TRACKPAD

Ver. 2.1

2

Teacher's Manual

Extended Support for Teachers

ORANGE
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Teacher's Time Table

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

Development Milestones in a Child

Development milestones are a set of functional skills or age-specific tasks that most children can do at a certain age. These milestones help the teacher 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

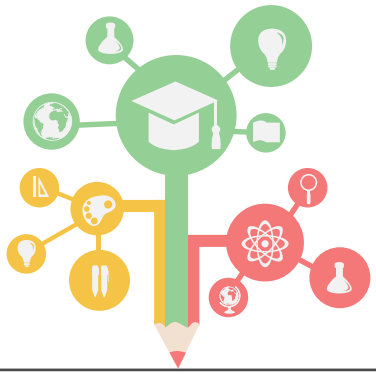
Age 11 - 20 Years

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.

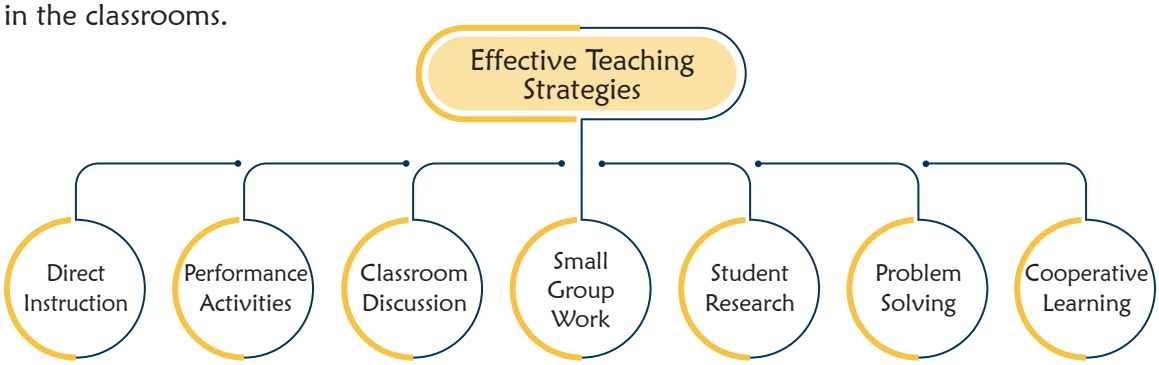
After the class

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

"Knowing yourself is the beginning of all wisdom."

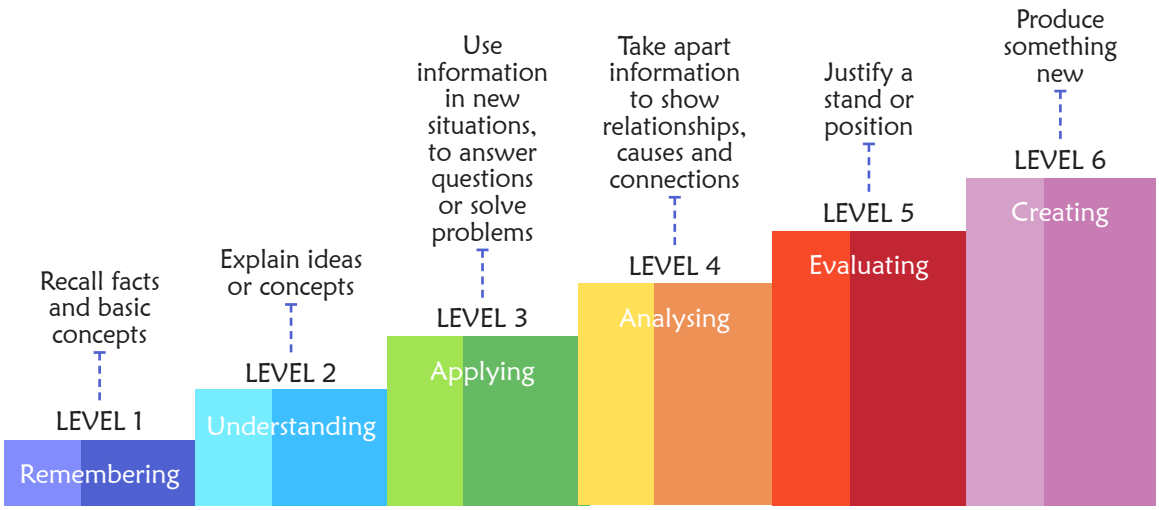
Teaching Strategies

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 2

LESSON PLAN

1 Computer – A Smart Machine

Teaching Objectives

Students will learn about

- Computer
- Types of Computers
- Computers and Humans
- Places where Computers are used

Number of Periods	
Theory	Practical
1	0

Teaching Plan

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

While teaching this chapter, tell the students that a computer is an electronic machine which helps us to solve many problems.

Tell the students that the computer is a man-made machine and very much different from man. Share with the students the features of a computer covering:

- **Accuracy** – does not make mistake.
- **Storage** – stores information and does not forget it.
- **Work Process** – does not get tired and work for long hours.
- **Speed** –works at a very high speed.

Make the students understand that there are certain things which man can do better than computers covering:

- **Feelings** – computer does not have feelings and does not understand emotions.
- **Instruction** – computer cannot work without our instructions.
- **Decision** – computer cannot take its own decisions.

Explain to the students about the different types of computers covering:

- **Desktop computer** – kept on desk or table.
- **Laptop computer** – can be kept on lap also and is portable.
- **Tablet computer** – smaller than a laptop and has a touchscreen.
- **Smartphone** – mobile phone which has computer facilities.

Tell the students that all these types of computers are called Personal Computers or PCs.

Ask the students to solve the exercise **I Know** given on page number 9.

Ask the students to solve the exercise **Quiz Bee** given on page number 12.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a computer?

Q. State any two features of a computer.

Q. Name two things which man can do better than computers.

Q. Name any two types of computers.

Q. Which is the largest type of computer?

Q. Which is the smallest type of computer?

Q. Can we keep all computers in our pocket?

Q. Name two computers which we can keep in our pocket.

Q. Name the computer which we keep on a desk or a table.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 14, 15 and 16 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 18.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Page 17 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Show the pictures of different types of computers to the students and ask the name of each type of computer.

2 Operating a Computer

Teaching Objectives

Students will learn about

- How to Start a Computer?
- How to Shut Down a Computer?
- IPO Cycle
- Opening a Program
- How a computer works
- Computer Devices

Number of Periods	
Theory	Practical
2	2

Teaching Plan

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

While teaching this chapter, tell the students that we need to follow proper steps to switch on and shut down a computer and that a computer works according to the commands or instructions given by us.

Share with the students, the steps to switch on a computer as:

(i) Switch on main power supply button.

(ii) Switch on UPS (invertor of the computer) button.

(iii) Switch on power supply button of CPU.

(iv) Switch on monitor.

Tell the students about the working of some machines like:

- **Juicer** – we put fruit pieces inside it, the juicer squashes the fruits and gives out fresh juice.

Explain to the students that:

- the first screen that appears on the monitor is called desktop.
- small pictures on the desktop are icons.
- long bar at the bottom of the desktop is called Taskbar.
- start button is on the left corner of the taskbar and used to open different programs.
- start menu has shut down button which is used to shut down the computer.
- maximize and minimize buttons to resize the window and Close button to close the window.

Share with the students the steps to shut down a computer as:

(i) Click on Start button.

(ii) Click on the power button. A submenu appears.

(iii) Click on the Shut down option. A Windows with the message Shutting down appears. After a few seconds, the computer will switch off.

(iv) Switch off UPS button.

(v) Switch off main power supply button.

Share with the students that in both these cases, the first step is input, the second step is process and the third step is output.

Share with the students that this cycle of working of machines is called Input-Process-Output cycle or IPO cycle.

Introduce the term Input as giving instructions to the computer.

Tell the students that keyboard and mouse are used as input devices in a computer.

Introduce the term Process as action performed by computer on the instructions given by us.

Tell the students that Central Processing Unit (CPU) is processing device of a computer and is called Brain of the computer.

Introduce the term Output as result given by the computer after processing.

Tell the students that monitor and printer are used as output devices in a computer.

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

Ask the students to solve the exercise **I Know** given on page number 22.

Ask the students to solve the exercise **Quiz Bee** given on page number 25.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the first step to switch on a computer?

Q. What is the first step to shut down a computer?

Q. What is the last step to shut down a computer?

Q. What are icons?

Q. Where is taskbar located?

Q. Do we need to switch off the CPU button while shutting down a computer?

Q. Which menu is used to shut down a computer?

Q. What does IPO stand for?

Q. What is Input-Process-Output cycle?

Q. Define Input / Process/ Output.

Q. Name two input / output devices.

Q. Which part of the computer is called Brain of the computer?

Q. Why is CPU called brain of the computer?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 26, 27, 28 and 29 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 31.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Page 29 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to draw images showing the steps to switch on a computer and to shut down a computer in their computer notebook you can also Show some more machines with input and output to the students and ask the students to arrange these in correct order of the IPO cycle.

3 Using a Mouse and a Keyboard

Teaching Objectives

Students will learn about

- Types of Mouse
- Actions of a Mouse
- Types of Keys on a Keyboard

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 33 to understand the recap of the topic.

While teaching this chapter, tell the students that keyboard and mouse are used to perform various functions.

Show to the students a keyboard and demonstrate:

- A keyboard has 104 keys
  - — **Alphabet keys –** used to type letters, words and sentences.
  - — **Number keys –** used to type numbers.

Tell the students that there are some special keys in details:

- **Shift key –** used with other keys for different purposes like with alphabet keys to type in capital letters with caps Lock turned off and with number keys and symbol keys to type the symbols in the upper row of that key.
- **Symbol keys –** used to type special signs like @,$, %, *, etc. and punctuation marks like ?, ! :, " ", etc.
- **Backspace key –** used to erase letters and numbers on the left side of the cursor.
- **Spacebar –** used to give a bla nk space when you type words, letters or numbers.
- **Enter key –** used to start a new line or a paragraph.
- **Delete key –** used to erase letters and numbers to the right of the cursor.
- **Arrow keys –** used to move the cursor up, down, right and left.

Function keys – 12 in number from F1 to F12 and used to perform a different function like F1 for Help, etc.

- **Caps Lock key –** used to type in capital letters.
- **Tab key –** used to move cursor several spaces forward at once.
- **Escape or Esc key –** used to cancel a task.

Show to the students a mouse and demonstrate:

- A mouse has buttons to click and wheel to scroll.
- Displays an arrow called pointer on the screen.

Explain different types of mouse to the students.

Tell the students about the parts of a mouse and mouse pointer.

Show the proper use of a mouse along with the position of fingers.

- **Click or Single-click –** used to select an item.
- **Double-click –** used to open the selected item.
- **Right-click –** used to display list of properties of the selected item.
- **Drag –** used to move an item from one location to another.

Ask the students to solve the exercise **I Know** given on page number 35.

Ask the students to solve the exercise **Quiz Bee** given on page number 37.

Extension

Ask the students some oral questions based on this chapter.

Q. Name the two commonly used input devices.

Q. How many keys are there on a standard keyboard?

Q. State one use of Shift key.

Q. What is Escape / Tab / Caps Lock key used for?

Q. How many Shift / Function keys are there on a keyboard?

Q. What is the use of Function / Symbol keys?

Q. What is a mouse?

Q. What is pointer?

Q. What is single-click / double-click / right-click / drag used for?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 39, 40 and 41 in the

main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 42.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 42 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to draw a keyboard on an A4 sheet of paper and label these keys:

- Shift keys
- Enter key
- Escape key
- Tab key
- Symbol keys
- Function keys
- Keys to spell the name of the student

4 Typing in WordPad

Teaching Objectives

Students will learn about

- Opening WordPad
- Typing Text
- Closing the WordPad
- Parts of WordPad Window
- Changing the Appearance of Text

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page 43 to understand the recap of the topic.

Explain the purpose of WordPad to the students in detail.

Demonstrate the steps to open WordPad easily to the students.

Explain the parts of WordPad window to the students in detail.

Tell the students about how to type text in WordPad and which keys plays an important role in the same.

Show the students how can we change the appearance of the text along with the commands and their operations.

Tell the students how to close WordPad in easy steps.

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

Ask the students to solve the exercise **Quiz Bee** given on page number 47.

Extension

Ask the students some oral questions based on this chapter.

Q. What is WordPad?

Q. How can we open WordPad?

Q. Define the parts WordPad window.

Q. Explain the steps about how to type in WordPad.

Q. How can we change the appearance of text?

Q. Write the steps to close WordPad.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 47, 48 and 49 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 50.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 49 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to search about some more examples of online storage service providers.

5 More on Paint

Teaching Objectives

Students will learn about

- Airbrush Tool
- Magnifier Tool
- Opening an Existing Drawing
- Text Tool
- Saving a Drawing
- Closing Paint

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 53 to understand the recap of the topic.

While teaching this chapter, make the students recall that Paint can be used to draw and paint on computer.

Demonstrate the parts of Paint windows along with their purpose.

Tell the students the use of Magnifier tool and steps involved in using the tool.

Tell the students that the Text tool is used to write some text in the drawing area.

Demonstrate to the students the use of Text tool in Paint.

Ask the students to solve the exercise **I Know** given on page number 58.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Paint?

Q. What is the use of Magnifier tool?

Q. What is the use of Color Picker tool?

Q. What is the Select command used for?

Q. What do you mean by moving the selected area?

Q. When do we use Text tool in Paint?

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

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

Q. How to add 3D shape and text?

Q. How to save a drawing?

Q. How to open a saved drawing?

Evaluation

After explaining the chapter, let the students do the exercises given on Page 58 and 59 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 61.

Take the students to the computer lab and let them practice the activity given in the Fun Activity and Lab Activity section on Pages 60 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to draw a picture of a school with its name written on a board at the top of the school building.

6 More on Tux Paint

Teaching Objectives

Students will learn about

- Opening Tux Paint
- Using Fill Tool
- Using Text Tool
- Saving a Drawing
- Opening a Saved Drawing
- Using Paint tool
- Using Magic Tool
- Using Eraser Tool
- Quitting Tux Paint

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 63 to understand the recap of the topic.

While teaching this chapter, tell the students that Tux Paint has a lot of tools, animations and effects to enhance your creativity in drawing.

Tell the students that the Tux mascot, that is, a penguin guides you while working in Tux Paint.

Make the students recall the components of the Tux Paint window covering Toolbar, Colors Palette, Help Area, Selector, Up and Down Arrows and Drawing Area or Canvas.

Introduce New tool as the tool used to open a new page for drawing.

Demonstrate to the students the steps involved in use of New tool.

Make the students understand that Open tool is used to open an existing drawing in Tux Paint.

Show to the students the method to use Open tool.

Introduce Stamp tool as the tool used to insert different stamps or images from the Selector.

Explain the steps involved in the use of Stamp tool to the students.

Tell the students that just like in Paint, Text tool is used in tux Paint to type some text in the drawing area or canvas.

Demonstrate to the students the steps involved in using Text tool in Tux Paint.

Tell the students that Magic tool in Tux Paint is used to add special effects to a drawing.

Show to the students some of the Magic tool effects which can be added to a drawing.

Ask the students to solve the exercise **I Know** given on page number 67.

Ask the students to solve the exercise **Quiz Bee** given on page number 64 and 66.

Extension

Ask the students some oral questions based on this chapter.

Q. What is the use of Text / Magic / Stamp / New / Open tool?

Q. When is New tool used?

Q. Can Open tool be used to open a drawing which was not saved earlier?

Q. What is the use of Selector in Tux Paint?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 70, 71 and 72 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 73.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 81 and fun activity section on page 73 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to draw a jungle scene in Tux Paint.

7 Reasoning and Analysis

Teaching Objectives

Students will learn about

- Number Pyramid
- Secret Message: Decoding
- Number Grid

Number of Periods	
Theory	Practical
1	0

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 75 to understand the recap of the topic.

Introduce Number Pyramids to the students in details with the help of pictures or charts.

Tell the students about Number Grid. Also, tell them how to solve by giving some examples which will improve their understanding of the topic.

Make the students aware of secret message: Decoding.

Show examples for all the topics for better clarity of the lesson at the end.

Ask the students to solve the exercise **Quiz Bee** given on page number 77.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a number pyramid?

Q. What is a grid?

Q. What is a number grid?

Q. Define decoding.

Q. In what forms can the hidden message be present?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 77 and 78 in the main course book as Assess Yourself.

Let students practice the activity given in the Fun Activity section on Page 78, 79 and 80 and the SDG Activity on page 80 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to practise more questions based on decoding.

8 More on ScratchJr

Teaching Objectives

Students will learn about

- ScratchJr Programming Language
- Components of ScratchJr Window
- Blocks in ScratchJr

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page number 81 to understand the recap of the topic.

While teaching this chapter, tell the students about scratchjr that it is a programming language that

is developed for young children to create their own interactive projects through coding and that in this chapter they will learn about blocks of ScratchJr.

Tell the students to recall the Components of ScratchJr Window.

Explain the students that Blocks in ScratchJr are divided into different categories based on their functions.

Introduce the students with Motion Blocks which are used to control the movement of a character and are blue in colour.

Tell them that some of the commonly used Motion blocks are:

- Move Right (moves the character to the right)
- Move Left (moves the character to the left)
- Move Up (moves the character up)
- Move Down (moves the character down)
- Turn Right (rotates the character clockwise)
- Turn Left (rotates the character anti-clockwise)

Introduce the students with Looks Blocks which are used to modify the appearance of a character. Tell them that some of the commonly used Looks blocks are:

- Say (show a specific message)
- Grow (increase the character's size)
- Shrink (decrease the character's size)
- Reset Size(Returns to default size of character)
- Hide (fade out the character)
- Show (deepens in the character)

Introduce the students with Control Blocks which are used to repeat the tasks and pause the character. Tell them that some of the commonly used Control blocks are:

- Wait (pauses the script)
- Stop (stops all of a character's script)

Introduce the students with Sound Blocks which are used to control the sound functions and they are green in colour.

Tell them that some of the commonly used Sound blocks are:

- Pop (plays a "pop" sound)
- Play Recorded Sound (plays a sound recorded by the user)

Explain the students about Events Blocks which control how the blocks in a script will start to run. Tell them that some of the commonly used Events blocks are:

- Start on Green Flag (starts by tapping Green Flag)

- Start on tap (start by tapping the character.)
- End(Ends the script)

Ask the students to solve the exercise **Quiz Bee** given on page number 84.

Ask the students to solve the exercise **I Know** given on page number 86.

After explaining the chapter, let the students do the exercises given on Page 88,89 and 90 in the main course book as Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on Page 91.

Take the students to the computer lab and let them practice the activity given in the SDG Activity and Lab Activity section on Page 90 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a scene of their choice using different blocks of ScratchJr.

9 Importance of AI

Teaching Objectives

Students will learn about

- Real-life Applications of Artificial Intelligence

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 92 to understand the recap of the topic.

Begin with the introduction of Artificial Intelligence as a medium to change the way we live our lives and get things done.

Make the students aware of how AI is not just limited to computers or space technologies but it also plays an important role in industries that are directly related to common people like entertainment, banking, automobile and the healthcare system.

Let the students know that AI is used to diagnose patients based on X-rays or medical scans in healthcare system.

Make the students understand that a large volume of data is processed to make important decisions with the help of robotic process automation in business.

Explain to the students how AI is used to grade homework and tests in education.

Let them know how AI models are used to detect exoplanets or planets outside our solar system.

Make the students aware that with the processed data, AI can predict price patterns and alert people when to buy tickets.

Ask the students to solve the exercise I Know given on page number 94.

Ask the students to solve the exercise Quiz Bee given on page number 95.

Extension

Ask the students some oral questions based on this chapter.

Q. How is Artificial Intelligence changing the way we live our lives?

Q. How is AI used in healthcare sector?

Q. How does AI help in the business sector?

Q. How is AI used in Education sector?

Q. What is the role of AI in space technology?

Q. How can AI contribute in tourism industry?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 96 and 97 in the main course book in the form of Assess Yourself. Tell them to solve the critical thinking skill developing exercise as Coding Zone given on page 98.

Take the students to the computer lab and let them practise the activity given in the Fun Activity and SDG Activity section on page 98 in the main course book. This will enhance the ability of the students and serve as a critical thinking activity.

Suggested Activity

Ask the students to find about more real-life applications of artificial intelligence which have upgraded methodology of our work in different sectors.