TOUCHPAD

PLUS Ver. 3.2

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

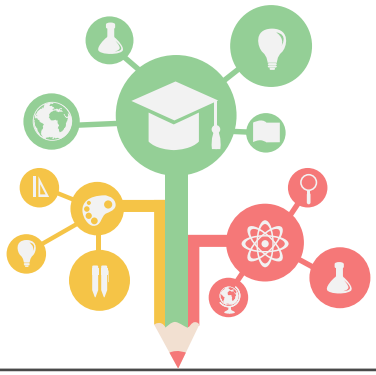
Age 11 - 20 Years

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.

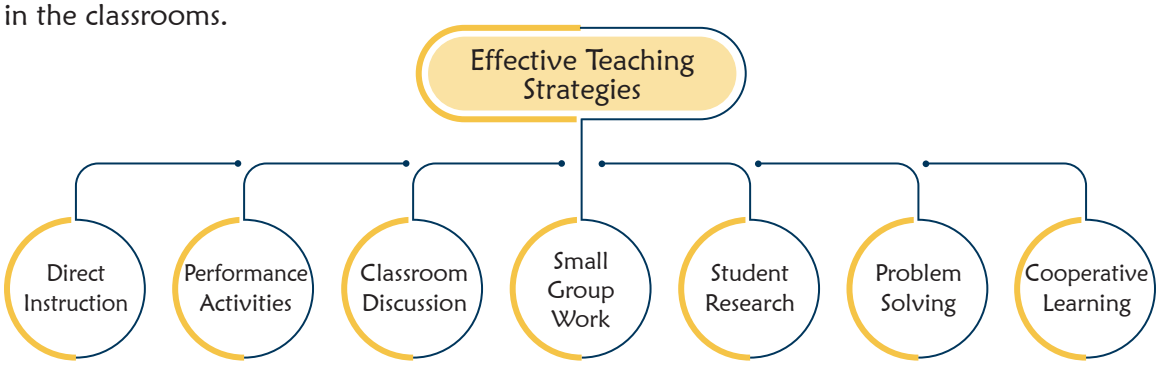
After the class

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

"Knowing yourself is the beginning of all wisdom."

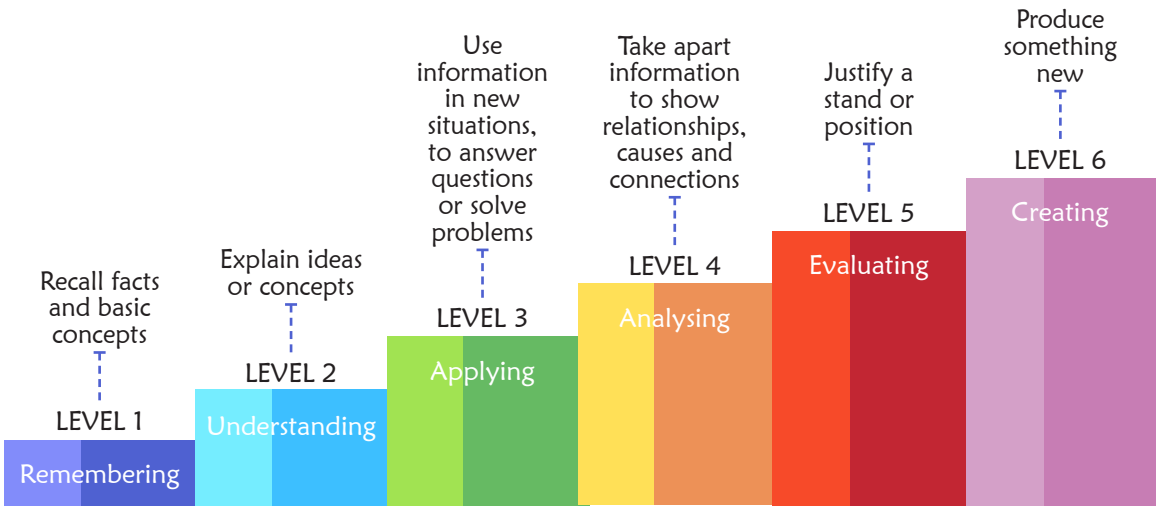
Teaching Strategies

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 Number System?
- Number System Conversion
- Operations on Binary Numbers

Number of Periods	
Theory	Practical
2	1

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 just like decimal number system:

- Add one more bullet 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 to binary conversion
- Binary to decimal conversion
- Octal to decimal conversion
- Hexadecimal to decimal conversion

Share the rules of binary addition, and subtraction and multiplication.

Show to the students the method of carrying out mathematical operations on binary numbers and verifying the results by corresponding conversions to decimal numbers.

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a numbers 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 exercises given on Pages 14 to 16 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler and Hands-On given on Pages 16 and 17 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 17 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy and Information Literacy activity.

Suggested Activity

1. Convert the last four digits of your parents' 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 Formulas, Functions and Charts in Calc

Teaching Objectives

Students will learn about

- Formula Basics
- Order of Operation
- Cell Referencing in Formulas and its Types
- Functions

✦ Charts in Calc

Number of Periods	
Theory	Practical
3	3

Teaching Plan

While teaching this chapter, tell the students that Calc has some built-in formulas called functions.

Share with the students the basic elements and rules of writing a formula in Calc.

Show to them the different methods of copying and pasting a formula.

Explain the students about the order of operation in Calc.

Introduce cell referencing as use of cell address while writing a formula.

Make them understand the different types of cell referencing and the difference between the three – Absolute, Relative and Mixed.

Tell the students about rules for using Functions and different categories of Functions in Excel.

Demonstrate the use of mathematical functions – SUM, PRODUCT, MOD, SQRT and INT. POWER.

Demonstrate the use of text functions – CONCATENATE, LEFT, RIGHT, Mid, LEN, UPPER and LOWER.

Demonstrate the use of statistical functions – MAX, MIN, AVERAGE and COUNT.

Demonstrate the use of date functions – TODAY, MONTH, YEAR and DAY

Show the different components of chart in Calc.

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

Demonstrate the steps of:

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

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What are Functions in Calc?

Q. Name the different elements of a formula in Calc.

Q. What is the order of operation followed in Calc?

Q. Define cell referencing.

Q. Name some important categories of Functions.

Q. State the purpose of SUM / SQRT / MOD / COUNT / LEN / RIGHT / TODAY / MAX Function.

Q. What is the syntax of PRODUCT / INT / POWER / CONCATENATE / LEFT / UPPER / LOWER / MIN / AVERAGE function?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 29 to 31 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Pages 31 and 32 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 32 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 enter their last mark sheet in Calc and calculate total marks scored, average marks scored, maximum and minimum marks amongst all the marks and the number of subjects using various Functions used in Calc.

3 More on Calc

Teaching Objectives

Students will learn about

- Sorting Data
- Conditional Formatting
- Printing a Worksheet
- Filtering Data
- Goal Seek

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that Calc provides easy options for sorting data and highlighting the required information in a worksheet.

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.

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.

Tell the students about basic difference between Filtering (unwanted information gets hidden) and Conditional Formatting (required information gets highlighted).

Explain the various criteria detailed under Conditional Formatting.

Demonstrate the steps involved in applying conditional formatting on a worksheet.\

Share with the concept and use of Goal Seek feature.

Make the students recall that a printout is a hard copy of the information we see on the monitor.

Show to the students the steps involved in the printing of a worksheet.

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. Define sorting.

Q. What are filters?

Q. What is Goal Seek feature?

Q. How can filters be removed in a worksheet?

Q. What do you understand by conditional formatting feature?

Q. How is conditional formatting different from filtering data?

Q. When is the conditional formatting criteria Data Bars / Icon Sets used?

Q. What is a printout?

Q. What are the steps to print a worksheet?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 41 to 43 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Pages 43 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 44 in the main course book. This will enhance the ability of the students and serve as a Critical Thinking and Technology Literacy activity.

Suggested Activity

1. 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.
2. 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.

4 Using Tools in Tupi 2D

Teaching Objectives

Students will learn about

- Pencil Tool
- Polyline Tool
- Object Selection Tool
- Fill Tool
- Ink Tool
- Brushes Tool
- Node Selection Tool
- Library

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that the various tools present in the Tools panel are quite helpful in creating drawings in Tupi 2D.

Demonstrate the use of some important drawing tools along with some of their important properties to be defined in Tupi 2D covering:

- Pencil Tool – used to draw freehand lines and curves. The properties to be defined are Stroke Color, Stroke Height, Stroke Style and Cap.
- Ink Tool – used to draw in different colors. The properties to be defined are Stroke Color, Stroke Height, Stroke Style and Cap.
- PolyLine Tool – used to draw closed shapes like triangles and those having five or more sides. The properties to be defined are Style and Number of Sides.
- Shapes tool – used to draw a closed rectangle, ellipse or a line.
- Object Selection Tool – used to select parts or whole objects from the stage.
- Node Selection Tool – helps to reorder the nodes which are created while drawing the object.
- Paint bucket tool – used to fill colour in closed shapes. The properties to be defined are Fill Color.

Explain the use of the Library in Tupi 2D.

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the use of Tools panel?

Q. What is the use of Pencil / Fill / Object Selection tools?

Q. What are the different properties that need to be defined for PolyLine / Brushes / Ink tools?

Q. Which key is pressed to draw a square or a circle?

Q. What is the use of Library?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 51 and 52 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Pages 52 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 53 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 drawing of robot in Tupi 2D using various tools available in the Tools panel.

5 Animations in Tupi 2D

Teaching Objectives

Students will learn about

- Exposure Sheet
- Layers
- Frames
- Tweening Tool

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that Tupi 2D is an authoring tool to create games, applications, simple animations, etc.

Tell the students about the exposure sheet and how to use it.

Tell the students about Layers.

Introduce the concept of frames in Tupi 2D.

Explain the concept of animation using tweens.

Show the steps to create various types of tweens covering all types of Tween.

Tell the students about tweens and different types of tweens –

- Motion Tween
- Rotation Tween
- Scale Tween
- Shear Tween
- Opacity Tween
- Coloring Tween

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Tupi 2D used for?

Q. What do you understand by Layers?

Q. How are layers useful?

Q. What is the difference between a frame and a keyframe?

Q. Define Tween.

Q. What is Motion Guide Tweening?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 61 and 62 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Page 63 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 63 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 animation where two cars are coming on a road from opposite directions and crash in the center.

6 Introduction to GIMP

Teaching Objectives

Students will learn about

- Starting GIMP
- Components of GIMP Window
- Opening an Image for Editing
- Using Tools
- Creating a New File
- Saving a File

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that GIMP is powerful graphics software used for image creation and editing.

Demonstrate to the students the steps to start GIMP.

Share with the students the features of GIMP.

Familiarize the students with the components of GIMP covering Menu Bar, Workspace, Toolbox, Foreground/Background colors, Tool options, Image window, Ruler, Layers palette and Brushes/ Patterns/Fonts tabs.

Show to the students the steps involved in creating a new file and the various settings to be made while creating a file.

Tell the students the process to:

- Open an image for editing
- Save a file.

Show the Photoshop toolbar to the students and share with them the various tools present on it.

Explain to the students the steps involved in the use of:

- Rectangle Select Tool
- Ellipse Select Tool
- Free Select Tool
- Fuzzy Select Tool
- Crop Tool
- Paintbrush Tool
- Zoom Tool
- Text Tool
- Gradient Fill Tool

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is GIMP?

Q. Name the various components of GIMP interface.

Q. State the features of GIMP.

Q. What does RGB and CMYK color modes stand for?

Q. Name some important tools of GIMP toolbar.

Q. State the use of Rectangular Marquee Tool / Lasso Tool / Crop Tool / Eraser tool / Rectangle Tool / etc.

Q. What are the different gradient types available in Gradient Tool?

Q. What is the difference between Rectangle Tool and Rectangular Marquee Tool?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 77 to 79 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Page 79 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session 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

Ask the students to draw a similar drawing in Adobe Photoshop CS6 using various tools from the toolbar.

7 More on HTML

Teaching Objectives

Students will learn about:

- HTML
- Text Properties
- Background Properties
- Font Properties
- Margin Properties

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students about HTML.

Introduce HTML to the students using examples.

Explain to the students the HTML tags and attributes which are:

- <HTML> tag
- <HEAD> tag
- <Title> tag
- <BODY> tag
- <Hn> tag
- <P> tag
-
 tag
- <HR> tag
- <SUP> tag
- <SUB> tag

Demonstrate to the students the steps involved in using these tags using programs and syntax.

Introduce the students with the text Properties and show the how to use these:

Also show them a code to use all these properties.

Demonstrate the students with the background properties and show them how to use these:

Also show them a code to use all these properties.

Tell the students about how to change the Font properties with the help of a program.

Demonstrate the students with the margin properties and show them how to use them with the help of a program.

Ensure that the scope of Teacher's Truf given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is HTML?

Q. What is the function of:

- <HTML> tag
- <HEAD> tag
- <Title> tag
- <BODY> tag
- <Hn> tag
- <P> tag
-
 tag
- <HR> tag
- <SUP> tag
- <SUB> tag

Q. Define following text properties:

a. color
b. text-align
c. text-indent
d. text-decoration
e. text-transform

Q. Define the following background properties:

a. background-color
b. background-image
c. background-repeat

Q. Define the following font properties:

a. font-family
b. font-size
c. font-style

Q. Define margin properties.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 88 and 89 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Pages 89 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 90 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy and Creativity.

Suggested Activity

Ask the student to create a web page using all the HTML Tags taught in this chapter.

8 Lists and Tables in HTML

Teaching Objectives

Students will learn about

- Creating Lists
- Creating Tables

Number of Periods	
Theory	Practical
2	3

Teaching Plan

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

Introduce list as 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. (See Suggested Activity 1 also).

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

Tell the students that all the attributes except ROWSPAN and COLSPAN are taken up by <TR> tag also.

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

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

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 tags 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 exercises given on Pages 100 to 102 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Page 102 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 103 in the main course book. This will enhance the ability of the students and serve as a Technology Literacy and Creativity activity.

Suggested Activity

Ask the students to create:

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

9 Algorithmic Intelligence

Teaching Objectives

Students will learn about

- Information Processing
- Conditions in a Program

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that 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 most basic form of data that a computer can directly interpret.

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.

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

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 exercises given on Pages 107 and 108 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Page 109 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 109 in the main course book. This will enhance the ability of the students and serve as a Critical Thinking and Technology Literacy activity.

Suggested Activity

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

10 Conditional Statement in Python

Teaching Objectives

Students will learn about

- Decision Making Statements
- The if Statement
- The if...else Statement
- Nested if Statement
- The if...elif...else Ladder

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students about Python has some decision making statements,

Explain to the students about the Decision Making Statements and the options available in Python.

Demonstrate to the students the steps involved in using these statements using programs and syntax are:

- if statement

- if...else statement
- Nested if statement
- if...elif...else ladder

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What the names of decision making statements?

Q. What is the function of if statement?

Q. What is the function of if...else statement?

Q. What is the function of nested if statement?

Q. What is the function of if...elif...else statement?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 118 to 121 in the main course book as Checkpoint. Tell the students to try different activities under Mind Boggler given on Page 122 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 122 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 make a program in Python to create a food menu using looping decision making statements.

11 AI for SDG

Teaching Objectives

Students will learn about

- Sustainable Development Goals

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Start the chapter by giving an introduction of SDGs to the students with the help of using real time examples.

Tell the students about Sustainable Development Goals and answer these queries regarding it:

What are SDGs?

How they are introduced?

Why they are introduced?

Who introduced SDGs?

Briefly explain all the SDGs in detail along with their motives and purpose:

Ensure that the scope of Teacher's Notes given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What are SDGs?

Q. How they are introduced?

Q. Why they are introduced?

Q. Who introduced SDGs?

Q. Define the following:

(a) Goal 1	(b) Goal 2	(c) Goal 3
(d) Goal 4	(e) Goal 5	(f) Goal 6
(g) Goal 7	(h) Goal 8	(i) Goal 9
(j) Goal 10	(k) Goal 11	(l) Goal 12
(m) Goal 13	(n) Goal 14	(o) Goal 15
(p) Goal 16	(q) Goal 17	

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 128 to 130 in the main course book as Checkpoint.

Take the students to the computer lab and let them practice the activity given in the Lab Session section on Page 130 in the main course book. This will enhance the ability of the students and serve as a Flexibility and Information Literacy activity.

Suggested Activity

Ask the students to research more about SDGs and ask them to create a poster on SDGs.