TOUCHPAD

Ver. 4.0

5

Teacher's Manual

Extended Support for Teachers

ORANGE
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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.

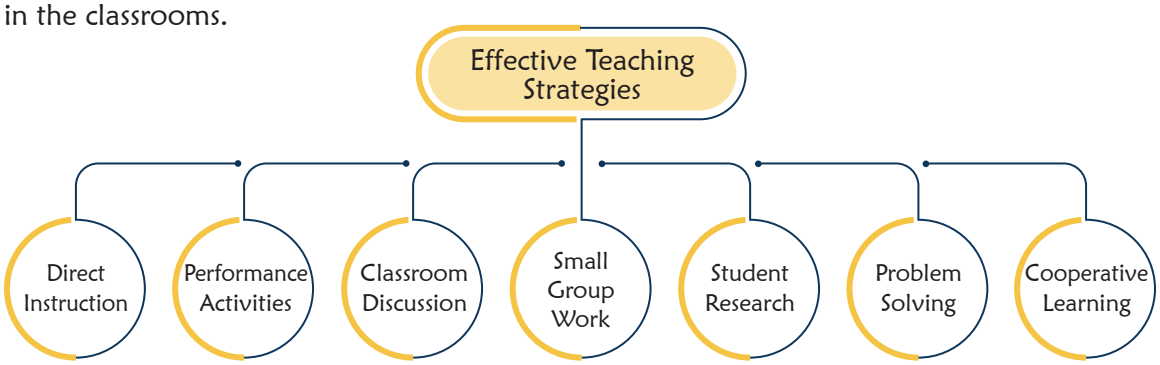
After the class

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

"Knowing yourself is the beginning of all wisdom."

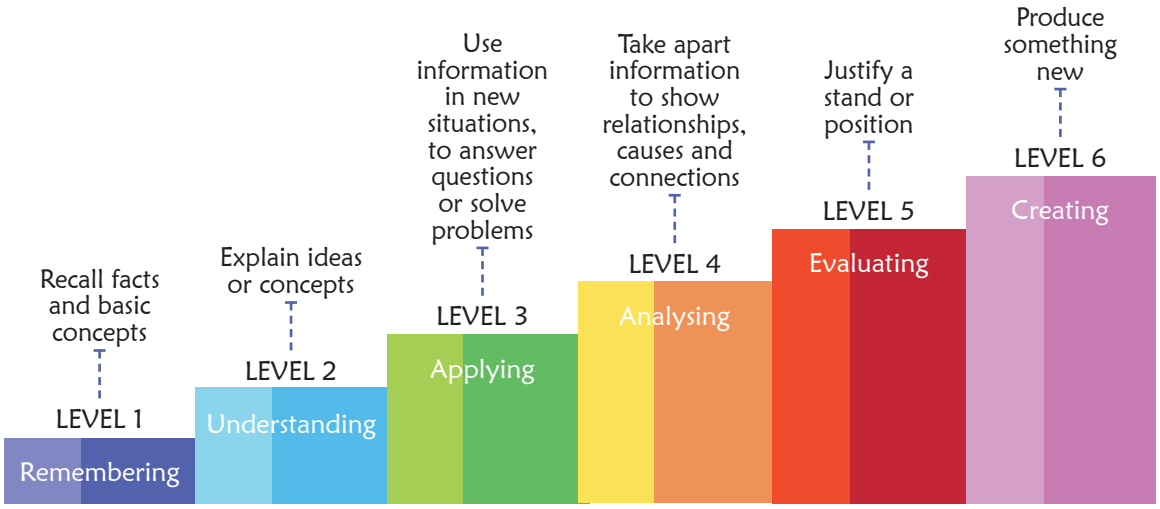
Teaching Strategies

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 5

LESSON PLAN

1 Evolution of Computers

Teaching Objectives

Students will learn about

- Early Counting Tools
- Pascaline Adding Machine
- Charles Babbage's Analytical Engine
- Herman Hollerith's Tabulating Machine
- Abacus—First Calculating Device
- Leibniz Step Reckoner
- Lady Ada Lovelace's Programs
- Computer Generations

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that the computer is an outcome of labour of a number of minds.

Tell the students about the early counting tools like knots tied on a rope, marks carved in clay, fingers, pebbles, etc.

Explain to the students about invention of Abacus – the first calculating device.

Share with the students the importance and usefulness of Abacus even today and is being taught in schools also.

Give a brief account of these calculating machines:

- Pascaline Adding Machine
- Leibniz Step Reckoner

Tell the students about Charles Babbage, the father of computers, and his invention of Difference Engine which was later improved by him into Analytical Engine, the first working model of a mechanical computer.

Inform the students about Lady Ada Lovelace, accredited as the first computer programmer as the programmer to the Analytical Engine of Charles Babbage.

Share with the students about Herman Hollerith who built Tabulating Machine and later his company became a part of IBM.

Explain to the students about the concept of generations of computers and need for classification on this basis.

Share with the students the characteristic features of the different generations of computers covering:

- First Generation (1940s) – MARK-I, ENIAC, UNIVAC
- Second Generation (1950s)
- Third Generation (1960s)
- Fourth Generation (1970s)
- Fifth Generation (Present)

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. Name some early counting tools.

Q. What is Abacus?

Q. Who invented Adding Machine?

Q. Which is the first mechanical calculator?

Q. Which is the first mechanical computer?

Q. Who is called the Father of Computers?

Q. Why is Lady Ada Lovelace famous?

Q. How many generations of computers are there?

Q. What was the technology used in First / Second / Third / Fourth / Fifth generation of computers?

Q. Give three characteristic features of First / Second / Third / Fourth / Fifth generation of computers.

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 12 to 14 of the main course book as **Exercise**.

In Creative Assignment, activity like **In the Lab** given on Page 14 of the main course book will enhance the ability of the students and serve as an Information Literacy activity.

Suggested Activity

Ask the students to prepare a collage of different models of computers depicting its evolution over the generations.

2 Working with Windows 10

Teaching Objectives

Students will learn about

- Files and Folders
- Organising Files and Folders
- Opening Files or Folders
- Copying/Cutting and Pasting Files or Folders
- Renaming a File or Folder
- Restoring a Deleted File or Folder
- File Explorer
- Creating a New File or Folder
- Selecting Files or Folders
- Deleting a File or Folder

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that all the data saved on a hard disk consists of files and folders.

Introduce file as an item that contains a collection of related information, a folder as a collection of files and a sub folder as a folder within a folder.

Introduce to the students the File Explorer as a file manager that manages files and folders.

Familiarise the students with the various components of Windows Explorer covering Toolbar, Navigation pane, File List pane, Status bar, Address bar, Search, Back and Forward.

Tell the students that Windows 10 has some default folders to organise similar files.

Demonstrate to the students the steps to:

- Creating a new file and a folder
- Open a file and a folder
- Select a file and a folder (including selecting a single file, selecting multiple files, selecting all files and deselecting a file)
- Copying a file and a folder (using Copy-Paste features)
- Moving a file and a folder (using Cut-Paste features)
- Renaming a file and a folder
- Deleting a file and a folder
- Restoring a file and a folder

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 file / folder / subfolder?

Q. Define a computer icon.

Q. What is File Explorer?

Q. Name the default folders of Windows 10 for organising data.

Q. Which key is used to select multiple files?

Q. Which key is pressed to invert the selection?

Q. What is the difference between copying a file and moving a file?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 21 to 23 of the main course book as **Exercise**.

In Creative Assignment, activity like **In the Lab** given on Page 23 of the main course book will enhance the ability of the students and serve as a Technology Literacy and Critical Thinking activity.

Suggested Activity

Ask the students to collect information about some more features of Windows 10 other than those discussed in the chapter.

3 More on Internet

Teaching Objectives

Students will learn about

- Uses of Internet
- Common Terms
- Requirements to Connect to Internet

Number of Periods	
Theory	Practical
2	2

Teaching Plan

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 recall that internet is a global network of millions of computers and computer networks.

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

Explain the various uses of internet covering:

- E-mail
- Online shopping
- Downloading data
- Social Networking
- Information
- Online chatting
- Uploading data
- Other Uses

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

Explain the meaning of some common internet terms like URL, Hyperlink, Offline, Online, Surfing, Website and Web page.

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. What is internet?

Q. What are the uses of internet?

Q. What are the requirements for an internet connection?

Q. What do you understand by Downloading / Uploading data?

Q. Define URL / Hyperlink / Offline / Online / Surfing / Website / Web Page.

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 29 and 30 of the main course book as **Exercise**.

In Creative Assignment, activity like **In the Lab** given on Page 30 of the main course book will enhance the ability of the students and serve as an Initiative and Information Literacy activity.

Suggested Activity

Ask the students to prepare a report on some more uses of internet and present the observations to the class.

4 Algorithm and Flowcharts

Teaching Objectives

Students will learn about

- Algorithm
- Flowchart

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students about how humans communicate and their language. Also give an introduction of problem solving techniques, algorithm, flowchart, etc.

Introduce algorithms as set of steps in a sequential and ordered manner to solve any problem or to complete a task.

Encourage the students to write algorithms involving some basic tasks like getting ready for school or involving mathematical problems.

Introduce flowcharts as diagrammatic representation of an algorithm.

Explain the shapes and usage of flowchart symbols covering Start / Stop box, Process box, Decision box, Input / Output box, Flow line and Connector.

Make the students learn the rules for drawing a flowchart.

Encourage the students to draw flowcharts for the algorithms written earlier.

Tell the students the advantages of flowchart.

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 is a flowchart?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 37 and 38 of the main course book as **Exercise**.

In Creative Assignment, activity like **In the Lab** given on Page 38 of the main course book will enhance the ability of the students and serve as a Critical Thinking activity.

Suggested Activity

Ask the students to write algorithms and draw corresponding flowcharts to:

- Calculate circumference of circle
- Calculate Volume of cuboid

5 Introduction to Scratch

Teaching Objectives

Students will learn about

- Uses of Scratch
- Components of Scratch Window
- Adding a Sprite
- Changing Appearance of the Sprite
- Saving a Project
- Exiting Scratch
- Starting Scratch
- Blocks
- Changing the Backdrop
- Creating a New Project
- Opening a Project

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that Scratch is a software which helps you to understand and create many games.

Make the students understand the uses of Scratch.

Demonstrate to the students the steps to start Scratch 3.0.

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

Introduce Blocks as the code or command used to create a program in Scratch.

Tell the students about different Blocks:

- Motion Block (to move the sprite)
- Looks Block (to add speech or thought bubbles)
- Events Block (Controls the script)

Show to the students the steps to add 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 project, open a project and exit Scratch.

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 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 course book exercises given on Pages 50 and 51 of the main course book as **Exercise**.

In Creative Assignment, activity like **In the Lab** given on Page 52 of the main course book will enhance the ability of the students and serve as a Technology Literacy and Media Literacy activity.

Suggested Activity

Ask the students to develop a program of speaking and moving cat in Scratch.

6 More Blocks in Scratch

Teaching Objectives

Students will learn about

- Block Categories
- Setting the Sprite Position

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that Scratch blocks are divided into different categories and each one of them performs different functions.

Explain the Block categories and its types using appropriate examples:

- Motion blocks
- Sound blocks
- Control blocks
- Looks blocks
- Events blocks

Show the students how to change the sprite position with suitable example.

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 Scratch?

Q. What are blocks?

Q. What is motion block?

Q. What is looks block?

Q. What is sound block?

Q. What is control block?

Q. How to change sprite's position?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 56 to 58 of the main course book as **Exercise**.

In Creative Assignment, activities like **HANDS ON** and **In the Lab** given on Page 58 of the main course book will enhance the ability of the students and serve as a Creativity and Critical Thinking activity.

Suggested Activity

Ask the students to create a program in Scratch to move sprite 360 degree and reverse to its original position.

7 Creating Shapes in Scratch

Teaching Objectives

Students will learn about

- Pen Block
- Drawing Polygons in Scratch
- Drawing a Line in Scratch
- Drawing a Circle in Scratch

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Tell the students about pen block and explain its use with using appropriate examples. Also, show the steps involved in creating programs using pen blocks.

Show the steps involved in drawing a line in Scratch.

Tell the steps involved in drawing polygons in Scratch.

Show the steps involved in drawing a circle in Scratch.

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 pen block?

Q. How can you draw a line in Scratch?

Q. How can you draw a polygon in Scratch?

Q. How can you draw a circle in Scratch?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 64 and 65 of the main course book as **Exercise**.

In Creative Assignment, activity like **HANDS ON** and **In the Lab** given on Pages 65 and 66 of the main course book will enhance the ability of the students and serve as a Technology Literacy and Critical Thinking activity.

Suggested Activity

Ask the students to draw a triangle and circle together in a program.

8 Creating a Game in Scratch

Teaching Objectives

Students will learn about

- Block Shapes in Scratch
- Variables
- Creating a Game
- Sensing Blocks
- Conditional Blocks

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that the blocks in Scratch are in different shapes and colours and are used for various purpose like creating shapes and scenes.

Tell the students that there are six block shapes in scratch.

Explain then about all the Block shapes:

- Hat Blocks
- Boolean Blocks
- C Blocks
- Stack Blocks
- Reporter Blocks
- CAP Blocks

Introduce Sensing blocks as the Blocks which sense the input from the keyboard or the mouse at the time of execution of a script.

Tell the students about some sensing blocks and their functions and demonstrate the steps to add sensing blocks.

Explain the students about the meaning of Script and Data and this data is sorted in Variables.

Tell the students about the types of variables and demonstrate the steps involved in creating variables in Scratch.

Introduce Conditional blocks to the students and explain the types of it.

Explain this by making a script using conditional blocks.

Explain the students by creating a game.

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 Boolean Blocks?

Q. What are the functions of sensing blocks?

Q. How many types of Block shapes are there in Scratch?

Q. What is a Script?

Q. What is Data?

Q. What are the types of Variables?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 74 to 76 of the main course book as **Exercise**.

In Creative Assignment, activities like **HANDS ON** and **In the Lab** given on Page 76 of the main course book will enhance the ability of the students and serve as a Critical Thinking and Technology Literacy activity.

Suggested Activity

Ask the students to create a game on Scratch.