

CODEPILOT



Ver. 5.0

1



TEACHER'S MANUAL

Extended Support for Teachers

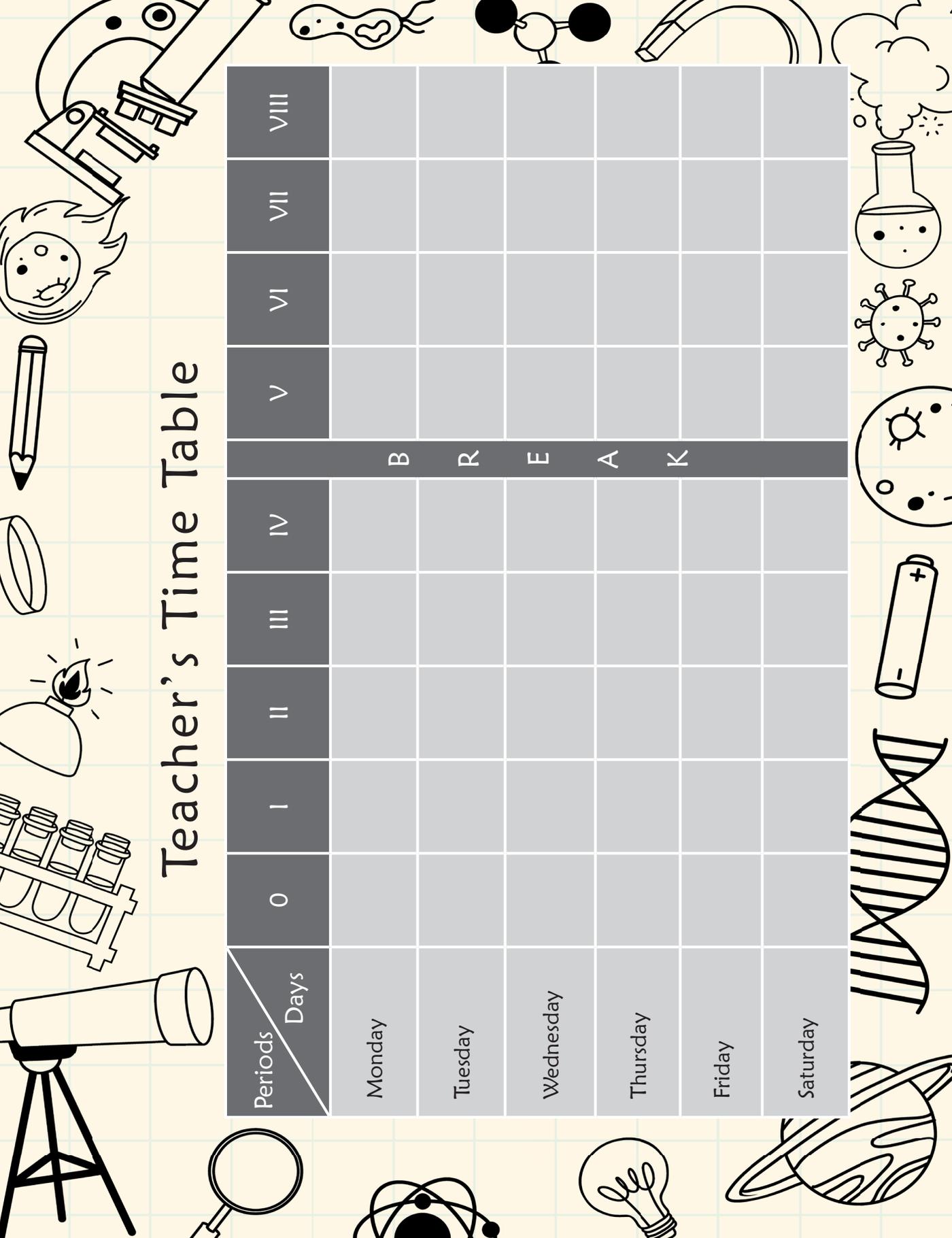


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Teacher's Time Table

Periods \ Days	0	I	II	III	IV	V	VI	VII	VIII
Monday									
Tuesday									
Wednesday									
Thursday									
Friday									
Saturday									

B R E A K



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

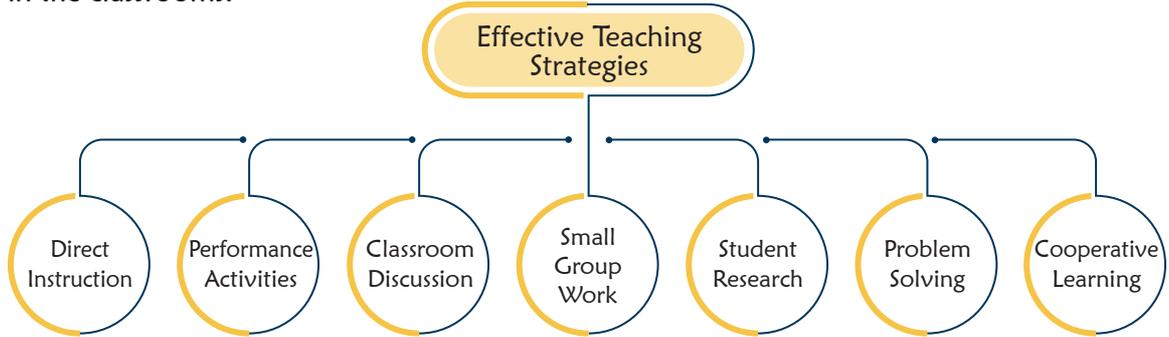
- May show increased gender stereotyping of attitudes and behaviour
- May have a conventional moral orientation

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. ”

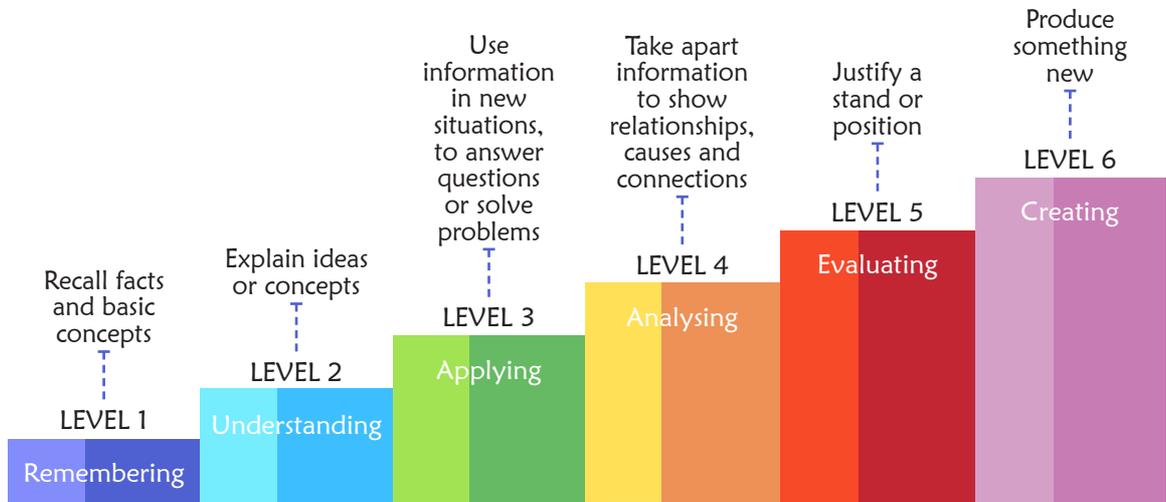
Teaching Strategies

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. ”

1 A Smart Machinet

Teaching Objectives

Students will learn about:

- ✦ Natural and Human-made Things
- ✦ Machines
- ✦ Computer- A Magic Machine
- ✦ Uses of Computer
- ✦ Computers Around Us

Number of Periods

Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **8** of the main course book.

Discuss with the students about natural things (e.g., sun, tree, moon, and animals) that are given by nature.

Discuss with the students about human-made things like toys, books, cars, and computers that are created using tools or machines.

Explain the students about the concept of machines as tools that make our work easier and faster.

Discuss with the students about the common features of machines, such as helping to do work, saving time, and needing power to work.

Discuss with the students about the different machines that require fuel, electricity, or human power to work, such as bikes, fans, and computers.

Introduce the students with the concept of a computer as a smart machine that helps us do many things, such as playing games, solving puzzles, and learning new things.

Discuss with the students about desktop computers as large computers that stay in one place and are not made to move.

Introduce the students with laptops as portable computers and tablets as smaller devices that can be carried around.

Discuss with the students about smartphones as small devices that can perform many tasks like a computer.

Show the students pictures of a desktop, laptop, tablet, and smartphone and discuss their uses.

Discuss with the students about how the computers help us learn new things, play games, listen to music, and watch videos.

Explain the students on how computers help us talk to friends and family through messages and video calls.

Discuss the students how computers are used at home, in schools, in offices, and in shops for various tasks, like typing messages, teaching, and tracking sales.

Extension

Ask the students some questions based on this chapter:

- Q. What is a computer, and how does it help you?
- Q. What are the differences between natural things and human-made things?
- Q. Can you name any machines you use at home or school?
- Q. How do machines help you?
- Q. What are some of the things you can do on a computer?
- Q. Can you name some types of computers?
- Q. What are some uses of computers at home or school?
- Q. How does a laptop differ from a desktop computer?
- Q. What is a smartphone, and how is it different from a computer?
- Q. What machines use electricity to work, and how do they help?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **14**.

Ask the students to complete the elements like **RAPID RECALL** given on pages **10** and **13**.

Encourage the students to complete tasks like **ART INTEGRATION ACTIVITY** given on page **12**.

Encourage the students to complete tasks like **LIVE LEARNING** page **9**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **17** and **18** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **19** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **19** in the main course book. This will enhance the ability of the students and serve as a **creativity** and **technology literacy** activity.

Suggested Activity

Have students think about their super machine that can do anything they like and draw it in their notebooks. Ask them to describe how this machine would help them in their daily tasks.

2

Building Blocks of a Computer

Teaching Objectives

Students will learn about:

- ✦ Monitor
- ✦ Keyboard
- ✦ Mouse
- ✦ CPU/CPU Cabinet
- ✦ Turning On/Off the Computer

Teaching Plan

Number of Periods	
Theory	Practical
2	1

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **21** of the main course book.

Explain the students about a computer as a smart machine that helps us do things like play games, watch videos, and learn.

Explain the students about monitor as a screen that shows everything you do on the computer.

Describe to the students about keyboard as a device with keys that you use to type letters, numbers, and symbols.

Introduce the students with mouse as a small device used to point, click, and select things on the screen.

Explain the students that the CPU is the brain of the computer, and it is kept inside a box called the CPU cabinet.

Show the students images of these parts and ask them to name each part. Use the image to highlight the CPU and discuss its role.

Explain the students about the steps for turning on the computer, starting with turning on the main power supply button followed by the CPU and monitor.

Discuss with the students about the importance of properly shutting down the computer by clicking Shut Down after closing any open programs.

Extension

Ask the students some questions based on this chapter:

- Q. What is the monitor, and what does it do?
- Q. What does the keyboard help you do?
- Q. How does the mouse help the computer work?
- Q. What is the CPU, and why is it called the brain of the computer?
- Q. How do you turn on the computer?
- Q. Why is it important to turn off the computer properly?
- Q. Can the computer work if the mouse is not connected?
- Q. What is the function of the monitor?
- Q. What happens when you press a key on the keyboard?
- Q. What does the CPU cabinet store inside it?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **23**.

Ask the students to complete the elements like **RAPID RECALL** given on pages **22** and **24**.

Encourage the students to complete tasks like **ART INTEGRATION ACTIVITY** given on page **23**.

Encourage the students to complete tasks like **LIVE LEARNING** page **25**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **26** to **28** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **29** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **29** in the main course book. This will enhance the ability of the students and serve as a **creativity** and **technology literacy** activity.

Suggested Activity

Students will create a model of the computer parts like the monitor, keyboard, mouse, and CPU using colored paper and cardboard. They will label each part and explain its function.

3

Keys and Clicks

Teaching Objectives

Students will learn about:

- + Keys of Keyboard
- + Clicks of Mouse

+ Mouse Actions

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **32** of the main course book.

Introduce the students with keyboard as a primary input device used for typing letters, numbers, and symbols.

Discuss with students about mouse as another primary input device, used for selecting and interacting with items on the screen.

Explain the students about the alphabet keys for typing letters, words, and sentences.

Discuss with the students about the number keys and their role in typing numbers.

Introduce the students with special keys like Spacebar, Backspace, Enter, Delete, and Arrow keys.

Explain the students about the different parts of the mouse: Left button, Right button, Scroll wheel, and Body.

Discuss with the students about how the mouse pointer moves when you move the mouse and how it helps interact with items on the screen.

Discuss with the students on how to hold the mouse correctly with the index finger on the left button, middle finger on the right button, and using the thumb to grip the mouse.

Explain the students about left-click action and its use to select or open items on the screen.

Discuss with the students about right-click action and how it opens a pop-up menu with additional options.

Show the students how to use the scroll wheel to move up and down on the screen.

Discuss with the students about common keyboard shortcuts such as Ctrl + C for copy, Ctrl + V for paste, and Ctrl + Z for undo.

Explain the students about the purpose of the mouse pointer and how it changes shape depending on the task being performed.

Extension

Ask the students some questions based on this chapter:

- Q. What is the role of the keyboard in a computer?
- Q. What are the alphabet keys used for on the keyboard?
- Q. How does the mouse pointer help in interacting with the computer?
- Q. What is the Spacebar key used for?
- Q. What happens when you press the Enter key?



- Q. How does right-clicking differ from left-clicking?
- Q. Why is the scroll wheel useful while reading a document?
- Q. What are the steps to hold the mouse properly?
- Q. What are some keyboard shortcuts you can use in daily tasks?
- Q. What is the Backspace key used for on the keyboard?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **35**.

Ask the students to complete the elements like **RAPID RECALL** given on pages **35** and **37**.

Encourage the students to complete tasks like **EXPERIENTIAL LEARNING** given on page **36**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **39** and **40** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **41** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **41** in the main course book. This will enhance the ability of the students and serve as a **critical thinking** and **technology literacy** activity.

Suggested Activity

Have students participate in a fun game where they must use the keyboard and mouse to complete tasks. Tasks may include typing sentences, selecting specific items, and clicking through menus. This activity will help improve their typing speed and accuracy while reinforcing their understanding of mouse functions.

4 Happy Computer Habits

Teaching Objectives

Students will learn about:

- ★ Things to do in a Computer Lab
- ★ Things not to do in a Computer Lab

Teaching Plan

Number of Periods	
Theory	Practical
2	1

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **43** of the main course book.

Discuss with the students about importance of good habits for maintaining a healthy and productive computer usage environment.

Discuss with the students about how to sit properly on the chair while using a computer, including keeping the back straight and facing the screen.

Explain the students about the importance of pressing keyboard keys softly and how to handle the mouse with gentle hands.

Discuss with the students about how to shut down the computer properly at the end of the session instead of turning off the power directly.

Explain the students about why it's important not to press the keys too hard or bang the mouse, and how this can damage the computer.

Discuss with the students about the importance of avoiding touching the screen with fingers or any sharp objects.

Teach the students that they should not pull or touch the wires or plugs as they are not toys and can be dangerous.

Explain the students about the risk of spilling liquids near the keyboard or mouse, as it can cause permanent damage.

Discuss with the students about the importance of keeping a safe distance from the screen to avoid straining the eyes.

Teach the students about how to maintain proper eye health by taking regular breaks and using correct posture while working.

Discuss with the students on how to handle the mouse, keyboard, and monitor properly to avoid damage.

Discuss with the students about the importance of shutting down the computer properly to prevent data loss and maintain system health.

Extension

Ask the students some questions based on this chapter:

- Q. What should you do if you want to sit properly while using a computer?
- Q. Why is it important to use gentle hands while pressing the keyboard keys?
- Q. How should you handle the computer's wires and plugs?
- Q. Why should you avoid eating or drinking near the computer?
- Q. What should you do if something goes wrong with the computer?
- Q. Why is it important to shut down the computer properly at the end of the session?
- Q. What can happen if you touch the screen of a monitor?



- Q. Why should you not sit too close to the screen?
- Q. How can you keep your eyes healthy while using a computer?
- Q. What should you do if your computer makes a strange sound?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **43**.

Ask the students to complete the elements like **RAPID RECALL** given on page **45**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **46 to 48** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **48** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **48** in the main course book. This will enhance the ability of the students and serve as an **creativity** and **technology literacy** activity.

Suggested Activity

Ask students to create a poster showing the Do's and Don'ts of using a computer. They can include illustrations of proper sitting posture, how to handle the mouse and keyboard, and the importance of shutting down the computer correctly.

5 Fun with Colours in Paint

Teaching Objectives

Students will learn about:

- ★ Starting Paint
- ★ Pencil Tool
- ★ Line Tool
- ★ Rectangle Tool
- ★ Saving a Drawing
- ★ Parts of Paint Window
- ★ Eraser Tool
- ★ Oval Tool
- ★ Fill Tool
- ★ Exiting Paint

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **52** of the main course book.

Introduce the students with Paint as a simple graphics program that allows users to create digital drawings, paintings, and designs. Discuss its features, like the ability to use different tools and colours.

Show the students the steps to open Paint from the Start menu.

Discuss with students about the components of the Paint window, including the Menu Bar, Title Bar, Drawing Area, Shapes Group, Colors Group, and Tools Group.

Demonstrate the students how to use the Pencil Tool to make basic drawings.

Explain the students about how the Pencil Tool can be used to draw freehand lines on the drawing area.

Discuss with the students about how the Eraser Tool can be used to erase parts of the drawing.

Introduce the students with the line tool that is used to draw straight lines in paint.

Introduce the students with the Oval Tool and Rectangle Tool for drawing ovals, circles, rectangles, and squares.

Explain the students about how to use the Shift key to draw perfect shapes.

Explain the students about the Fill Tool and how to use it to colour shapes by selecting a colour from the Colors Group and clicking inside a closed shape.

Explain the students on how to save a drawing in Paint by clicking on the File menu, choosing Save, and typing a name for the drawing.

Show the students on how to properly close the Paint program by clicking on Exit

Extension

Ask the students some questions based on this chapter:

- Q. How do you start Paint on the computer?
- Q. What is the function of the Pencil Tool in Paint?
- Q. How can you erase part of your drawing in Paint?
- Q. What is the Fill Tool used for?
- Q. How do you create a perfect circle or square in Paint?
- Q. What are the steps to save your drawing in Paint?
- Q. How can you add colours to your shapes in Paint?
- Q. What is the Menu Bar in Paint, and what options does it have?
- Q. How do you close the Paint program properly?
- Q. What is the importance of saving your work before closing Paint?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page 59.

Ask the students to complete the elements like **RAPID RECALL** given on page 56.

Encourage the students to complete tasks like **ART INTEGRATION ACTIVITY** given on page 56.

Motivate the students to complete activities such as **LIVE LEARNING** on page 58.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages 60 and 61 in the main course book. Tell the students to try sections such as **CODE CHECK** given on page 72 in the main course book.



Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **61** in the main course book. This will enhance the ability of the students and serve as a **creativity** and **technology literacy** activity.

Suggested Activity

Have students design a colourful birthday card using Paint, applying shapes, colours, and text. Students can save and share their cards with the class.

6 Brain Games

Teaching Objectives

Students will learn about:

- ✦ Patterns
- ✦ Spot the Difference
- ✦ Solving Puzzles
- ✦ Learning Directions
- ✦ Sequence

Teaching Plan

Number of Periods	
Theory	Practical
2	1

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **64** of the main course book.

Introduce the students with brain games as fun activities that improve mental skills like memory, focus, and problem-solving.

Discuss with the students about the concept of patterns, where something repeats in a predictable way.

Teach the students about the directions like up, down, left, and right.

Explain the students about spotting the difference involves finding what is not the same between two similar pictures.

Explain the students about sequences as a series of steps or actions that need to be done in a specific order.

Discuss with the students about how puzzles help develop problem-solving skills. Explain word search puzzles, where students look for hidden words in a grid of letters.

Extension

Ask the students some questions based on this chapter:

- Q. What is the difference between a pattern and a sequence?
- Q. How do you spot the difference in two pictures?

- Q. How do you follow directions when completing tasks?
- Q. What does a sequence mean in the context of doing things in the right order?
- Q. How do puzzles help in improving problem-solving skills?
- Q. How can identifying patterns help you in your studies?
- Q. Why is it important to think critically when solving puzzles?
- Q. What are the four directions you need to know?
- Q. How can you create your own spot the difference puzzle?
- Q. What is the purpose of brain games in improving your memory and focus?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **67**.

Ask the students to complete the elements like **RAPID RECALL** given on page **67**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **71** and **72** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **72** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **72** in the main course book. This will enhance the ability of the students and serve as an **creativity** and **critical thinking** activity.

Suggested Activity

Have students create a pattern-based puzzle in Paint and ask their classmates to find the differences or solve the sequence in the image.

7

SCRATCHJR– My Coding Playground

Teaching Objectives

Students will learn about:

- ✦ Introduction to ScratchJr
- ✦ ScratchJr Interface
- ✦ Removing a Character
- ✦ Blocks in ScratchJr
- ✦ Saving Your Project
- ✦ Getting Started
- ✦ Adding a Character
- ✦ Choosing a Background
- ✦ Making Your Character Move



Teaching Plan

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **75** of the main course book.

Introduce the students with ScratchJr as a fun, block-based coding app where students can create stories, games, and animations by combining blocks.

Show the students on how to start ScratchJr by clicking on the Start button and searching for ScratchJr in the app.

Discuss with students about the components of the ScratchJr interface like the save, presentation mode, change background, green flag, character, stage, blocks palette, block categories and programming area.

Teach the students about on how to add a character (sprite) to the project by clicking the Plus button and selecting a character.

Explain the students about how to remove a character from the stage by tapping and holding the character until the red cross appears.

Explain the students about how to change the background to set the scene of their project.

Introduce the students with Motion Blocks as a way to move characters.

Discuss with the students about blocks like Move Right, Move Left, and Turn Around.

Discuss with the students on how Control Blocks such as Wait, Stop, and Repeat help control the timing and order of actions.

Explain the students about how the Sound Blocks add sound to projects, making characters speak or play music.

Show students how to save their projects in ScratchJr by clicking the Project Information button and typing a name for their project.

Extension

Ask the students some questions based on this chapter:

- Q. What is ScratchJr, and how does it help you create stories and games?
- Q. How do you add a character to your project in ScratchJr?
- Q. What are the Motion Blocks used for in ScratchJr?
- Q. How do you change the background in your ScratchJr project?
- Q. What do Control Blocks do in ScratchJr?
- Q. How can you make a character talk in ScratchJr?
- Q. What are the steps to save your project in ScratchJr?

- Q. What happens when you remove a character from the stage in ScratchJr?
- Q. How can you animate a character using Motion Blocks?
- Q. Why is ScratchJr useful for learning coding and programming.

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **84**.

Ask the students to complete the elements like **RAPID RECALL** given on pages **79** and **82**.

Encourage the students to complete tasks like **ART INTEGRATION ACTIVITY** given on page **84**.

Motivate the students to complete activities such as **LIVE LEARNING** on page **84**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **86** and **87** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **88** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on pages **88** and **89** in the main course book. This will enhance the ability of the students and serve as a **creativity** and **technology literacy** activity.

Suggested Activity

Have students create a simple animation where a character performs an action (e.g., a cat jumps or a rocket flies). They should use Motion Blocks, Sound Blocks, and Control Blocks to animate the character.

8

New Friends: AI and Robots

Teaching Objectives

Students will learn about:

- ✦ Human Intelligence
- ✦ Artificial Intelligence
- ✦ Intelligent Machines
- ✦ Robots

Teaching Plan

Before starting the chapter, ask the students to solve the question in **BRIDGE BACK** given on page **99** of the main course book.

Number of Periods	
Theory	Practical
2	1

Discuss with the students about the concept of intelligence, explaining how it helps humans learn new things, solve problems, and make decisions.

Discuss with the students about how human intelligence differs from artificial intelligence.

Tell the students about the term Human Intelligence as how humans think, learn, and solve problems.

Discuss with students about the functions like remembering things, learning new things, solving problems, and making decisions.

Explain the students about Artificial Intelligence (AI) as the ability of machines to think, learn, and act like humans.

Introduce the students with the Intelligent machines as machines that use AI to perform tasks independently, such as cleaning, answering questions, or playing games.

Discuss with the students about the examples of AI such as smartphones, smartwatches, smart AC, and smart washing machines.

Tell the students about the robots as intelligent machines that can do work and follow instructions.

Discuss with the students about how the robots can walk, talk, clean, and even help in hospitals.

Extension

Ask the students some questions based on this chapter:

- Q. What is Human Intelligence, and how is it different from Artificial Intelligence?
- Q. How do smartwatches and smartphones use AI?
- Q. What are some examples of intelligent machines?
- Q. How can robots help in hospitals?
- Q. How can robots help people with tasks like cleaning or exploring places?
- Q. What tasks can robots perform?
- Q. Name two famous robots and describe what they do.
- Q. How do robots differ from machines that are not intelligent?
- Q. What is the role of AI in smart homes?
- Q. What are some of the limitations of robots?

Evaluation

Ask the students to complete the elements like **ASK AI AGENT** given on page **95**.

Ask the students to complete the elements like **RAPID RECALL** given on page **93** and **95**.

Encourage the students to complete tasks like **EXPERIENTIAL LEARNING** given on page **95**.

After explaining the chapter, let the students do the **LEARNING LOGS** on pages **96** to **98** in the main course book. Tell the students to try sections such as **CODE CHECK** given on page **98** in the main course book.

Take the students to the computer lab and let them practice the activity given in the **LAB LEARNING** section on page **99** in the main course book. This will enhance the ability of the students and serve as a **creativity** and **technology literacy** activity.

Suggested Activity

Ask students to draw a robot on paper that can help people. They should think about what special tasks their robot can do to help improve daily life, such as cleaning, playing games, or helping in hospitals.

