7

TOUCHPAD®

PLUS Ver. 2.1

Teacher's Manual

Extended Support for Teachers

ORANGE™
www.orangeeducation.in
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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 to identify and understand how children differ in different age groups.

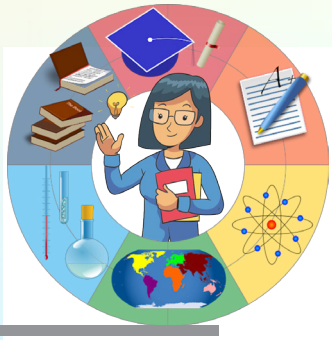
Age 5 - 8 Years	
Physical	• First permanent tooth erupts • Shows mature throwing and catching patterns • Writing is now smaller and more readable • Drawings are now more detailed, organised and have a sense of depth
Cognitive	• Attention continues to improve, becomes more selective and adaptable • Recall, 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 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.



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 needs 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:

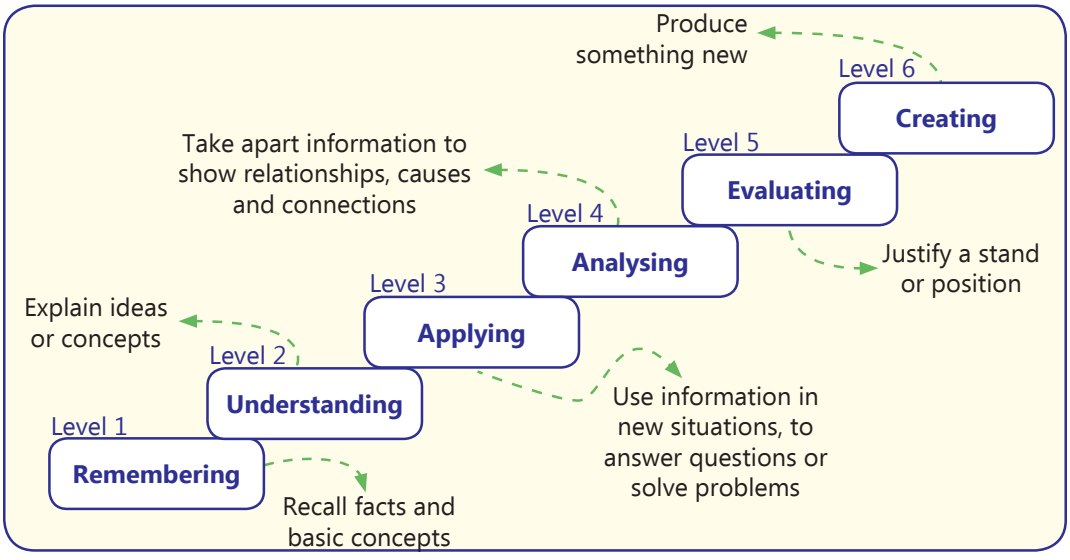
Reflect on what worked well and why. If needed, revise the lesson plan.

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.

Class 7

LESSON PLAN

Touchpad Ver 2.1

1. Number System

Teaching Objectives

Students will learn about

- ☞ Number System
- ☞ Decimal to Binary Conversion
- ☞ Binary to Decimal Conversion
- ☞ Operations on Binary Numbers

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 7 of the main course book.

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 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.

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

Show to the students the method of carrying out mathematical operations on binary numbers and

verifying the results by corresponding conversions to decimal numbers

Ask the student to solve the exercise Let's Catch Up given on page number 11, 12 and 13.

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 exercises given on Pages 14 and 15 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Pages 15 and 16 in the main course book.

Let the students solve the questions given in the Tech Practice section on Page 16. This will enhance the ability of the students and serve as a Subject Enrichment 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. Charts in Excel 2016

Teaching Objectives

Students will learn about

- ☞ Components of a Chart
- ☞ Types of Charts in Excel
- ☞ Creating a Chart
- ☞ Change Chart Type

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 17 of the main course book.

While teaching this chapter, tell the students that Excel 2016 has 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
- 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.

Ask the student to solve the exercise Let's Catch Up given on page number 19.

Extension

Ask the students some oral questions based on this chapter.

Q. Define charts in Excel.

Q. What is a legend?

Q. What are gridlines in a chart?

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

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

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 22 and 23 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Pages 23 and 24 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 24 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment 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.

3. Advanced Features in Excel

Teaching Objectives

Students will learn about

- ☞ Sorting data
- ☞ Filtering data
- ☞ Conditional 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 26 of the main course book.

While teaching this chapter, tell the students that Excel 2016 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.

Explain the concept and use of Custom Sort feature.

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

Show 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.

Ask the student to solve the exercise Let's Catch Up given on page number 28.

Extension

Ask the students some oral questions based on this chapter.

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?

Q. How is conditional formatting different from filtering data?

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

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 32 and 33 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Page 33 in the main course book.

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 Subject Enrichment 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. More 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

Number of Periods	
Theory	Practical
2	3

Teaching Plan

efore starting the chapter, ask the students to solve the question in Let's Plug-In given on Page 34 of the main course book.

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

Explain the concept of animation using tweens.

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.

Ask the student to solve the exercise Let's Catch Up given on page number 37.

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 exercises given on Page 45 and 46 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve, Let's Explore and Let's Get Better given on Page 46 and 47 in the main course book.

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 Subject Enrichment 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.

5. Internet Services

Teaching Objectives

Students will learn about

- Social Networking
- Skype
- E-Banking
- Newsgroup
- Blogging
- Cloud Computing
- RSS (Really Simple Syndication)
- Podcasting

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 51 of the main course book.

While teaching this chapter, brief the students about Internet.

Introduce Social Networking 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 Twitter in detail and also tell the steps involved in creating account on Twitter.

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

Explain the Internet services like:

- E-Banking
- Blogging
- OneDrive
- Podcasting
- Newsgroup
- Cloud Computing
- RSS

Tell the students the difference between a blog and a website.

Explain to the students the benefits and risks of using cloud computing.

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?
Q. What is OneDrive?
Q. What is RSS?
Q. What is Podcasting?

Evaluation

After explaining the chapter, let the students do the exercises given on Page 65 and 66 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve, Let's Explore and Let's Get Better given on Page 66 and 67 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 67 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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

6. App Development

Teaching Objectives

Students will learn about

- What is an App?
- Defining the Android and iOS
- Types of Mobile Apps
- Categories of Apps
- Downloading and Installing the App
- Developing an App

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 68 of the main course book.

While teaching this chapter, brief the students about smartphones and technology.

Tell the students that an App is a software program primarily developed for hand-held smart devices such as mobile and tablet.

Explain to the students the difference between the Android and iOS in detail.

Demonstrate the types of Mobile Apps to the students with example, that are:

- Native Apps
- Web Apps
- Hybrid Apps

Explain the following categories of Apps to the students along with the examples:

- Gaming Apps
- Productivity Apps
- Entertainment Apps
- Utility Apps
- Educational Apps
- Social Networking Apps
- Communication Apps
- E-Commerce Apps

Explain to the students the steps involved in downloading and installing the Apps.

Explain to the students the steps involved in developing an App.

Ask the student to solve the exercise Let's Catch Up given on page number 69, 70 and 79.

Extension

Ask the students some oral questions based on this chapter.

Q. What is an App?

Q. Define the following:

- Gaming Apps
- Productivity Apps
- Entertainment Apps
- Utility Apps
- Educational Apps
- Social Networking Apps
- Communication Apps
- E-Commerce Apps

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 80 and 81 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve, Let's Explore and Let's Get Better given on Page 81 and 82 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 82 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to develop an App for reciting tables with your help.

7. More on HTML

Teaching Objectives

Students will learn about

- ☞ HTML
- ☞ Text Properties + Background Properties
  - Font Properties +
  - Margin Properties
- ☞ HTML Tags and Attributes

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 83 of the main course book.

While teaching this chapter, tell the students about HTML and Internet.

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
- <PRE> tag
- <B> tag
- <I> tag
- <U> tag
- <SUP> tag
- <SUB> tag
- <FONT> tag
- <CENTER> tag

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

Tell the students about HTML and attributes used in making web pages.

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 control multiple pages using CSS 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.

Ask the student to solve the exercise Let's Catch Up given on page number 88.

Ensure that the scope of Teacher's Corner 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
- <BODY> tag
-
 tag
- <B> tag
- <SUP> tag
- <CENTER> tag
- <HEAD> tag
- <Hn> tag
- <HR> tag
- <I> tag
- <SUB> tag
- <Title> tag
- <P> tag
- <PRE> tag
- <U> tag
- <FONT> 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 93 and 94 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve, Let's Explore and Let's Get Better given on Page 94 and 95 in the main course book.

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 Subject Enrichment activity.

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

Before starting the chapter, ask the students to solve the question in Let's Plug-In given on Page 96 of the main course book.

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>.

Explain the use of different attributes of <TABLE> tag covering BORDER, BORDERCOLOR, FRAMES, BGCOLOR, BACKGROUND, HEIGHT, WIDTH, CELLSPACING and CELLPADDING.

Discuss the use of different attributes of <TD> tag explaining about ALIGN, BGCOLOR, WIDTH, ROWSPAN, COLSPAN and VALIGN attributes.

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. (See Suggested Activity 2 also).

Ask the student to solve the exercise Let's Catch Up given on page number 101 and 107.

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 108 and 109 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Pages 109 and 110 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 110 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create:

- List of favourite games of 10 friends.

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

9. Conditional Statements in Python

Teaching Objectives

Students will learn about

☞ Decision Making Statements

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 112 of the main course book.

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

Ask the student to solve the exercise Let's Catch Up given on page number 116.

Extension

Ask the students some oral questions based on this chapter.

Q. Write 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 120 and 121 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Pages 121 and 122 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 122 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to make a program in Python to create a food menu using looping decision making statements

10. AI for SDGs

Teaching Objectives

Students will learn about

- ☞ Students will learn about
- ☞ Sustainable Development Goals

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to read the conversation given in page number 123 to understand the recap of the topic.

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:

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
Goal 2
Goal 3
Goal 4
Goal 5
Goal 6
Goal 7
Goal 8

Goal 9
Goal 10
Goal 11
Goal 12
Goal 13
Goal 14
Goal 15
Goal 16

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 130 and 131 in the main course book as Test Your Skills. Tell the students to try sections under Fun Zone– Let's Solve and Let's Explore given on Page 131 in the main course book.

Take the students to the computer lab and let them practice the activity given in the Tech Practice section on Page 132 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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