TRACKPAD

iPro Ver. 4.1

8

Teacher's Manual

Extended Support for Teachers

ORANGE
www.orangeeducation.in

Teacher's Time Table

Periods / Days	0	I	II	III	IV		V	VI	VII	VIII
Monday						B				
Tuesday						R				
Wednesday						E				
Thursday						A				
Friday						K				
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

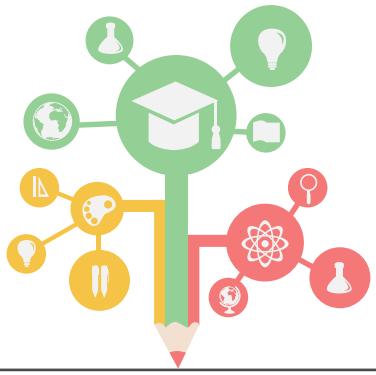
Age 11 - 20 Years

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.

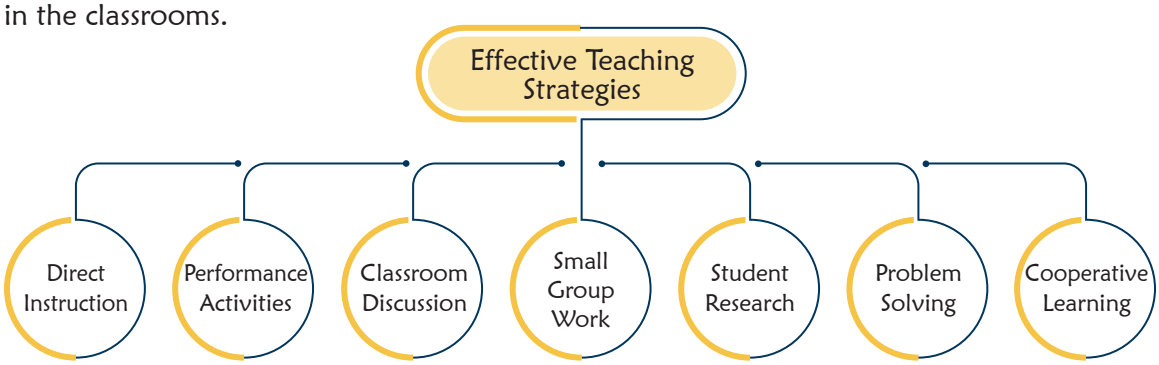
After the class

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

"Knowing yourself is the beginning of all wisdom."

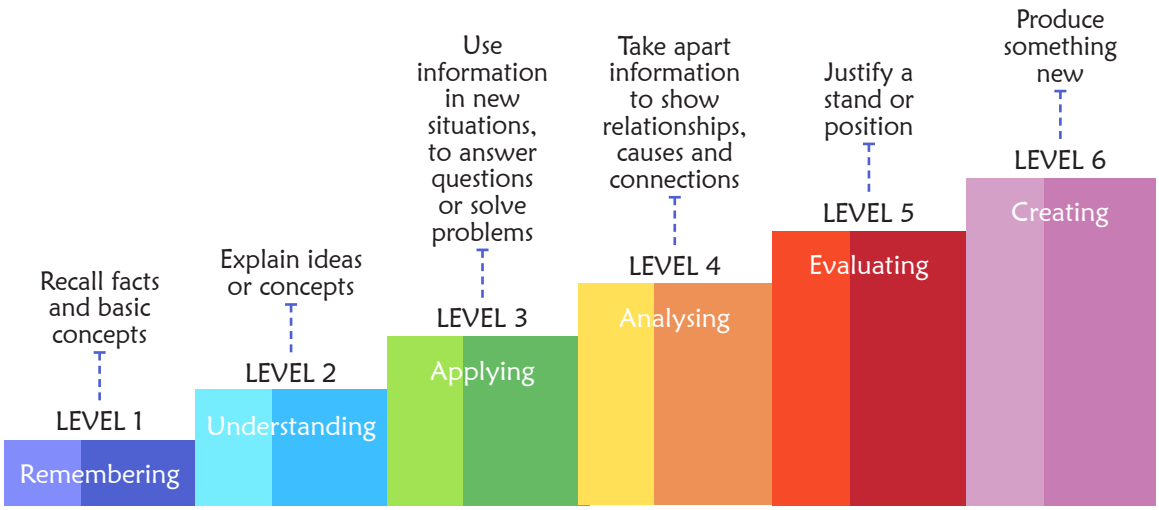
Teaching Strategies

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 8

Lesson Plan

1 Operating System

Teaching Objectives

Students will learn about

- What is an Operating System?
- Functions of an Operating System
- What is a User Interface?
- Why do we need an Operating System?
- Types of Operating Systems
- A Comparison between CUI and GUI

Number of Periods	
Theory	Practical
3	0

Teaching Plan

While While teaching this chapter, tell the students that a computer is a combination of hardware and software.

Share with the students different categories of software:

- System software
- Application software

Explain what is an operating system

Explain what is the need of an operating system.

Demonstrate to the students different functions of an OS.

- Arranging Files and Folders
- Managing Memory
- Managing Devices
- Assigning Tasks to CPU
- Managing Resources
- Security

Tell the students about the different types of OS

- Single-user Operating System
- Multi-tasking Operating System
- Real-time Operating System
- Multi-processing Operating System
- Multi-user Operating System

Introduce user interface.

Share with the students different types of User interfaces.

Explain GUI and its advantages and disadvantages.

Compare and explain differences between CUI & GUI.

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 a System Software?

Q. What is an OS?

Q. What is the need of an OS?

Q. What are some different types of OS?

Q. Explain the use of GUI in an OS.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 11 to 14 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 14 of the main course book to imbibe Problem Solving & Logical Reasoning skill. Help the students to solve these questions.

In Creative Assignment, activities like **Hands-On** and **Fun in Lab** given on pages 14 and 15 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness, Collaboration & Teamwork, Digital Literacy and Experiential Learning activity.

Suggested Activity

Ask the students to create an algorithm to add 2 numbers and explain through a flowchart.

2 Spreadsheet—Functions and Charts

Teaching Objectives

Students will learn about

- Understanding Cell Range
- Cell Referencing in Formulas and its Types
- Functions
- Sorting Data
- Different ways to Enter Formulas
- Customise Worksheet Tab
- Charts in Excel

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that a group of selected cells is called a **range**.

Demonstrate to the students the steps to: select a range in a worksheet naming a cell range.

Explain to the students the different ways to enter formulas in Excel.

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.

Demonstrate to the students the steps to customise worksheet tab in Excel.

Introduce functions as predefined formulas in Excel to perform both simple and complex calculations.

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

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

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

Demonstrate the use of date functions – TODAY, MONTH, YEAR, DAY, NOW HOUR and MINUTE.

Demonstrate the use of logical functions – IF, AND and OR.

Introduce chart as an effective way to display data in a pictorial form.

Show the different components of an Excel chart.

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.

Demonstrate and explain to the students the procedure to apply sorting in MS Excel.

Explain and demonstrate custom sort.

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 are Functions in Excel?

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

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

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?

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 chart used earlier?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 33 to 35 as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 36 of the main course book to imbibe Experiential Learning and Coding & Computational Thinking skills. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 37 will enhance the ability of the students and serve as a Coding & Computational Thinking and Creativity & Innovativeness activity.

Suggested Activity

1. Ask the students to enter their last mark sheet in Excel 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 Excel.
2. 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 Algorithms and Flowcharts

Teaching Objectives

Students will learn about

- Algorithm
- Uses of an Algorithm
- Defining Flowchart
- Solving Problems using Algorithm and Flowchart
- Characteristics of a Good Algorithm
- Writing an Algorithm

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students how to solve problems using various strategies.

Share with the students what is an algorithm and characteristics of a good algorithm.

Explain what are the uses of an algorithm.

Demonstrate to the students the method of writing algorithms with examples.

Tell the students the steps involved in writing an algorithm.

Introduce flowchart and different symbols used in a flowchart.

Show to the students rules of drawing a flowchart and advantages of flowcharts.

Share with the students how to use algorithms and flowcharts for solving problems.

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 an algorithm?

Q. What are advantages of using an algorithm?

Q. What is a flowchart?

Q. What are some rules of drawing a flowchart?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 44 and 45 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 46 of the main course book to imbibe Problem Solving & Logical Reasoning skill. Help the students to solve these questions.

In Creative Assignment, activities like **Hands-On** and **Fun in Lab** given on pages 46 and 47 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness, Art Integration, Coding & Computational Thinking and Interdisciplinary activity.

Suggested Activity

Ask the students to create an algorithm to add 2 numbers and explain through a flowchart.

4 Program Coding

Teaching Objectives

Students will learn about

- Introducing Java
- What is an Object and a Class?
- Introducing BlueJ
- Creating First Project using BlueJ
- Basic Fundamentals of Java
- Writing Some More Programs
- Features of Java
- Basic Principles of OOP
- Interface of BlueJ
- Structure of a Java Program
- Operators
- Taking Values as Arguments

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students how a computer uses various types of applications to perform different operations.

Share with the students what is a programming language and difference between procedural and object oriented language.

Explain what is Java and what are its basic features.

Tell the students the concept of an object and a Class.

Explain the basic principles of OOP covering Encapsulation, Data Abstraction, Inheritance and Polymorphism.

Introduce BlueJ and explain its interface to the students.

Show to the students how to create a project using BlueJ.

Share with the students how to compile and run a Java Program.

Explain the structure of a Java program

Explain the basic fundamentals of java such as:

- Identifiers
- Keywords
- Data Types
- Variable
- Comments

Explain to the students what are operators in Java and different types of Java operators:

- Arithmetic Operators
- Relational operators
- Logical operators
- Unary operators
- Assignment operators

Demonstrate some more Java programs and explain how to pass values as arguments in Java.

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 an object oriented language?

Q. What are keywords in Java & how are they different from identifiers?

Q. What is a variable in Java?

Q. What are some rules of naming a variable in Java?

Q. What are operators in Java?

Q. How many types of operators are there in Java?

Q. What are the basic principles of OOP?

Q. What is BlueJ?

Q. What is a literal?

Q. What are Data Types?

Q. How do we write a comment in Java?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 64 to 68 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 69 of the main course book to imbibe Coding & Computational Thinking and Experiential Learning skills. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 70 of the main course book will enhance the ability of the students and serve as a Coding & Computational Thinking and Digital Literacy activity.

Suggested Activity

Ask the students to create a program in BlueJ to swap 2 variables using a 3rd variable or without using a 3rd variable.

5 Conditional Looping and Jumping Statements in Java

Teaching Objectives

Students will learn about

- Conditional Statements
- Jump Statements
- Writing Some More Programs
- Looping Statements
- Errors in Java

Number of Periods	
Theory	Practical
3	2

Teaching Plan

While teaching this chapter, tell the students about different statements used in Java with examples:

- Conditional statements
  - If statement
  - If...else...if statement
  - If....else statement
  - Switch statement
- Looping statements
  - The while loop
  - The for loop
  - The do-while loop
- Jumping statements
  - The break statement
  - The continue statement

Share with the students what are different types of errors in Java:

- Syntax errors
- Runtime errors
- Logical errors

Demonstrate to the students some basic programs in Java:

- Write a java program to print all the even numbers between 1 and N by using the while loop.
- Write a Java program to print sum of all the odd numbers upto 10 by using the for loop.
- Write a Java program to calculate the factorial of an entered number.
- Write a program to print a table of an entered number.

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 are conditional statements in Java?

Q. What are the difference between if...else & if...else...if statements?

Q. What are looping statements in Java?

Q. How many types of jumping statements are there in Java?

Q. Explain different types of errors in java.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 89 to 94 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 94 of the main course book to imbibe Digital Literacy and Experiential Learning skills. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 95 of the main course book will enhance the ability of the students and serve as a Coding & Computational Thinking activity.

Suggested Activity

Ask the students to create a program in BlueJ to print the sum of all even numbers up to 10 using while loop.

6 App Development

Teaching Objectives

Students will learn about

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

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, 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 what is the difference between android and iOS.

Share with the students different types of mobile apps:

- Native Apps
- Web Apps
- Hybrid Apps

Explain to the students different varieties in which Apps are categorised.

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

Demonstrate to the students how to download and install an app.

Explain the process to develop an App.

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 an App?

Q. What is Android OS?

Q. What is the difference between native apps and web apps?

Q. Name some utility apps.

Q. Name some Communication apps.

Q. What are some common E-commerce Apps?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 109 to 111 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 111 of the main course book to imbibe Ethical & Moral Reasoning and Experiential Learning skills. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 112 of the main course book will enhance the ability of the students and serve as a Communication and Digital Literacy activity.

Suggested Activity

Ask the students to make a list of commonly used android apps with the help of their teacher and parents and categorise them.

7 Computer Networking

Teaching Objectives

Students will learn about

- Computer Network
- Advantages of Computer Network
- Network Terminologies
- Types of Networks
- Network Architecture
- Protocol
- Need for Computer Network
- Components of a Data Communication System
- Devices Required for a Network
- Topology
- Wireless Networking Technology

Number of Periods	
Theory	Practical
3	2

Teaching Plan

While teaching this chapter, tell the students what is a computer network and what is the need for computer networks.

Explain the need of computer network:

- Resource sharing
- Communication

Explain the advantages of a computer network.

Explain to the students what are the components of a network and make them familiar with basic network terminologies such as:

- Server
- Client
- Intranet
- Internet
- URL
- ISP
- IP address
- DNS
- Web page
- Website
- Web Portal
- Hyper text
- Link
- Hyper link
- Bandwidth

Share with the students different devices required for a network.

- NIC
- Hub or Switch
- Router
- Modem
- Networking Cable
- Gateway

Explain to the students different types of networks based on geographical area they cover.

- LAN
- MAN
- WAN
- PAN
- CAN

Explain to the students what is the meaning and concept of Topology in computer networking.

Explain different types of network topologies such as:

- BUS topology
- RING topology
- STAR topology
- TREE topology
- MESH topology

Explain what is the meaning of Network Architecture?

- Peer to Peer network
- Client Server network

Explain wireless networking technologies:

- Wi-Fi
- Bluetooth

Explain what is Protocol and different protocols used in computer network:

- HTTP
- HTTPS
- FTP
- TCP/IP
- POP3
- IMAP
- SMTP

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 a computer Network?

Q. Name some components of a computer network.

Q. What is NIC?

Q. What is the work of a modem in a computer network?

Q. Differentiate between LAN and WAN.

Q. What is a PAN?

Q. What do you mean by network topology?

Q. Name some commonly used network topologies.

Q. In which topology all communication is controlled by a central hub?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 122 to 125 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on pages 125 and 126 of the main course book to imbibe Experiential Learning skill. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 126 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness and Collaboration & Teamwork activity.

Suggested Activity

Ask the students to visit their computer lab and find out which topology is being used and all the networking devices which are being used.

8 Cloud Computing

Teaching Objectives

Students will learn about

- What is Cloud Computing?
- Advantages of Cloud Computing
- Storing Data using Cloud Computing
- File Shared with You
- Characteristics of Cloud Computing
- Disadvantages of Cloud Computing
- Sharing Files
- Other Cloud Storage Service Providers

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students what is a cloud and what is meant by cloud computing.

Explain to the students what are the characteristics of Cloud computing and what are its advantages and disadvantages.

Share with the students how to store data using cloud computing(using MS one drive).

- Accessing one drive
- Uploading files on one drive
- Creating files on one drive
- Uploading folders to one drive

Explain to the students some other cloud storage service providers such as

- DropBox
- iCloud
- ZipCloud
- Google Drive

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 cloud computing?

Q. Explain any 4 characteristics of cloud computing.

Q. What is the advantages of using cloud storage to save and access your files?

Q. What is Microsoft One drive?

Q. How do we upload a folder from local storage to one drive?

Q. Name some commonly used cloud storage services.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 135 to 137 of the main course book as **One Touch Learn** and **Let's Do It**. After solving the course book exercises, tell the students to solve **Crack the Code** activity given on page 137 of the main course

book to imbibe Experiential Learning and Communication skills. Help the students to solve these questions.

In Creative Assignment, activity like **Fun in Lab** given on page 138 of the main course book will enhance the ability of the students and serve as a Digital Literacy and Creativity & Innovativeness activity.

Suggested Activity

Ask the students to find out basic differences between some major cloud storage services such as DropBox and Google Drive.