7

TOUCHPAD®

PLUS Ver. 2.0

Teacher's Manual

Extended Support for Teachers

ORANGE™
www.orangeeducation.in
www.thetouchpad.com

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

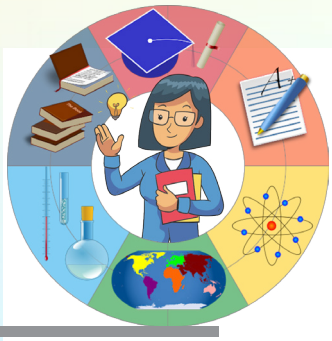
"If you cannot do great things, do small things in a great way."

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.

"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 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.

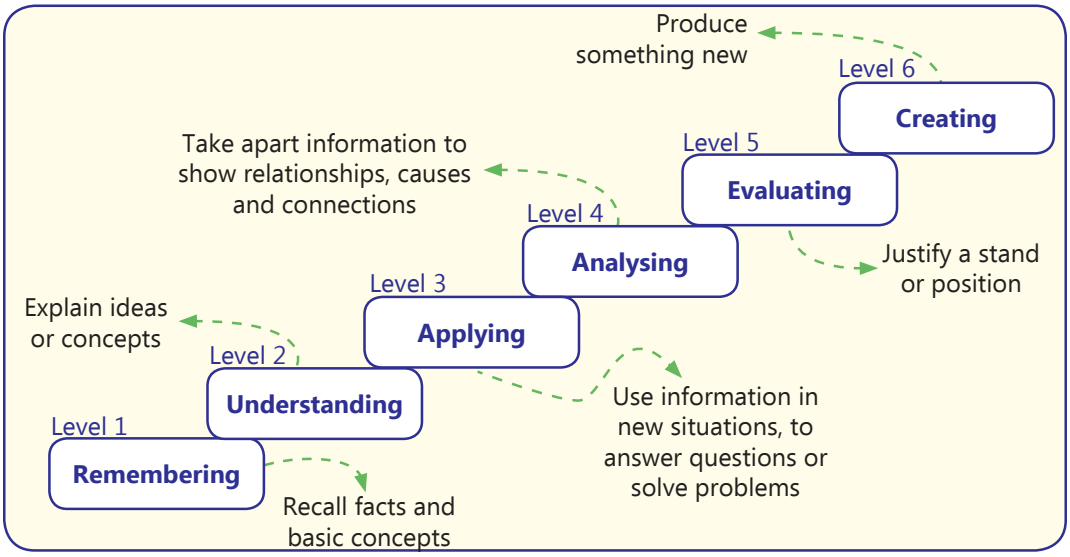
"Knowing yourself is the beginning of all wisdom."

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."

LESSON PLAN

Touchpad PLUS Ver 2.0

Class-7

1. Number System

Teaching Objectives

Students will learn about

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

Teaching Plan

Number of Periods: 3

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 Page 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 Page 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

Teaching Plan

Number of periods: 5

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 Page 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 Page 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

Teaching Plan

Number of periods: 4

Before starting the chapter, ask the students to solve the question in Let's Plug-In given on Page 25 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 27.

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 Page 31 and 32 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 32 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 32 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. Looping in Small Basic

Teaching Objectives

Students will learn about

- ☞ Looping
- ☞ For...EndFor Statement
- ☞ Sample Programs Using For...EndFor Statement
- ☞ While...EndWhile Statement
- ☞ Sample Programs using While...EndWhile Statement
- ☞ Infinite Loop
- ☞ Sub Routine

Teaching Plan

Number of periods: 5

Before 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 small basic has some statements and functions to run programs.

Introduce Looping to the students with the help of examples.

Tell the students about FOR...ENDFOR statements with syntax using appropriate example or programs.

Show the students the some programs for FOR...ENDFOR statements.

Tell the students about WHILE...ENDWHILE statements with syntax using appropriate example or programs.

Show the students the some programs for WHILE...ENDWHILE statements.

Tell the students about INFINITE LOOP statements with syntax using appropriate example or programs.

Tell the students about SUB ROUTINE statements with syntax using appropriate example or programs.

Ask the student to solve the exercise Let's Catch Up given on page number 39.

Extension

Ask the students some oral questions based on this chapter.

Q. What is looping?

Q. Explain the following with example:

a. FOR...ENDFOR
b. WHILE...ENDWHILE
c. INFINITE LOOP
d. SUB ROUTINE

Evaluation

After explaining the chapter, let the students do the exercises given on Page 41 and 42 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 42 and 43 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 43 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 programs using Looping.

5. Graphics in Small Basic

Teaching Objectives

Students will learn about

- ☞ The Graphics Window
- ☞ Methods of Graphics Window
- ☞ Graphics Window Properties
- ☞ Graphics Window Events

Teaching Plan

Number of periods: 4

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

While teaching this chapter, tell the students that Small Basic has a Graphics Window which is used to draw colorful objects, shapes and lines.

Tell the students about the Graphics Window and make them familiarize them with the actions they can perform like:

- Displaying the Graphics Window
- Setting up the Graphics Window

Demonstrate to the students the methods of Graphics Window with its syntax and description. Also show some programs to the students along with the solution and output.

Explain to the students the properties of the Graphics Window along with the syntax and description in brief. Also show some solved programs to the students.

Tell the students about the Graphics Window Events along with the description and syntax with the help of solved programs with output too.

Ask the student to solve the exercise Let's Catch Up given on page number 48.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a Graphics Window?

Q. How can you display the Graphics Window?

Q. How can you set up the Graphics Window?

Q. What are the methods of Graphics Window?

Q. How many properties are there in Graphics Window?

Q. What are Graphics Window Events?

Evaluation

After explaining the chapter, let the students do the exercises given on Page 52 and 53 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 53 and 54 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 54 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 write a program in Small Basic to convert Metres to Kilometres.

6. 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

Teaching Plan

Number of periods: 4

efore starting the chapter, ask the students to solve the question in Let's Plug-In given on Page 58 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 61.

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 69 and 70 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 70 and 71 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 71 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.

7. Introduction to Python

Teaching Objectives

Students will learn about

- ☞ Python
- ☞ Features of Python
- ☞ Installing Python
- ☞ Programming in Python
- ☞ Input and Output
- ☞ Variables in Python
- ☞ Data Types
- ☞ Comments in Python
- ☞ Operators
- ☞ Precedence of Operators
- ☞ Sample Programs

Teaching Plan

Number of periods: 4

Before starting the chapter, ask the students to solve the question in Let's Plug-In given on Page 72 of the main course book.

While teaching this chapter, tell the students that Python is a popular high-level programming language and it is a powerful language used for general-purpose programming.

Introduce the students with Python and its use.

Share with the students the features of Python briefly that it is:

- Easy to code
- Object-oriented
- Interpreted language
- Open-source language
- Integrated and Extensible language
- Dynamically Typed language

Demonstrate the students the steps to install Python.

Tell the students that Programming in Python have two basic modes:

- Script Mode
- Interactive Mode

Show to the students the components of Python window.

Share with the students the working in Script mode and demonstrate the steps involved in the four step process , i.e.,

- Creating a new file
- Writing a program
- Saving Python program
- Running a Python program

Explain to the students the Input and Output functions in a Python program with syntax and pictures.

Tell the students the Variables in Python along with the declaring and initializing a variable with syntax.

Explain to the students the Data Types and Comments in Python with syntax.

Show the students the proper use of Single Line and Multiple-line comment in Python.

Explain to the students about Operators in Python and its types along with the syntax and description of that are:

- Arithmetic Operators
- Assignment Operators
- Logical Operators
- Relational Operators

Tell the students about the Precedence of Operators with the help of sample programs in Python.

Ask the student to solve the exercise Let's Catch Up given on page number 78.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Python?

Q. What are features of Python?

Q. What are the steps to install Python?

Q. What are the two modes of programming in Python?

Q. What is the purpose of input() function?

Q. What is the purpose of print() function?

Q. What are variables in Python?

Q. What are comments in Python?

Q. What are operators in Python?

Evaluation

After explaining the chapter, let the students do the exercises given on Page 86 and 87 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 87 and 88 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 88 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 a program in Python. Tell them to use all the functions taught in this chapter.

8. Conditional Statements in Python

Teaching Objectives

Students will learn about

☞ Decision Making Statements

Teaching Plan

Number of periods: 4

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.

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

Ask the student to solve the exercise Let's Catch Up given on page number 93.

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 Page 97 and 98 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 98 and 99 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 99 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.

9. More on HTML

Teaching Objectives

Students will learn about

- ☞ HTML
- ☞ HTML Tags and Attributes

Teaching Plan

Number of periods: 2

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

While teaching this chapter, 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.

Ask the student to solve the exercise Let's Catch Up given on page number 104.

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
- <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

Evaluation

After explaining the chapter, let the students do the exercises given on Page 109 and 110 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 110 and 111 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 111 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.

10. Internet Services

Teaching Objectives

Students will learn about

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

Teaching Plan

Number of periods: 2

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, 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
- Newsgroup
- Blogging
- Cloud Computing
- OneDrive
- RSS
- Podcasting

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 126 and 127 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 127 and 128 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 128 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.