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TOUCHPAD®

MODULAR Ver 1.1

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		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 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

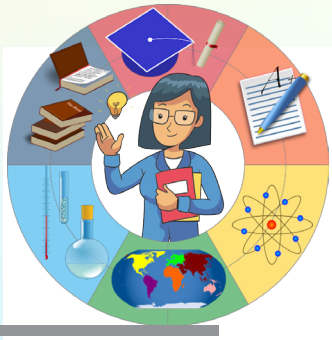
"If you cannot do great things, do small things in a great way."

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.

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During the class:

Present the lesson plan.

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After the class:

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

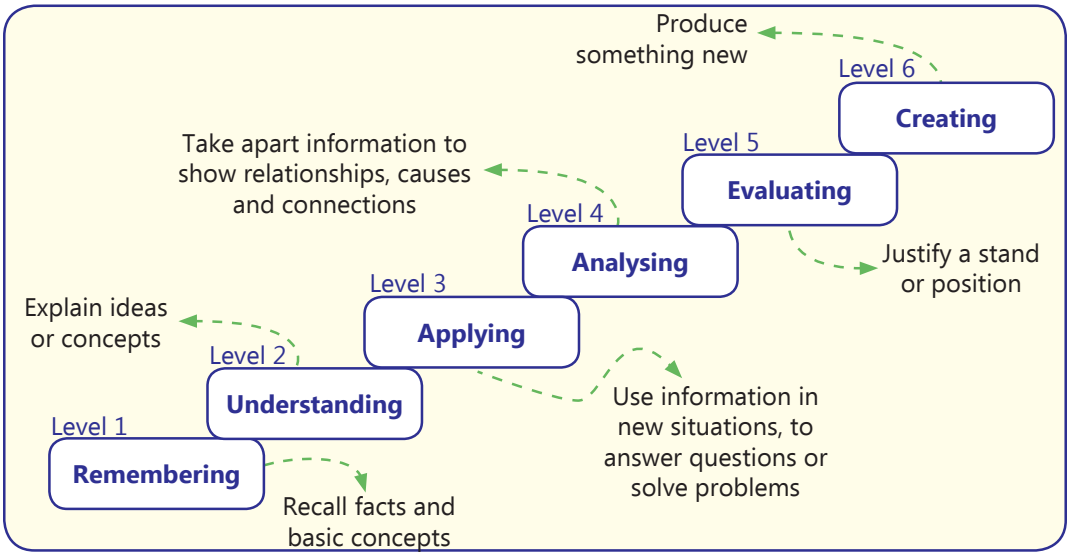
"Knowing yourself is the beginning of all wisdom."

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 MODULAR Ver 1.1
Class-5

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

Teaching Plan

Number of periods: 2

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 (1940-1955) – MARK-I, ENIAC, UNIVAC
- Second Generation (1956-1964)
- Third Generation (1965-1975)
- Fourth Generation (1976-1985)
- Fifth Generation (1986-Present) (See Suggested Activity also)

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 and 13 of the main course book as Exercise.

In Creative Assignment, activity like In The Lab given on Page 13 of the main course book will enhance the ability of the students and serve as a Subject Enrichment 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 7

Teaching Objectives

Students will learn about

- ☞ Files and Folders
- ☞ Organizing Files and Folders
- ☞ Opening Files or Folders
- ☞ Copying/Cutting and Pasting Files or Folders
- ☞ Windows Explorer
- ☞ Creating a New File or Folder
- ☞ Selecting Files or Folders

- ☞ Renaming a File or Folder
- ☞ Deleting a File or Folder
- ☞ Restoring a Deleted File or Folder

Teaching Plan

Number of periods: 4

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 Windows Explorer as a file manager that manages files and folders.

Demonstrate to the students the steps to open Windows Explorer.

Familiarize 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 7 has some default folders to organize similar files.

Demonstrate to the students the steps to:

- 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)
- Creating a new file and a folder
- 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 Windows Explorer?

Q. Name the default folders of Windows 7 for organizing 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 20 and 21 of the main course book as Exercise.

In Creative Assignment, activity like In The Lab given on Page 21 of the main course book 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 features of Windows 7 other than those discussed in the chapter.

3. Algorithm and Flowcharts

Teaching Objectives

Students will learn about

- ☞ Algorithm
- ☞ Programming
- ☞ Flowcharts

Teaching Plan

Number of periods: 4

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.

- **Program** – a set of instructions given to CPU in a pre-defined sequence to complete a task.
- **Computer language** – means by which data and instructions are transmitted to the computer.
- **Syntax** – the grammar of a computer language.
- **Programming** – process of writing a program.
- **Programmers** – people who write computer programs.

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 lines and Connectors.

Make the students learn the rules for drawing a flowchart.

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

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

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?

Q. What is programming?

Evaluation

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

In Creative Assignment, activity like In The Lab given on Page 28 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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

- Calculate circumference of circle
- Calculate Volume of cuboid

4. Introduction to Scratch

Teaching Objectives

Students will learn about

- ☞ Starting Scratch
- ☞ Scratch Window
- ☞ Resizing a Sprite
- ☞ Choosing a Backdrop
- ☞ Creating a Script
- ☞ Saving a Project
- ☞ Features of Scratch
- ☞ Choosing a Sprite
- ☞ Deleting a Sprite
- ☞ Scratch Blocks
- ☞ Full Screen Mode
- ☞ Quitting a Project

Teaching Plan

Number of periods: 5

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

Demonstrate to the students the steps to start Scratch 2.0.

Make the students understand the features of Scratch.

Familiarize the students with the various components of Scratch window covering Sprite, Stage, Blocks palette, Scripts Area, Duplicate, Delete, Grow, Shrink, Green Flag, Stop button and Menu bar.

Show to the students the steps to:

- Choose a sprite from the Library
- Delete a sprite
- Resize a sprite

Make the students recall backdrop as background of the stage.

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

Introduce Scratch blocks as puzzle-piece shapes that are used to create code in Scratch.

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.

Demonstrate the use of Motion Blocks by developing My First Script (refer Page 88 of the main course book).

Explain the use of Events Blocks as used to sense events that run the script and their identifying colour code as brown.

Share the use of Control Blocks as used to control the scripts and their identifying colour code as gold.

Tell the students about the use of Sound Blocks as used to control sound, its playback and volume and their identifying colour code as pink.

Help the students in developing My Second Script (refer Page 90 of the main course book).

Make the students aware about the full screen mode available in Scratch.

Show to the students the steps to:

- Save a Scratch project
- Quitting the project

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. Which buttons icons are used to resize a sprite?

Q. What is a backdrop in Scratch?

Q. What are Scratch blocks?

Q. What is the use of Motion / Events / Control / Sound blocks?

Q. What is the colour code for Motion / Events / Control / Sound blocks?

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

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 35 and 36 of the main course book as Exercise.

In Creative Assignment, activity like In The Lab given on Page 36 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to develop the story of thirsty crow in Scratch.

5. Programming in Scratch

Teaching Objectives

Students will learn about

- ☞ Changing the appearance of sprite
- ☞ Taking decisions
- ☞ Storing values
- ☞ Drawing shapes
- ☞ Repeating a task
- ☞ Using operators

Teaching Plan

Number of periods: 4

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

Tell the students that Scratch allows changing the appearance of the selected sprite.

Share with the students the various blocks present under Looks category.

Demonstrate to the students the steps to change appearance of a selected sprite.

Tell the students that Scratch allows drawing shapes.

Share with the students the various blocks present under Pen category.

Demonstrate to the students the steps to draw shapes on the stage with the help of a sprite.

Tell the students that decision making can be done by using If...then...Else Control block.

Share with the students that Forever Control block is used to repeat a script continuously.

Make the students understand that Variable blocks are used to store values and strings.

Demonstrate to the students the steps to create variables.

Explain the use and purpose of various Operator blocks under the categories Arithmetic operators (+, -, *, /), Relational operators (<, >, =) and Logical operators (AND, OR, NOT).

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

Q. What are Looks blocks?

Q. What is the use of Pen blocks?

Q. What is the use of Operators blocks?

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 Exercise.

In Creative Assignment, activity like In The Lab given on Page 45 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to develop the story of Lion and mouse in Scratch.

6. Drawing Shapes in Scratch

Teaching Objectives

Students will learn about

- ☞ Sprite's Direction
- ☞ Drawing a Polygon
- ☞ Drawing Patterns
- ☞ Drawing a Square
- ☞ Drawing a Circle and Semicircle

Teaching Plan

Number of periods: 4

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

Tell the students that Scratch allows changing the appearance of the selected sprite.

Share with the students the various blocks present under Looks category.

Demonstrate to the students the steps to change appearance of a selected sprite.

Tell the students that Scratch allows drawing shapes.

Share with the students the various blocks present under Pen category.

Demonstrate to the students the steps to draw shapes on the stage with the help of a sprite.

Show the steps involved in drawing a line in Scratch.

Tell the steps involved in drawing polygons in Scratch.

Explain the steps involved in drawing a square in Scratch.

Demonstrate the steps involved in drawing a rectangle in Scratch. Also, show the steps involved in drawing a circle and semicircle 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 Scratch?

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

Q. What are Looks blocks?

Q. What is the use of Pen blocks?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 51, 52 and 53 of the main course book as Exercise.

In Creative Assignment, activity like In The Lab given on Page 53 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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

7. Advanced Blocks in Scratch

Teaching Objectives

Students will learn about

- ☞ Creating a Simple Game
- ☞ Variables
- ☞ Sensing Blocks
- ☞ Loops
- ☞ Operators
- ☞ Conditions
- ☞ Storing User Input

Teaching Plan

Number of periods: ?

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

Explain the Sensing block to the students and the steps involve in the use of this block.

Tell the students what are variable using appropriate examples along with-

- Types of variables
- Creating variables

Explain the Conditional Blocks to the students and the steps involved in this in detail.

Demonstrate ho can one create a game in Scratch using appropriate blocks.

Tell the students that decision making can be done by using If...then...Else Control block.

Share with the students that Forever Control block is used to repeat a script continuously.

Make the students understand that Variable blocks are used to store values and strings.

Demonstrate to the students the steps to create variables.

Explain the use and purpose of various Operator blocks under the categories Arithmetic operators (+, -, *, /), Relational operators (<, >, =) and Logical operators (AND, OR, NOT).

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 is the use of Operators blocks?

Q. What is variable?

Q. What is the purpose of sensing block?

Evaluation

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

In Creative Assignment, activity like In The Lab given on Page 63 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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

8. More on Internet

Teaching Objectives

Students will learn about

- ☞ Internet
- ☞ Requirements to connect to internet
- ☞ Uses of internet
- ☞ Common terms

Teaching Plan

Number of periods: 2

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 – an online communication system
- Information – through search engines like Google, Yahoo, etc.
- Online shopping
- Online chatting
- Downloading data
- Uploading data
- Social Networking – Facebook, Instagram, Twitter, YouTube, WhatsApp, etc.

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, 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 68 and 69 of the main course book as Exercise.

In Creative Assignment, activity like In The Lab given on Page 69 of the main course book 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.