3

TRACKPAD®

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.

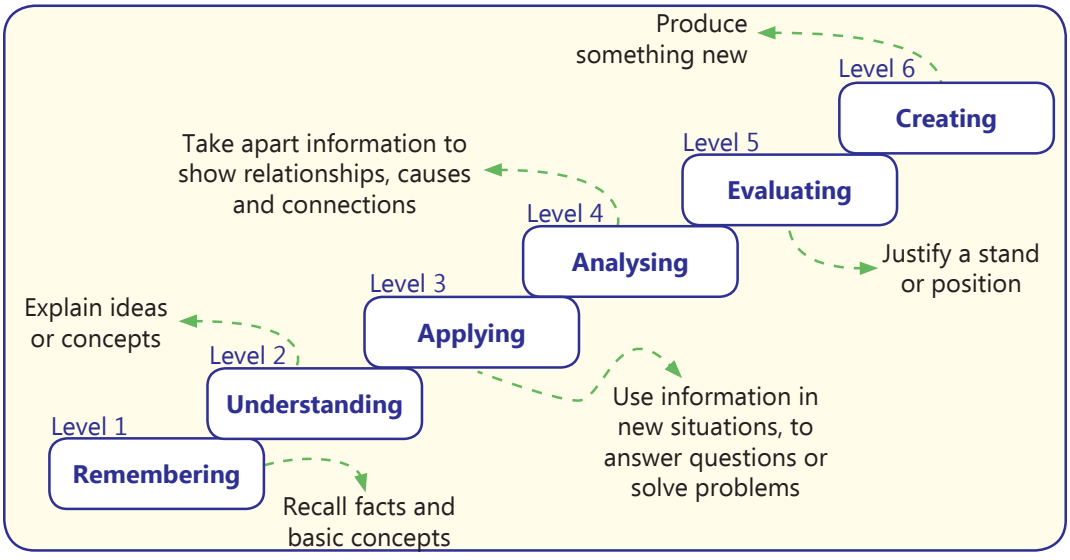
"Knowing yourself is the beginning of all wisdom."

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."

Class 3

LESSON PLAN

Trackpad Ver 2.0

1. Hardware and Software

Teaching Objectives

Students will learn about

- Features of a Computer
- Parts of a Computer
- Software
- Working of a Computer
- Hardware

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 7 to understand the recap of the topic.

Tell the students that the parts of the computer that can be touched are called hardware.

Tell them about Computer Hardware and how it is divided into four groups.

Tell them that a computer works through Input-Process-Output (IPO) cycle.

Explain the meaning of the terms input and input devices.

Tell them how keyboard, mouse and scanner are used to input data into a computer.

Explain the meaning of the terms process, processor and processing.

Tell them how CPU processes data with the help of Arithmetic Logic Unit (ALU) – for arithmetic and logical calculations, Memory Unit (MU) – for storing data and instructions and Control Unit (CU) – for coordinating between all parts of the CPU.

Explain the meaning of the terms output and output devices.

Make the students understand the meaning of the term Storage.

Tell the students the devices that help us to enter data into the computer and give orders are called input devices.

Explain some of the input devices are keyboard, mouse, scanner, joystick, touchscreen, microphone, web camera, light pen, etc.

Tell the students the devices that show us the result of processing done by the CPU are called output devices.

Explain that the result can be in any of these forms: display on the monitor, print by the printer, sound from the speakers.

Demonstrate to them the difference between hard copy and soft copy.

Tell to the students about computer software and its types.

Explain to the students the difference between Application software and System software.

Ask the students to solve the exercise **Quiz Bee** given on page number 11.

Ask the students to solve the exercise **I Know** given on page number 15.

Extension

Ask the students some oral questions based on this chapter.

Q. What are input devices?

Q. Name some input devices.

Q. What is a Keyboard / Mouse / Scanner / Joystick / Touchscreen / Microphone / Web Camera and Light Pen?

Q. What are output devices?

Q. What is the difference between hard copy and soft copy?

Q. Name some output devices.

Q. What is a Monitor / Speakers / Headphones / Printer?

Q. Name different types of Printers.

Q. What is a Plotter / Projector and Smartboard?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 15, 16 and 17 in the main course book as Assess Yourself.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Page 18 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 collect information about some more input/output devices and the purpose for which they are used.

2. Windows 10 – An Introduction

Teaching Objectives

Students will learn about

- Windows 10
- Icons
- Desktop Background
- Desktop
- Taskbar

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 19 to understand the recap of the topic.

While teaching this chapter, tell the students that operating system is one of the most important software as without this software we cannot use our computer at all.

Give a brief introduction of Microsoft Windows.

Tell the students the about the useful features of Windows 10.

Demonstrate to the students the steps to start Windows 10.

Make the students aware about the concept of desktop.

Familiarize the students with some important icons on the desktop like Computer, Recycle Bin and Network.

Demonstrate to the students the steps to sort icons on the desktop.

Show to the students that how some or all of the icons on the desktop can be hidden.

Introduce the students to the taskbar and its components covering Start button, Opened program icons and Notification Area.

Demonstrate to the students the steps involved in changing the position of the taskbar.

Explain to the students the use of the 'Computer' icon.

Tell the students that the mouse pointer changes its shape on the basis of our actions performed.

Show to the students some commonly taken shapes by the mouse pointer.

Demonstrate to the students the steps to change desktop background.

Show the students the correct method of shutting down Windows 10.

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

Ask the students to solve the exercise **Quiz Bee** given on page number 22.

Ask the students to solve the exercise **I Know** given on page number 26.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the importance of an operating system?

Q. Give examples of some popular operating systems.

Q. Which company developed Windows operating system?

Q. What are the important features of Windows 10?

Q. What is desktop?

Q. Define icons.

Q. What is taskbar?

Q. Can the position of the taskbar be changed?

Q. When does the mouse pointer change to Double-headed Arrow / I Beam / Four-headed Arrow?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 27 and 28 in the main course book as Assess Yourself.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 29 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 draw the various shapes of a mouse pointer and the action being performed at that time on an A3 sheet of paper.

3. Word 2016 – An Introduction

Teaching Objectives

Students will learn about

- Uses of Word 2016
- Components of Word 2016
- Saving a Document
- Printing a Document
- Starting Word 2016
- Creating a new Document
- Opening an Existing Document
- Closing a Document

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 31 to understand the recap of the topic.

the category of application software.

Make the students aware of the various uses of MS Word 2016.

Demonstrate to the students the steps involved in starting MS Word 2016.

Show the students the various components of MS Word 2016 window covering Title Bar, Quick Access Toolbar, Ribbon, Rulers, Horizontal and Vertical Scroll Bars, Text / Document Area and Status Bar.

Familiarize the students that while working on MS Word, some frequently used keys other than alphabet and number keys are Spacebar, Enter, Delete and Backspace.

Demonstrate to the students the steps involved in:

- Creating a new Word file
- Typing text
- Saving a document
- Opening a saved document
- Printing a document
- Closing MS Word

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

Ask the students to solve the exercise **Quiz Bee** given on page number 35.

Ask the students to solve the exercise **I Know** given on page number 36.

Extension

Ask the students some oral questions based on this chapter.

Q. What is MS Word?

Q. What are the various uses of MS Word 2016?

Q. Name some important components of MS Word 2016 window.

Q. Which company developed MS Word?

Q. What are the shortcut keys to open / save / print a document?

Q. What are the various ways in which the user can exit from MS Word 2016?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 38 and 39 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 40.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 39 and 40 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 Word document on Myself. The students

4. Editing Text in Word 2016

Teaching Objectives

Students will learn about

- ☞ Inserting Text
- ☞ Deleting Text
- ☞ Moving Text
- ☞ Selecting Text
- ☞ Copying Text
- ☞ Undo and Redo

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 41 to understand the recap of the topic.

Share with the students that to edit text, first it needs to be selected.

Tell the students about selecting text with the help of mouse and with the help of keyboard.

Show to the students that text can simply be inserted by moving the cursor to the point where text is to be entered and start typing.

Introduce Undo as a feature used to cancel the command and Redo as a feature to reverse the action of Undo.

Familiarize the students with the icons and the shortcut keys to Undo and Redo actions.

Introduce Cutting as moving the text from one place to another and Copying as duplicating text at another place also.

Demonstrate the steps to Cut-Paste and Copy-Paste text in a Word document.

Share with the students the default font and font size in a Word 2016 document.

Demonstrate to the students the method of changing font and font size.

Tell the students the steps involved in changing color of the selected text in the document.

Share with the students about the Bold, Italic and Underline features and the method of applying these features to the text.

Demonstrate to the students the method of:

- Applying text effects
- Changing text alignment
- Applying borders

- Applying artistic borders
- Applying shading

Introduce bullets as small symbol used to mark items in a list.

Show to the students the method of adding bullets or numbers to the items in a list.

Ask the students to solve the exercise **Quiz Bee** given on page number 43.

Ask the students to solve the exercise **I Know** given on page number 45.

Extension

Ask the students some oral questions based on this chapter.

Q. What is editing?

Q. How is letter / word / text / paragraph selected using a keyboard?

Q. Which key is used to delete a letter?

Q. What is the use of Undo command?

Q. When is Redo command used?

Q. What is the difference between cutting and copying text?

Q. Define formatting a text.

Q. What is the default font / font size of text in a document?

Q. What is the difference between bold and italic format of the text?

Q. What are text effects?

Q. Define text alignment.

Q. What are the different types of text alignment options?

Q. Why is shading added to text?

Q. What are bullets?

Q. When are bullets or numbers added to text?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 46 and 47 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 48.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 48 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 collect write a paragraph on My Favourite Sport in Word 2016 applying various formatting features to make the paragraph attractive.

5. Working With Paint 3D

Teaching Objectives

Students will learn about

- Features of Paint 3D
- Components of Paint 3D Window
- Creating 2D Shapes
- Creating 3D Shapes
- Adding Text
- Opening a Saved Project
- Opening Paint 3D
- Brushes Tool
- Filling Colours in a Shape
- Changing Colour of a Shape
- Saving a Project
- Closing Paint 3D

Number of Periods	
Theory	Practical
2	4

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 52 to understand the recap of the topic.

Tell the students about Paint 3D and the steps involved in starting Paint 3D.

Demonstrate to the students about all the components of Paint 3D window:

- Title bar displays the name of the program and the name of your drawing on the top-left corner.
- Menu displays options such as New, Open, Insert, Save and Save As.
- Canvas is the area where you can create or draw your shape or you can say it is the drawing area of Paint 3D.
- Brushes Tool opens a panel on the right side of the drawing area and displays brush options, and colour palette. It has options Brushes Option and Color Palette.
- 2D Shapes Tool replaces brushes option and displays a 2D shapes library with options like line and curve and 2D shapes to select from.
- 3D Shapes Tool replaces the Brushes options and displays options like Open 3D library, 3D Doodle, 3D Objects and 3D Models to select from.

Show the step involved in creating 2D and shapes with example.

Demonstrate the step involved in creating 2D and 3D text with example.

Explain the steps involved in selecting a shape and changing colour in a shape.

Show to the students the steps involved in saving and opening a drawing. Also show the steps to close Paint 3D.

Ask the students to solve the exercise **Quiz Bee** given on page number 55.

Ask the students to solve the exercise **I Know** given on page number 59.

Extension

Ask the students some oral questions based on this chapter.

Q. What can Paint 3D be used for in computers?

Q. State the use of Shapes / Text / Brushes Tool.

Q. How to add 3D shape and text?

Q. How to save a drawing?

Q. How to open a saved drawing?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 62 and 63 in the main course book as Assess Yourself.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 64 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 draw a bus using shape tool and also add 3D text in the drawing.

6. Stepwise Thinking

Teaching Objectives

Students will learn about

- ☞ What is Stepwise Thinking?
- ☞ How to Break a Task into Steps?
- ☞ The Computer and Step-by-Step Instructions

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 65 to understand the recap of the topic.

Tell the students about the following in detail using appropriate examples:

- Reasoning
- Problem Solving

Explain the Stepwise Thinking to the students with the steps involved in the process using suitable examples.

Share some Case Study with the students to explain the above taught factors in problem solving approach.

Tell the students about Programming and give a brief introduction about it.

Ask the students to solve the exercise **Quiz Bee** given on page number 68.

Extension

Ask the students some oral questions based on this chapter.

Q. What is reasoning?

Q. What is problem solving?

Q. What is stepwise thinking?

Q. What is case study?

Q. What is programming?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 70 and 71 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 72.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity 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 write a case study to create a greeting card.

7. Introduction to Scratch Programming

Teaching Objectives

Students will learn about

- What is Scratch?
- Getting Started with Scratch
- Coding Blocks
- Creating a Scratch Project
- Opening an Existing Project
- Advantages of Scratch
- Components of Scratch Window
- Working with Sprite
- Saving a Project
- Exiting Scratch

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 73 to understand the recap of the topic.

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

Demonstrate to the students the steps to start Scratch.

Make the students understand the features of Scratch.

Familiarize the students with the various components of Scratch window covering Title bar, Menu bar, Sprite, Stage, Blocks Palette, Scripts Area, Coding Area, Blocks Menu, Backdrop, Tabs, Green Flag and Stop button.

Introduce Motion Blocks for changing placement, direction, rotation and movement of sprites.

Tell the students the method of identifying Motion Blocks which are colour coded as blue.

Show to the students the steps to choose a sprite from the Library.

Make the students recall backdrop as background of the stage.

Tell the students the steps to change the backdrop in Scratch.

Demonstrate the use of Motion Blocks by developing new project.

Tell the steps to save a program, opening a project and exiting Scratch.

Ask the students to solve the exercise **Quiz Bee** given on page number 79.

Ask the students to solve the exercise **I Know** given on page number 76.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Scratch?

Q. What are the features of Scratch?

Q. Name the various components of Scratch window.

Q. Define Sprite / Stage / Scripts Area / Green Flag / Stop button.

Q. What is a backdrop in Scratch?

Q. What is the use of Motion block?

Q. What is the colour code for Motion block?

Q. What are the steps to save a project in Scratch?

Q. What are the steps to open a project in Scratch?

Q. What are the steps to exit Scratch?

Evaluation

After explaining the chapter, let the students do the exercises given on Page 82 and 83 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 84.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 84 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 a program of speaking and moving cat in Scratch.

8. Internet – An Introduction

Teaching Objectives

Students will learn about

- History of Internet
- Uses of Internet
- Requirement for Connecting to the Internet
- Commonly used Internet Terms
- Using URLs
- Using a Search Engine

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 86 to understand the recap of the topic.

While teaching this chapter, tell the students that computers connected to a network can share data and files efficiently without any delay.

Make the students learn that internet is a global network of millions of computers and computer networks.

Share with the students the various requirements for an internet connection covering computer system, telephone/cable line, modem, web browser and Internet Service Provider (ISP).

Explain the meaning of some common internet terms like URL, Web Browser, Home Page, Website and Web page.

Introduce Uniform Resource Locator (URL) as a unique address or website address used for locating websites.

Tell the students about the disadvantages of Internet.

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

Ask the students to solve the exercise **Quiz Bee** given on page number 90.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a computer network?

Q. What is Internet?

Q. What are the uses of Internet?

Q. What are the requirements for an Internet connection?

Q. Define URL, Web Browser, Home Page, Website and Web page.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 92, 93 and 94 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 95.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Pages 94 and 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 students to prepare a report on some more uses of Internet and present the observations to the class.

9. Introduction to Robotics

Teaching Objectives

Students will learn about

- Introduction
- What is a Robot?
- Characteristic of Robots
- Limitations of Robots
- Robots around Us
- Artificial Intelligence and Robotics

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 96 to understand the recap of the topic.

Introduce the students with concept of machines which help us in our daily lives. Also, introduce students with the concept of robots and robotics in detail with suitable examples.

Tell the students what is a robot in easy and simple language for better and clear understanding.

Define the meaning of robotics in detail to the students.

Explain the parts of a robot to the students which are:

- Controller
- Sensor
- Mechanical Parts

Share the characteristics of a robot with the students:

- Consistency
- Speed
- Safety
- Accomplishment

Share the limitations of a robot with the students and also tell them the suitable examples.

Make the students learn about the robots around us, some of which are:

- Eagle
- Eagle 2.0
- Ruby
- Daksha
- Goalkeeper
- MARCBOT
- Nao

Define the meaning and difference of Artificial Intelligence and Robotics in detail.

Ask the students to solve the exercise **Quiz Bee** given on page number 98.

Ask the students to solve the exercise **I Know** given on page number 99.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a robot?

Q. What do you mean by robotics?

Q. Who is a roboticist?

Q. Define the parts of a robot.

Q. What are the mechanical parts of a robot?

Q. Write the characteristics of a robot.

Q. Write the limitations of a robot.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 101 and 102 in the main course book as Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on Page 103.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Page 103 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 prepare a report on some more uses of Internet and present the observations to the class.