# TRACKPAD

Ver. 5.1

7

# 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<br>• Shows mature throwing and catching patterns<br>• Writing is now smaller and more readable<br>• Drawings are now more detailed, organised and have a sense of depth |
| Cognitive | • Attention continues to improve, becomes more selective and adaptable<br>• Recall, scripted memory, and auto-biographical memory improves<br>• Counts on and counts down, engaging in simple addition and subtraction<br>• Thoughts are now more logical |
| Language | • Vocabulary reaches about 10,000 words<br>• Vocabulary increases rapidly throughout middle childhood |
| Emotional/ Social | • Ability to predict and interpret emotional reactions of others enhances<br>• Relies more on language to express empathy<br>• Self-conscious emotions of pride and guilt are governed by personal responsibility<br>• Attends to facial and situational cues in interpreting another's feelings<br>• 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<br>• Cognitive self-regulation is now improved |
| Language | • Ability to use complex grammatical constructions enhances<br>• Conversational strategies are now more refined |
| Emotional/ Social | • Self-esteem tends to rise<br>• Peer groups emerge |

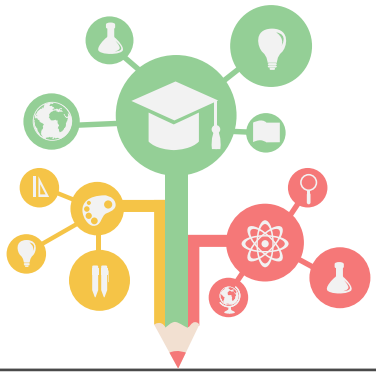
## Age 11 - 20 Years

| | |
|---|---|
| Physical | • If a girl, reaches peak of growth spurt<br>• If a girl, motor performance gradually increases and then levels off<br>• If a boy, reaches peak and then completes growth spurt<br>• If a boy, motor performance increases dramatically |
| Cognitive | • Is now more self-conscious and self-focused<br>• Becomes a better everyday planner and decision maker |
| Emotional/ Social | • May show increased gender stereotyping of attitudes and behaviour<br>• 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.

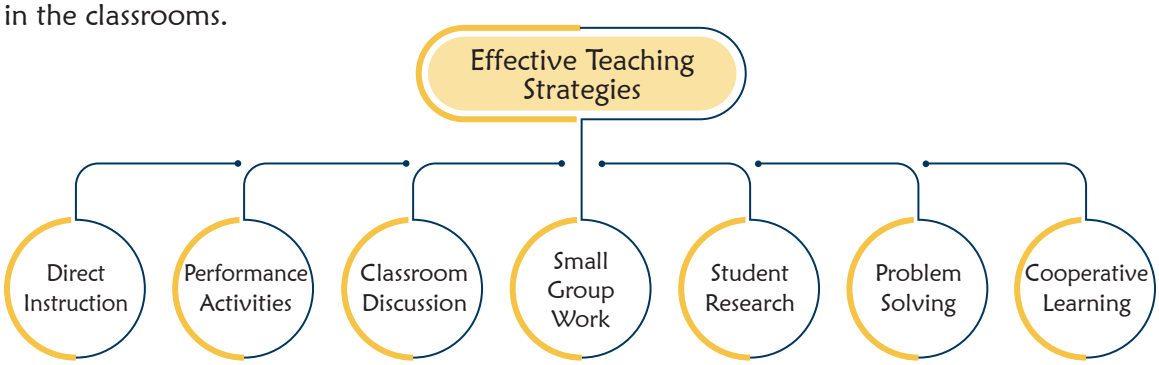
**After the class**

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

"Knowing yourself is the beginning of all wisdom."

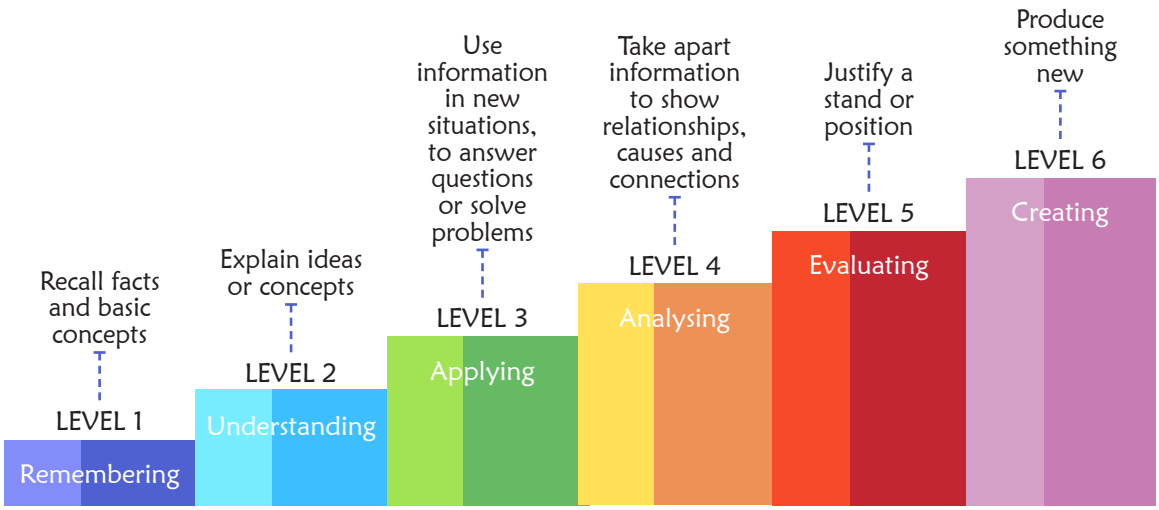
## Teaching Strategies

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 7

# LESSON PLAN

## 1 Number System

### Teaching Objectives

Students will learn about

- Data Representation
- What is Number System?
- Conversion of Decimal to Binary
- Conversion of Binary to Decimal
- Operations on Binary Numbers

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 0 |

### Teaching Plan

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

Begin with description of data representation through a computer.

Explain bit to the students.

While teaching this chapter, tell the students that a number system is simply a method of counting.

Introduce base or radix as the total number of digits used in a number system.

Inform them that there are four important types of number systems – Decimal (base 10), Binary (base 2), Octal (base 8) and Hexadecimal (base 16).

Make the students recall the method of writing expanded form of a number under Decimal number system.

Inform them that just like decimal number system:

- In decimal number system, the numbers are expressed using ten digits, 0 to 9 and expanded with base 10.
- In octal number system, the numbers are expressed using eight digits, 0 to 7 and expanded with base 8.

- In hexadecimal number system, the numbers are expressed using fifteen digits, 0 to 9 and A to F, and expanded with base 16.

Show the students the method of converting:

- Decimal number to Binary number by successive division by 2 and arranging the remainders in reverse order.
- Binary number to Decimal number by multiplying digits with 2 raised to the power of place of that digit starting from 0 on the left.

Share the rules of binary addition, subtraction, multiplication and division.

Show to the students the method of carrying out mathematical operations on binary numbers and verifying the results by corresponding conversions to decimal numbers

Ask the students to solve the exercise **I Know** given on page number 11.

Ask the students to solve the exercise **Quiz Bee** given on page number 11.

## Extension

Ask the students some oral questions based on this chapter.

Q. What is a number system?

Q. What is the radix of decimal / binary / octal / hexadecimal number system?

Q. Which digits are used to express a decimal / binary / octal / hexadecimal number?

Q. What is the value of addition of binary digits 1 and 1?

Q. What is the value of subtraction of binary digits 0 and 1?

Q. Which number system is used by computers?

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 13 to 16 in the main course book in the form of Assess Yourself. Tell them to solve the creativity and critical thinking skills developing exercise as Coding Zone given on page 17.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 16 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

Ask the students to try Self Reflection session given on page 13 to highlight elements like initiative on part of the students.

## Suggested Activity

1. Convert the last four digits of your parents' mobile numbers into binary number.
2. Ask the students to prepare a comparative chart with four columns, the first one listing the digits used in Hexadecimal number system and in the remaining three columns, their equivalent value under decimal, binary and octal number systems.

# 2 Advanced Features of Excel

## Teaching Objectives

Students will learn about

- SUM()
- IF()
- Sorting Data in Excel
- Filtering Data in Excel
- Conditional Formatting

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 0 |

## Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 18 to understand the recap of the topic.

While teaching this chapter, tell the students that Excel 2021 provides easy options for sorting data and highlighting the required information in a worksheet.

Explain the students about the SUM( ) function and how to use it in Excel.

Demonstrate the students about the IF( ) function and the details regarding how to use it in Excel.

Introduce sorting as arranging the data in ascending or descending order.

Demonstrate to the students the various steps involved in sorting of data in an Excel worksheet.

Explain the concept and use of Custom Sort feature.

Introduce filtering as hiding unwanted data from a set of data.

Show students the various steps involved in applying Filters in a worksheet.

Share with the students that Filters once applied can be easily removed and tell them the method of removing filters.

Introduce Conditional Formatting as highlighting the required information.

Tell the students about basic difference between Filtering (unwanted information gets hidden) and Conditional Formatting (required information gets highlighted).

Demonstrate the steps involved in applying conditional formatting on a worksheet.

Ask the students to solve the exercise **I Know** given on page number 21.

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. Define Excel 2021.

Q. When do we need to use Excel 2021?

Q. What is the purpose of SUM()?

Q. What is the purpose of IF()?

Q. What is the difference between sort and custom sort features?

Q. What are filters?

Q. How can filters be removed in a worksheet?

Q. What do you understand by conditional formatting feature?

Q. How is conditional formatting different from filtering data?

Q. Write the steps to apply conditional formatting.

### Evaluation

After explaining the chapter, let the students do the exercises given on pages 25, 26 and 27 in the main course book in the form of Assess Yourself. Tell them to solve the technology literacy and productivity & accountability skills developing exercise as Coding Zone given on page 28.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 27 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

### Suggested Activity

1. Ask the students to enter their height and weight along with similar information for their nine friends. Sort the data with primary criteria as heights in ascending order and secondary criteria as weights in descending order.
2. Highlight the cells where the heights are less than the height of the student or weight is more than the weight of the student who is preparing the worksheet.

## 3 More on Krita

### Teaching Objectives

Students will learn about

- Manipulating the canvas
- Different Views in Krita
- Opening an Image in Krita
- Selection Tools
- Move Tool
- Crop Tool
- Gradient Tool

- Creating and Managing Layers in Krita
- Creating a Project in Krita

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 3 |

## Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 29 to understand the recap of the topic.

Explain and Recap of Krita as an open-source digital painting software.

Introduce the features of Krita covered in this lesson and their applications.

Explain the concept of Manipulating the Canvas in Krita.

Demonstrate zooming, panning, resizing, and rotating the canvas using shortcuts and tools.

Explain Different Views in Krita Show Canvas Only View and Full Screen Mode View.

Demonstrate how to switch between different views for an optimized workflow.

Demonstrate the steps of opening an image in Krita.

Explain why selection tools are important for editing specific parts of an image.

Demonstrate different selection tools:

- Rectangular Selection Tool
- Freehand Selection Tool
- Polygonal Selection Tool
- Magnetic Curve Selection Tool

Explain the function and their steps to move selecting objects using the Move Tool.

Demonstrate how to move selections, layers, and objects to a different location.

Explain the importance of cropping in digital artwork and also explain the Steps of Crop Tool.

Demonstrate how to select and crop an image or a specific area.

Explain the function of the Gradient Tool, and also demonstrate the steps to use it.

Demonstrate how to create and apply gradients in an image or selection.

Explain the purpose and benefits of Creating and Managing Layers.

Demonstrate the following:

- Creating a new layer
- Renaming a layer
- Duplicating a layer
- Hiding and unhiding a layer
- Moving layers up and down

Demonstrate the steps to creating a Project in Krita.

Demonstrate steps to add images as separate layers and manipulate them.

Ask the students to solve the exercise **I Know** given on page number 33.

## Extension

Ask the students some oral questions based on this chapter.

Q. What are the different ways to manipulate a canvas in Krita?

Q. How do selection tools help in modifying an image?

Q. Why are layers useful in digital painting?

Q. What is the shortcut for zooming in Krita?

Q. How do you select an object using the Freehand Selection Tool?

Q. What is the purpose of layers in Krita?

Q. Which tool helps to move an object to a different location?

Q. How do you create a new layer in Krita?

Q. How can you move a layer without affecting the others?

Q. What are the benefits of using the Gradient Tool?

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 45 and 46 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 47.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on pages 47 in the main course book. This will enhance the ability of the students and serve as a creativity and technology literacy activity.

Ask the students to try Self Reflection session given on page 44 to highlight elements like leadership & responsibility on part of the students.

## Suggested Activity

Ask students to create a digital painting using layers and selection tools.

Save the final artwork as a .png file.

# 4 Lists and Tables in HTML5

## Teaching Objectives

Students will learn about

- Lists
- Nested List
- Tables
- Styling Tables Using CSS

| Number of Periods | |
|---|---|
| Theory | Practical |
| 3 | 2 |

## Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 49 to understand the recap of the topic.

While teaching this chapter, tell the students that HTML tags are used to create a web page.

Introduce list as collection of related items.

Tell the students that there are three types of lists – Ordered List (Numbered List), Unordered List (Bulleted List) and Definition List (Description List).

Explain the use of <OL> tag to create ordered lists, <UL> tag to create unordered lists and <DL> tag to create definition lists.

Let the students know that an item on a list can another list and this list within a list is known as a nested list or sub-list.

Make the students learn how to write HTML code to create a nested list.

Explain the use of <TABLE> tag and its child tags covering <TR>, <TD>, <TH> and <Caption>.

Demonstrate the code to create a table and its data in HTML.

Make the students aware of styling tables using CSS.

Let the students know that CSS allows us to style tables for a single HTML page.

Explain to the students the border property, border-collapse property and padding property in detail.

Ask the students to solve the exercise **I Know** given on page number 55.

Ask the students to solve the exercise **Quiz Bee** given on page number 63.

## Extension

Ask the students some oral questions based on this chapter.

Q. Define List / Table.

Q. How many types of Lists can be created in HTML?

Q. Name the different types of Lists that can be created in HTML.

Q. What is an Ordered / Unordered / Definition List?

Q. Name the attributes of <OL> tag.

Q. Name the tags used to create Definition List.

Q. What is a nested list?

Q. How can we make a list attractive?

Q. Name the tags that can be used to create different kinds of tables.

Q. What are the attributes of <TABLE> / <TD> tag?

Q. What allows us to style tables?

Q. What is border-collapse property?

Q. What is padding?

### Evaluation

After explaining the chapter, let the students do the exercises given on pages 63, 64 and 65 in the main course book in the form of Assess Yourself. Tell them to solve the information literacy skill developing exercise as Coding Zone given on page 67.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on pages 59 and 60 in the main course book. This will enhance the ability of the students and serve as an creativity and technology literacy activity.

Ask the students to try Video based question given on page 65 in the computer lab to enhance media literacy skills.

### Suggested Activity

Ask the students to create a web page using all the HTML Tags taught in this chapter.

## 5 Images, Links and Forms in HTML5

### Teaching Objectives

Students will learn about

- Images in HTML
- Images with CSS
- Hyperlink in HTML
- Hyperlink with CSS
- Embedding Audio and Video
- Frames and iFrames
- iFrames and CSS

## ✦ Forms in HTML

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 2 |

### Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 68 to understand the recap of the topic.

While teaching this chapter, tell the students that HTML allows inserting images and frames on web pages as well as interlinking them.

Tell the students that HTML supports JPEG, GIF and PNG image formats.

Tell the students that <IMG> tag is used to insert images and it takes the attributes as SRC, WIDTH, HEIGHT, ALIGN, BORDER and ALT.

Demonstrate to the students the use of <IMG> tag and its attributes.

Let the students know how to write HTML code for inserting an image on a web page.

Make the students aware of how to control display of the image using CSS.

Explain to the students hyperlink is a feature of HTML which helps link the web pages.

Make the students understand that a hyperlink is an underlined text or an image which when clicked takes the user to some other location.

Share with the students that <A> is used to create links and the attributes that this tag can take are – LINK, ALINK and VLINK.

Demonstrate the use of <A> tag and its attributes to hyperlink web pages.

Let the students know that the HTML5 <AUDIO> and <VIDEO> tags allow us to add media to a website.

Explain to the students how to embed audio and video in an HTML document.

Introduce Frames as a feature to display more than one web page on a single screen of the web browser.

Explain the use of <FRAMESET> tag and <FRAME> tag to create and define frames on a web page.

Make the students aware of iFrames and CSS

Let the students know that HTML forms are used to collect information from the site visitors.

Explain to the students how to create forms in HTML.

Ask the students to solve the exercise **Quiz Bee** given on page number 71.

Ask the students to solve the exercise **I Know** given on page number 73.

### Extension

Ask the students some oral questions based on this chapter.

Q. Which tag is used to insert images on a web page?

Q. State the use of SRC / WIDTH / ALIGN /ALT attribute of IMG tag.

Q. Which image formats are supported by HTML?

Q. What can we use to control the display of the image?

Q. Which tag is used to link web pages?

Q. Name the attributes that can be taken by FRAME tag.

Q. What is a frameset?

Q. Which properties of CSS make frames attractive?

Q. What are HTML forms?

### Evaluation

After explaining the chapter, let the students do the exercises given on pages 85, 86 and 87 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 88.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on pages 87 and 88 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

Ask the students to try Self Reflection session given on page 84 to highlight elements like initiative and collaboration on part of the students.

### Suggested Activity

Ask the students to create an e-shopping website listing categories of items on home page and details of items on separate category pages.

## 6 Developing Mobile Apps

### Teaching Objectives

Students will learn about

- Installing an App from Google Play Store
- Removing an App
- Developing an App

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 3 |

### Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 89 to understand the recap of the topic.

While teaching this chapter, brief the students about smartphones, technology and apps.

Explain to the students the steps involved in installing the App from the Google Play Store.

Explain to the students the steps involved in removing an App.

Tell the students in detail:

- Points to keep in mind while developing an App
- App Inventor
- Setting Up App Inventor

Define all the components of Project Designer Window in detail:

- Palette Pane
- View Pane
- Components Pane
- Properties Pane

Describe to the students how to create a Talking App by following the actions like:

- Adding a button
- Testing the App
- Rename the button
- Change the display name of button
- Adding a text to Speech Command

Define all the components of Block Editor in detail:

- Built-in blocks
- Component blocks
- Workspace
- Trash
- Backpack

Show the students how to test the App in detail.

Ask the students to solve the exercise **Quiz Bee** given on page number 93.

Ask the students to solve the exercise **I Know** given on page number 98.

## Extension

Ask the students some oral questions based on this chapter.

Q. What is an App?

Q. Write the steps to install an app from play store.

Q. Write the steps to remove an app.

Q. What is App Inventor?

Q. Define the following.

- Palette Pane
- View Pane
- Components Pane
- Properties Pane

Q. How can a talking app be created?

Q. Define the following.

- Built-in blocks
- Component blocks
- Workspace
- Trash
- Backpack

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 99 and 100 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 102.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 102 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

Ask the students to carry out the Group Discussion session given on page 101 in the class only to enhance social interaction and communication skills.

Ask the students to try Video based question given on page 102 in the computer lab to enhance media literacy skills.

## Suggested Activity

Ask the students to develop an app for adding grocery list and with your voice.

# 7 Google Apps

## Teaching Objectives

Students will learn about

- Google Workplace
- How are Google Apps Helpful?
- Commonly used Google Apps
- Other Google Apps
- Apps for Everyday Use

| Number of Periods | |
|---|---|
| Theory | Practical |
| 3 | 3 |

## Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 106 to understand the recap of the topic.

While teaching this chapter, brief the students about Google and mobile apps.

Introduce Google to the students along with the history.

Make the students aware of Google Workplace.

Let the students know how how Google apps are helpful to us.

Explain the Google Apps to the students in detail like Gmail, Google Drive, Google Maps, Google Docs, Google Sheets, Google Slides and YouTube.

Explain the following components of Google Drive to the students along with the steps involved in:

- What can you store in Google Drive?
- How much can you store in Google Drive?
- How does it work?
- Features of Google Drive

Demonstrate the features of Google Maps to the students along with the steps involved in it.

Demonstrate the opening/ importing an existing word document for editing in Google Docs to the students along with the steps involved in it.

Explain the following components of Google Sheets to the students along with the steps involved in:

- Features of Google Sheets
- Creating and Saving a New Google Sheet
- Sharing and Protecting Data in Google Sheets
- Sharing a File
- Protecting Data

Explain the following components of Google Slides to the students along with the steps involved in:

- Features of Google Slides
- Creating a New Presentation

Explain the following components of YouTube to the students along with the steps involved in:

- Features of YouTube
- How to Use YouTube
- Uploading a Video on YouTube

Explain the other Google apps which are used in our daily lives:

- Google Calendar
- Google Meet
- Google Contacts
- Google Photos
- Google Classroom
- Google Forms
- Google Earth
- Google Translate

Ask the students to solve the exercise **Quiz Bee** given on page number 111.

Ask the students to solve the exercise **I Know** given on page number 122.

## Extension

Ask the students some oral questions based on this chapter.

Q What are Google Apps?

Q. What is Gmail?

Q. What is Google Drive?

Q. Define Google Maps.

Q. Define Google Docs.

Q. Define Google Sheets.

Q. Define Google Slides.

Q. What is YouTube?

Q. What is a Google Calender?

Q. What is Google Meet?

Q. Define Google Contacts.

Q. Define Google Photos.

Q. What is Google Classroom?

Q. Define Google Forms.

Q. What is Google Earth?

Q. How is Google Translate useful to us?

### Evaluation

After explaining the chapter, let the students do the exercises given on pages 123, 124 and 125 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 125.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 125 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 the students to learn more about the features of Google Classroom.

## 8 Cyber Security

### Teaching Objectives

Students will learn about

- What is Cyber Security?
- Need of Cyber Security
- Computer Ethics
- Common Cyber Security Measures
- Indian Laws and Government Initiatives

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 0 |

### Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 126 to understand the recap of the topic.

While teaching this chapter, brief the students about the term 'cyber' and cyber security.

Tell the students why we need cyber security and what issues we can resolve with it.

Explain to the students about the Computer Ethics and the unethical practises:

- Spamming
- Phishing
- Software Piracy
- Digital Footprints
- Hacking
- Plagiarism
- Intellectual Property Rights

Also, explain the tips to avoid these unethical practises while you are using online services.

Share some common cyber security measures with the students along with information technology security.

Tell the students in detail about the Indian Laws and Government Initiatives which are:

- Information Technology Act, 2000
- Information Technology Amendment Act, 2008
- National Cyber Security Policy, 2013

Ask the students to solve the exercise **Quiz Bee** given on page number 129.

Ask the students to solve the exercise **I Know** given on page number 130.

## Extension

Ask the students some oral questions based on this chapter.

Q. What is Cyber Security?

Q. Why do we need cyber security?

Q. Define the following:

- Spamming
- Phishing
- Software Piracy
- Digital Footprints
- Hacking
- Plagiarism
- Intellectual Property Rights

Q. What is IT security?

Q. Explain the following:

- Information Technology Act, 2000
- Information Technology Amendment Act, 2008
- National Cyber Security Policy, 2013

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 131, 132 ands 133 in the main course book in the form of Assess Yourself. Tell them to solve the initiative and information literacy skill developing exercise as Coding Zone given on page 134.

Take the students to the computer lab and let them practise the activity given in the Lab Activity and Fun Activity section on page 133 and 134 in the main course book. This will enhance the ability of the students and serve as a technology literacy, creativity and collaboration activity.

Ask the students to try Self Reflection session given on page 131 to highlight elements like flexibility on part of the students.

Ask the students to carry out the Group Discussion session given on page 133 in the class only to enhance social interaction and communication skills.

### Suggested Activity

Ask the students to prepare a detailed project on Indian Laws and Government Initiatives on an A3 sheet.

# 9 Algorithmic Intelligence

### Teaching Objectives

Students will learn about

- Information Processing
- Conditions in a Program

| Number of Periods | |
|---|---|
| Theory | Practical |
| 1 | 1 |

### Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 135 to understand the recap of the topic.

Begin with introduction of algorithm as a step-by-step instructions in a sequential manner to solve a problem.

Let them know that a flowchart is a pictorial representation of an algorithm.

Make the students aware of information processing.

Make the students understand that Binary code is the fundamental form of the programming data that is directly interchanged by a computer.

Explain about conditions in a program that are required to make certain decisions based on the logic of the program.

Also let them know about if-then-else statements and conditions related to them.

Ask the students to solve the exercise **I Know** given on page number 137.

Ask the students to solve the exercise **Quiz Bee** given on page number 138.

### Extension

Ask the students some oral questions based on this chapter.

Q. What is algorithm?

Q. What is a flowchart?

Q. Name the base to write a program.

Q. What is information processing?

Q. What is the importance of processing of information?

Q. What is binary code?

Q. Define conditions in a program.

Q. Why are conditional statements used in a program?

### Evaluation

After explaining the chapter, let the students do the exercises given on pages 139 and 140 in the main course book in the form of Assess Yourself. Tell them to solve the critical thinking and Technology Literacy skill developing exercise as Coding Zone given on page 141.

Take the students to the computer lab and let them practise the activity given in the Lab and Fun activity section on page 140 in the main course book. This will enhance the ability of the students and foster Critical Thinking, Creativity and collaborative skills.

Ask the students to try Self Reflection session given on page 138 to highlight elements like initiative on part of the students.

### Suggested Activity

Ask the students to develop an app for reciting tables with your help.

## 10 Tokens and Data Types in Python

### Teaching Objectives

Students will learn about

- Python Character Set
- Python Tokens
- Data Types
- Find Data Type
- Errors in Python Programs
- Some More Programs

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 0 |

### Teaching Plan

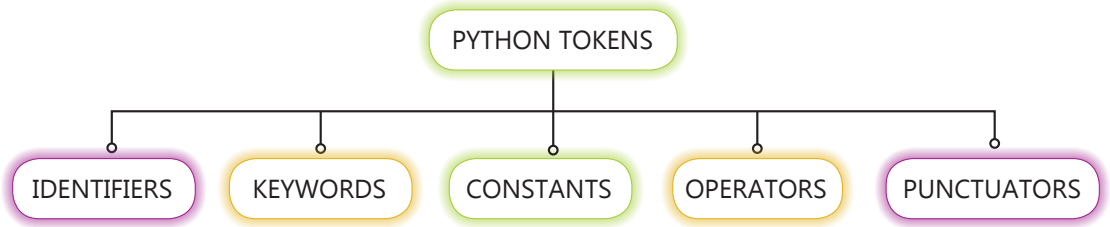
Before starting the chapter, ask the students to read the comic given on page 143 to understand the recap of the topic.

While teaching the chapter, explain to the students briefly about Python for a quick revision.

Tell the students about the Python character set and define:

- Alphabet
- Digits
- Special Character

Explain the students the Python tokens and its types:

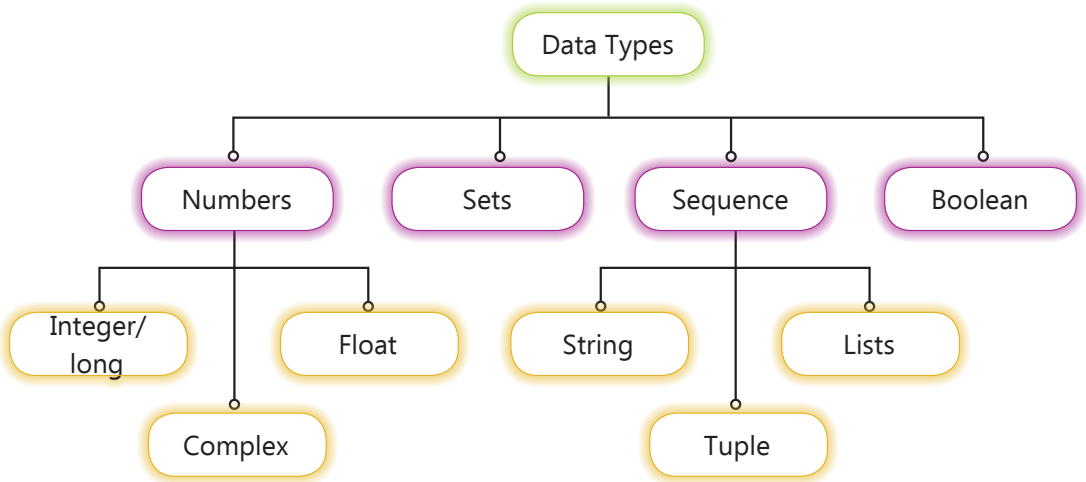



Also, explain how the following operators are used:

- Arithmetic
- Relational or Comparison
- Logical
- Assignment
- Operator Precedence

Let the students know that punctuators are also called separators as they are used to separate lines of codes, variables, etc.

Share to the students about data types in detail




Tell the students how to find the data type using the type( ) function in Python.

Explain to the students about the types of errors that occur in a Python program:

- Syntax Error
- Logical Error

Also, explain some more programs of Python for their self-learning and practise.

Ask the students to solve the exercise **I Know** given on page number 145.

Ask the students to solve the exercise **Quiz Bee** given on page number 150.

## Extension

Ask the students some oral questions based on this chapter.

Q. What are tokens in python?

Q. Explain the following:

- Identifiers
- Keywords
- Constants
- Operators
- Punctuators

Q. Explain the data types.

Q. Define the following:

a. Numbers

b. Sets

c. Sequence

d. Boolean

Q. How is type( ) function used?

Q. Define the following types of errors in Python.

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 154, 155 and 156 in the main course book in the form of Assess Yourself. Tell them to solve the technology literacy and critical thinking skill developing exercise as Coding Zone given on page 157.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 156 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

## Suggested Activity

Ask the students to write a program to calculate area of a square in Python.

# 11 Future of Artificial Intelligence

## Teaching Objectives

Students will learn about

- Evolution of AI
- Future Prospects of AI

| Number of Periods | |
|---|---|
| Theory | Practical |
| 2 | 0 |

## Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 158 to understand the recap of the topic.

While teaching this chapter, brief the students about Artificial Intelligence.

Explain to the students about the scope and evolution of AI with examples of:

- First Wave of AI
- Second Wave of AI
- Third Wave of AI

Demonstrate the future prospects of AI to the students in detail:

- Automated Transportation
- Safety and Security
- Traffic Management
- Smart Homes and Cities
- Smart Highway
- Intelligent Security

Ask the students to solve the exercise **Quiz Bee** given on page number 160.

Ask the students to solve the exercise **I Know** given on page number 161.

## Extension

Ask the students some oral questions based on this chapter.

Q. What is AI?

Q. Write notes on:

a. First Wave of AI
b. Second Wave of AI
c. Third Wave of AI

Q. Explain the following:

- Automated Transportation
- Safety and Security

- Traffic Management
- Smart Homes and Cities
- Smart Highway
- Intelligent Security

## Evaluation

After explaining the chapter, let the students do the exercises given on pages 162 and 163 in the main course book in the form of Assess Yourself. Tell them to solve the technology literacy skill developing exercise as Coding Zone given on page 164.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 163 in the main course book. This will enhance the ability of the students and serve as a creativity and technology literacy activity.

Ask the students to try Self Reflection session given on page 161 to highlight elements like flexibility on part of the students.

## Suggested Activity

Ask the students to research more examples about the devices which fall under the categories of future prospects.