating on internet.

Make the students recall E-mail as the process of exchanging messages electronically through communications network by using a computer.

Share with the students the advantages of e-mail.

Explain the components of an e-mail address to the students.

Demonstrate in detail the steps involved in:

- Creating an e-mail account
- Signing in to an e-mail account
- Sending an e-mail (with reference to fields like To, Cc, Bcc and Subject)
- Attaching files to an e-mail
- Reading a received e-mail
- Signing out from the e-mail account (tell them the importance of this step)

Ask the students to solve the exercise **Let's Catch Up** given on page 80.

Extension

Ask the students some oral questions based on this chapter.

Q. What is World Wide Web?

Q. Define web server.

Q. How the web works?

Q. Expand URL?

Q. Define an e-mail.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 86 and 87 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 87 and 88 in the main course book to imbibe Critical Thinking, Communication 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 88 in the main course book. This will enhance the ability of the students and serve as a Collaboration activity.

Suggested Activity

Ask the students to create an e-mail account. Tell them to design a birthday invitation card in Adobe Photoshop and send this card as an attachment to ten friends and/or relatives.

7 Data Processing

Teaching Objectives

Students will learn about

- Data and Information
- Representing Information
- Sorting Data
- Decoding

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 89 of the main course book.

Introduce Data and Information to the students in details with the help of proper examples for better understanding.

Tell the students how to sort data and demonstrate the same with proper examples which are easy to understand.

Tell the students about how to represent information with the help of proper charts and tables. is a puzzle. Also, tell them how to solve this by giving some examples which will improve their understanding of the topic.

Explain the meaning of Decoding to the students and ask them use the reference given in the book to understand the concept.

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 page 92.

Extension

Ask the students some oral questions based on this chapter.

Q. What is data?

Q. What is information?

Q, What is sorting?

Q. How can you sort data?

Q. How can you represent information?

Q. What is a decoding?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 93 and 94 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 94 in the main course book to imbibe Critical Thinking and Technology 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 95 in the main course book. This will enhance the ability of the students and serve as a Creativity activity.

Suggested Activity

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

8 Conditional Blocks in Scratch

Teaching Objectives

Students will learn about

- Blocks Shapes in Scratch
- Variables
- Use of Loops Blocks
- Sensing Blocks
- Use of Conditional Control Blocks
- Creating a Game

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 97 of the main course book.

While teaching this chapter, tell the students that Scratch is a block-based programming language.

Tell the students that Scratch allows changing the appearance of the selected sprite.

Show the students the shapes of blocks:

- Hat Blocks
- Boolean Blocks
- C Blocks
- Stack Blocks
- Reporter Blocks
- Cap Blocks

Explain the Sensing block to the students and the steps involve in the use of this block.

Tell the students what are variable using appropriate examples along with-

- Types of variables
- Creating variables

Explain the Conditional Control Blocks to the students and the steps involved in this in detail.

Explain the use of Loops blocks to the students.

Demonstrate ho can one create a game in Scratch using appropriate blocks.

Ask the students to solve the exercise **Let's Catch Up** given on page 100.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Scratch?

Q. Define:

- Hat Blocks
- Stack Blocks
- Boolean Blocks
- Reporter Blocks
- C Blocks
- Cap Blocks

Q. What is a sensing block?

Q. What is a variable?

Q. What are conditional blocks?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 107 and 108 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 108 and 109 in the main course book to imbibe Critical Thinking 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 109 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 develop the story of Rabbit and Tortoise in Scratch.

9 Concept of Smart Living

Teaching Objectives

Students will learn about

- Smart Homes
- Devices Used in Smart Homes

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 110 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.

Start the chapter with an introduction of variety of gadgets used in our homes to make the life easier.

Explain the meaning and purpose of Smart Homes to the students. Also, tell them how these devices are beneficial like:

- Power Saver
- Protect Home and its Belongings
- One Point Access
- Remote Control
- Protection
- Increased energy Efficient
- Interactive Home
- Flexibility
- Climate Control

Share the devices which are used in smart homes to the students:

- Smart TV
- Smart Cameras
- Smart Lighting
- Video Doorbells
- Smart Smoke Detectors
- Smart Speakers

Relate all these to their daily life routine.

Extension

Ask the students some oral questions based on this chapter.

Q. What are smart devices?

Q. What is the concept of smart home?

Q. What are the benefits of smart home?

Q. Define the following:

- Smart TV
- Video Doorbells
- Smart Cameras
- Smart Smoke Detectors
- Smart Lighting
- Smart Speakers

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 114 and 115 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 115 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 116 in the main course book. This will enhance the ability of the students and serve as a Media Literacy activity.

Suggested Activity

Ask the students to search more smart devices in Google and make a list of them.