6

TRACKPAD

Ver. 5.0

Teacher's Manual

Extended Support for Teachers

ORANGE
www.orangeeducation.in
www.thetouchpad.com

Teacher's Time Table

Periods / Days	0	I	II	III	IV	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.

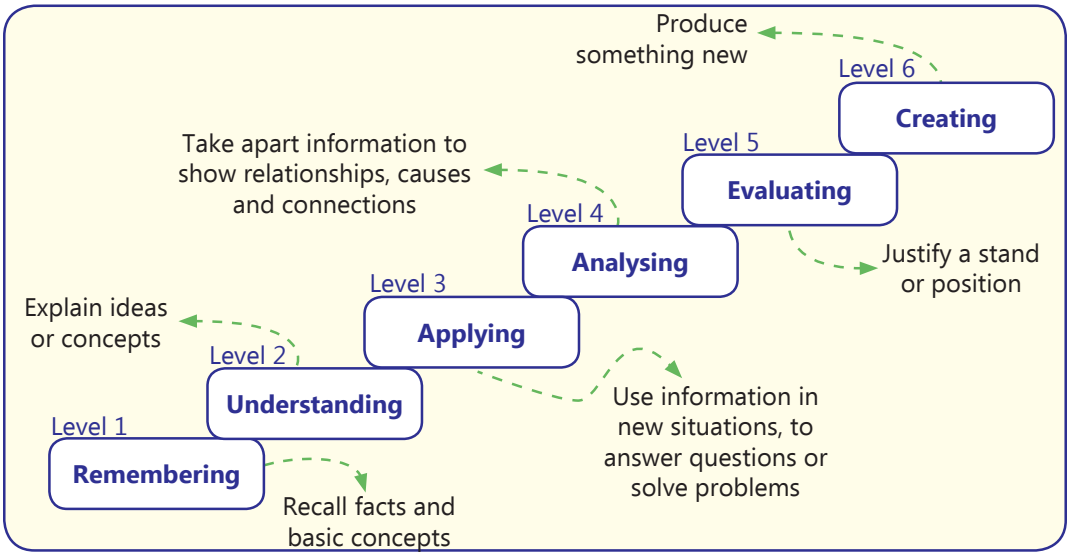
"Knowing yourself is the beginning of all wisdom."

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 6

LESSON PLAN

Trackpad Ver 5.0

1. Fundamentals of Computer

Teaching Objectives

Students will learn about

- Evolution of Computers
- Other Types of Computer
- Categories of Computers
- Devices of a Computer

Number of Periods	
Theory	Practical
3	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.

While teaching this chapter, tell the students that a computer is an electronic device that performs diverse operations with the help of instructions to process the data in order to achieve desired results.

Explain the students about the evolution of computers and tell them about computer generations:

- First Generation (Vacuum Based)
- Second Generation (Transistor Based)
- Third Generation (Integrated Circuit Based)
- Fourth Generation (Microprocessor Based)
- Fifth Generation (Artificial Intelligence)

Tell the students that on the basis of functions, computers are further divided into three categories: **Analog Computer**, **Digital Computer** and **Hybrid Computer** with examples.

Showcase the basic definitions of these three types of computer:

a. **Analog Computer:** This type of computer store data in a continuous form of physical quantities and perform calculations with the help of measures.

b. **Digital Computer:** This type of computer processes both numeric as well as non-numeric data. It also performs many arithmetic operations such as addition, subtraction, multiplication, division, and logical operations.

c. **Hybrid Computer:** This type of computer system consists of a combination of analog and digital computer systems.

Explain the students that according to size, speed, processing power and cost, computers are further divided into categories.

Tell the students that computers are categorized on the basis of:

- Size
- Speed
- Processing
- Cost

Make them understand these categories in details with examples.

- Explain **Microcomputers** and their examples like Desktop computer, Laptop and Tablet.
- Explain **Mainframe Computer** with example like IBM zSeries.
- Explain **Supercomputer** with examples like PARAM, Cray-1, etc.

Make them understand that there are some other special computers:

- **Embedded Computer:** It is further divided into Digital Camera, ATM and Microwave, etc.
- **Handheld Computer:** It is further divided into Smartphone, PDA, Smartwatch, Gaming Consoles, etc.

Tell the students about the working of computer and explain the working of the associated devices:

- Input Devices
- Processing Devices
- Output Devices

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

Ask the students to solve the exercise **I Know** given on page number 15.

Extension

Ask the students some oral questions based on this chapter.

Q. How has invention of computers helped us?

Q. How has evolution of computers been classified?

Q. Explain computers belonging to different generations.

Q. What is an analog computer?

Q. What is a digital computer?

Q. What is a hybrid computer?

Q. Give examples of:

- Analog Computer
- Digital computer
- Hybrid Computer

Q. What is a microcomputer?

Q. What is a minicomputer?

Q. What is a mainframe computer?

Q. What is a supercomputer?

Q. Explain embedded computer with examples.

Q. What is a handheld computer? Give three examples.

Q. Explain input devices with examples.

Q. What are processing devices? Give examples.

Q. Explain output devices with examples.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 15, 16 and 17 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 18.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 18 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 collect pictures of different types of computers and paste them on a chart paper according to the categories explained in this chapter.

2. Formulas and Functions in Excel 2021

Teaching Objectives

Students will learn about

- ☞ Data Types in Excel 2021
- ☞ Operator Precedence
- ☞ Cell Range
- ☞ Functions
- ☞ Operators in Excel 2021
- ☞ Ways to Enter a Formula in Excel 2021
- ☞ Cell References

Number of Periods	
Theory	Practical
2	2

Teaching Plan

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

Begin with introduction of data types in Excel 2021 to the students.

Share with the students the knowledge of basic elements and rules of writing a formula in Excel.

Show them the different methods of entering a formula Excel 2021.

Introduce cell referencing as the use of cell address while writing a formula.

Make them understand the different types of cell referencing and the difference between the three – Absolute, Relative and Mixed.

Explain the meaning of these three types of referencing in simple words like:

a. **Absolute Referencing:** It refers to a reference that is "locked" so that rows and columns won't change when copied.

b. **Relative Referencing:** It is the default cell reference in Excel. It is simply the combination of column name and row number without any dollar ($) sign.

c. **Mixed Referencing:** It is a type of Absolute reference in which either the column is made constant or the row is made constant.

Tell the students about rules for using functions and different categories of functions in Excel.

Demonstrate the use of mathematical functions – SUM, PRODUCT, MOD, SQRT, INT, POWER, COUNT, etc.

Demonstrate the use of text functions – CONCATENATE, LEFT, RIGHT, LEN, UPPER, LOWER, etc.

Demonstrate the use of logical functions – MAX, MIN and AVERAGE, etc.

Demonstrate the use of date functions – TODAY, MONTH, YEAR, DAY, etc.

Demonstrate the use of error functions – ####, #VALUE!, #N/A, etc.

Ask the students to solve the exercise **I Know** given on page number 23.

Ask the students to solve the exercise **Quiz Bee** given on page number 27.

Extension

Ask the students some oral questions based on this chapter.

Q. What are data types in Excel 2021?

Q. What are operators in Excel 2021?

Q. What is the order of operation followed in Excel 2021?

Q. Name the different elements of a formula in Excel 2021.

Q. Define cell referencing.

Q. What is a cell range?

Q. How is a cell range selected?

Q. What are functions in Excel 2021?

Q. Name some important categories of functions.

Q. State the purpose of SUM / SQRT / MOD / COUNT / LEN / RIGHT / TODAY / MAX function.

Q. What is the syntax of PRODUCT / INT / POWER / CONCATENATE / LEFT / UPPER / LOWER / MIN / AVERAGE function?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 29 & 30 in the main course book as Assess Yourself. Tell them to solve the interdisciplinary and computational skills developing exercise in the form of Coding Zone given on page 31.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 31 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 28 to highlight elements like initiative on part of the students. Also ask the students to carry out Group Discussion session given on page 31 in the class to enhance social interaction and communication skills.

Suggested Activity

Ask the students to enter their last marksheet in Excel and calculate total marks scored, average marks scored, maximum and minimum marks amongst all the marks and the number of subjects using various functions used in Excel 2021.

3. Charts in Excel 2021

Teaching Objectives

Students will learn about

- Charts
- Components of a Chart
- Creating a Chart
- Setting the Data Range
- Changing Background of the Chart
- Advantages of Charts
- Types of Charts
- Changing Chart Type
- Moving and Resizing the Chart

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 32 to understand the recap of the topic.

Begin with explanation of the charts in Excel 2021 as representative of data in pictorial or graphical form.

Let them know various advantages of charts in Excel 2021.

Show the different components of an Excel chart.

Familiarize the students with the different types of chart options available Excel 2021.

Explain each chart type to the students with examples:

- Column chart
- Bar chart
- Line chart
- Area chart
- Pie chart
- Scatter chart
- Doughnut chart

Demonstrate the steps of:

- Creating a chart
- Changing the chart type
- Setting the data range
- Moving and resizing the chart
- Changing background of the chart

Ask the students to solve the exercise **I Know** given on page number 34.

Ask the students to solve the exercise **Quiz Bee** given on page number 36.

Extension

Ask the students some oral questions based on this chapter.

Q. Define charts in Excel.

Q. What are advantages of the chart?

Q. What is data series?

Q. What is a legend?

Q. What are gridlines in a chart?

Q. Explain different types of chart.

Q. When is a Line / Column / Pie / Bar / Area chart used?

Q. In Excel, can we change the type of an existing chart?

Q. Where are various options to change the colour of the chart area present?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 40, 41 and 42 in the main course book in the form of Assess Yourself. Tell them to solve the interdisciplinary and computational skill developing exercise as Coding Zone given on page 43.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on pages 42 and 43 in the main course book. This will enhance the ability of the students and serve as a technology literacy, creativity and collaboration activity.

Also ask the students to attempt Video based question given on page 42 in the computer lab to enhance media literacy.

Suggested Activity

From the previous marksheets of grade 1 to 6, collect data about your attendance in various grades. Plot a Line Chart in Excel from the data.

4. Introduction to Adobe Animate 2021

Teaching Objectives

Students will learn about

- Adobe Animate 2021
- Creating a Document in Adobe Animate
- Creating Graphics and Shapes
- Erasing Part of a Drawing
- Closing an Animate File
- Starting Adobe Animate 2021
- Components of Adobe Animate Window
- Filling Colours in a Shape
- Saving/Opening an Adobe Animate File

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 45 to understand the recap of the topic.

Begin with description of animation as an illusion of movement.

Explain them how animation works.

Make them aware of Adobe Animate 2021.

Describe various uses of Adobe Animate 2021.

Tell the students about Adobe Animate 2021 and the steps to start the application.

Show the students how to create a document in Adobe Animate 2021 with labelled steps.

Explain the components of Adobe Animate 2021 window:

- Stage
- Timeline
- Tools panel
- Properties panel

- Library panel
- Menu bar along with the functions

Demonstrate to the students the steps involved to create graphics and shapes in Animate 2021.

Explain the students about how to fill colours in shapes using Animate 2021.

Show the students the steps involved in erasing a part of a drawing.

Show the students the steps involved in saving a program.

Tell the students about the steps involved in opening a program. Also, tell them how to close an Animate file.

Ask the students to solve the exercise **Quiz Bee** given on page number 53.

Ask the students to solve the exercise **I Know** given on page number 54.

Extension

Ask the students some oral questions based on this chapter.

Q. Define animation.

Q. How does animation work?

Q. What is Adobe Animate 2021?

Q. What does Adobe Animate 2021 ensure?

Q. What are the various uses of Adobe Animate 2021?

Q. Write the steps to start Adobe Animate 2021.

Q. How is a document created in Adobe Animate 2021?

Q. Define:

a. Stage
b. Timeline Panel
c. Frame Number
d. Properties Tab
e. Library Tab
f. Menu Bar

Q. What is Tools Panel? Explain any four tools.

Q. What is Pen tool?

Q. How can a curved line to drawn using Pen tool?

Q. How can colours be filled in a shape using Adobe Animate 2021?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 55, 56 and 57 in the main course book in the form of Assess Yourself. Tell them to solve the computational skills developing exercise as Coding Zone given on page 57.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 57 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 create any shape in Adobe Animate 2021 using the tools taught in this chapter.

5. More on Adobe Animate 2021

Teaching Objectives

Students will learn about

- ☞ Adding Text to a Drawing
- ☞ Converting Text into a Shape
- ☞ Resizing and Rotating an Object
- ☞ Importing an Image
- ☞ Formatting Text
- ☞ Selecting an Object
- ☞ Grouping Objects

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to read the comic given in page 58 to understand the recap of the topic.

Demonstrate to the students the steps involved to add text to a drawing in Animate 2021.

Explain to the students about how to format text after adding the same in Animate 2021.

Show the students the steps involved in converting text into a shape in Animate 2021.

Demonstrate the steps to the students which are involved in selecting an object using:

- Selection Tool
- Lasso Tool

Show to the students the steps involved in:

- Resizing an object
- Rotating an object
- Grouping objects
- Importing an image

Ask the students to solve the exercise **Quiz Bee** given on page number 61.

Ask the students to solve the exercise **I Know** given on page number 62.

Extension

Ask the students some oral questions based on this chapter.

Q. What are the steps involved in:

a. Resizing an object
b. Rotating an object
c. Grouping objects
d. Importing an image

Q. What is selection tool?

Q. What is Lasso tool?

Q. What is Free Transformation tool?

Evaluation

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

Take the students to the computer lab and let them practise the activity given in the Lab Activity and Fun Activity section on page 65 in the main course book. This will enhance the ability of the students and serve as an interdisciplinary, technology literacy, creativity and critical thinking activity.

Ask the students to try Self Reflection session given on page 63 to highlight elements like flexibility on part of the students. Also ask the students to carry out Group Discussion session given on page 65 in the class to enhance social interaction and communication skills.

Suggested Activity

Ask the students to add text and convert it into an image in Adobe Animate 2021.

6. Learn HTML5 and CSS3

Teaching Objectives

Students will learn about

- What Is HTML?
- HTML Editor
- Understanding HTML5 Tags
- Attributes
- Rules for Writing HTML Codes
- Creating and Saving an HTML Document
- <P> Tag
- <Hn> Tag
- History of HTML
- Features of HTML5
- Basic HTML Tags
- HTML Comments
- Structure of an HTML Document
- Displaying a Web Page in a Web Browser
-
 Tag
- <HR> Tag

- ☞ Styling HTML5 Documents with Cascading Style Sheets
- ☞ Use of Inline CSS with HTML5 Tags

Number of Periods	
Theory	Practical
2	4

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 70 to understand the recap of the topic.

While teaching this chapter, tell the students that websites consist of millions of pages called web pages which contain text, graphics, audios, videos and links to other pages.

Introduce Hypertext Markup Language (HTML) as language that describes the structure of a web page. Make the students understand the meaning of the terms like hypertext and markup language. Tell the students about the tools needed for working with HTML.

Make the students aware of the different types of HTML editors – WYSIWYG editor and Text editor.

Familiarise the students with basic HTML terms like tags, container tags, empty tags, block level tags, text level tags and attributes.

Tell the students about the concept of nesting of tags.

Share with the students the general rules followed for writing HTML codes.

Show to the students a HTML document and make them understand and identify the various sections and structure of the HTML document.

Demonstrate to the students the steps involved in:

- Creating a HTML document • Saving a HTML document
- Previewing a web page.

Tell the students about the meaning and use of basic HTML tags covering <HTML>, <HEAD>, <TITLE> and <BODY> tags alone with their attributes.

Make the students aware of styling HTML5 Documents with cascading style sheets.

Let the students know how to use inline CSS with HTML5 tags.

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

Ask the students to solve the exercise **I Know** given on page number 79.

Extension

Ask the students some oral questions based on this chapter.

Q. What is HTML?

Q. Define hypertext and Markup language.

Q. Name the different types of HTML editors.

Q. What are tags and attributes?

Q. State the rules followed while writing HTML codes.

Q. Name the text editor most commonly used to write HTML codes.

Q. What is the difference between container tags and empty tags?

Q. State the use of <HTML> / <HEAD> / <BODY> / <TITLE> tags.

Q. What are attributes?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 80 and 81 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 82.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on pages 81 and 82 in the main course book. This will enhance the ability of the students and serve as an interdisciplinary and technology literacy activity.

Ask the students to try Self Reflection session given on page 79 to highlight elements like initiative and collaboration on part of the students.

Suggested Activity

Ask the students to develop a web page in HTML and show the names of National Symbols.

7. Formatting a Web Page

Teaching Objectives

Students will learn about

- Text Properties
- Font Properties
- Margin Properties
- Background Properties
- Using CSS to Control Multiple Pages

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 83 to understand the recap of the topic.

Tell the students about HTML and attributes used in making web pages.

Introduce the students with the text properties and show them how to use these:

Property	Value	Description
color	Name of the colour	It specifies the text colour to be used on the web page.
text-align	left, right, center, justify	It specifies the alignment of the text.
text-indent	length in pixels or percentage	It specifies the indentation of the first line of the text.
text-decoration	underline, over line or strike-through	It specifies the text effects like underline, over line or strike-through.
text-transform	capitalise, uppercase, lower-case and none	It specifies the transformation of text into uppercase, lowercase or title case.

Also show them a code to use all these properties.

Demonstrate the students with the background properties and show them how to use these:

Property	Value	Description
background-color	Name of the colour	It specifies the background colour to be used on the web page.
background-image	URL of image	It specifies the image to be used in the background on the web page.
background-repeat	repeat, repeat-x, repeat-y, (whereas, x- horizontal & y-vertical) no repeat	It specifies the repetition of an image on the web page.

Also show them a code to use all these properties.

Make the students aware of the font properties and how they are used.

Tell the students about how to control multiple pages using CSS with the help of a program.

Demonstrate the students with the margin properties and show them how to use them with the help of a program.

Ask the students to solve the exercise **Quiz Bee** given on page number 85.

Ask the students to solve the exercise **I Know** given on page number 90.

Extension

Ask the students some oral questions based on this chapter.

Q. Define following text properties:

a. color
b. text-align
c. text-indent
d. text-decoration
e. text-transform

Q. Define the following background properties:

a. background-color
b. background-image
c. background-repeat

Q. Define the following font properties:

a. font-family
b. font-size
c. font-style

Q. Define margin properties.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 90 and 91 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 94.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 92 in the main course book. This will enhance the ability of the students and serve as a critical thinking and technology literacy activity.

Ask the students to try Video based question given on page 92 in the computer lab to enhance media literacy skills.

Suggested Activity

Make a web page showing different types of food cuisine using the text and font properties taught in this chapter.

8. Internet Services

Teaching Objectives

Students will learn about

- Services on the Internet
- Safety on Internet

Number of Periods	
Theory	Practical
3	0

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 93 to understand the recap of the topic.

While teaching this chapter, brief the students about Internet.

Make the students aware of various services available on the internet for users.

Explain the Internet services like:

- Instant messaging
- File sharing
- Internet banking
- Podcast
- Video conferencing
- E-commerce
- Blog

Let the students know about the safety on Internet.

Ask the students to solve the exercise **Quiz Bee** given on page number 96.

Ask the students to solve the exercise **I Know** given on page number 96.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Internet?

Q. How can we search for the information on the Internet?

Q. What is instant messaging?

Q. Name some applications used for instant messaging.

Q. What is video conferencing?

Q. What is file sharing?

Q. What is Google Drive?

Q. What is E-commerce?

Q. What is Internet banking?

Q What is a blog?

Q. What is a podcast?

Q. What can we do to maintain safety on Internet?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 98 and 99 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 99.

Take the students to the computer lab and let them practise the activity given in the Lab Activity 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.

Ask the students to try Video based question given on page 99 in the computer lab to enhance media literacy skills.

Suggested Activity

Ask the students to learn how to use the internet services.

9. Algorithm, Flowchart and Mind Maps

Teaching Objectives

Students will learn about

- ☞ Algorithm
- ☞ Flowchart
- ☞ Brainstorming
- ☞ Computer Languages
- ☞ Writing an Algorithm
- ☞ Drawing a Flowchart
- ☞ Mind Maps
- ☞ Language Translator

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 101 to understand the recap of the topic.

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

Let the students know that writing a program becomes easy if the algorithm is written first.

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

Make the students aware of characteristics of an algorithm like input, output, definiteness, finiteness, effectiveness and uniqueness.

Explain to the students that an algorithm is mainly used for calculations, data processing and decision-making.

Let the students know how to write an algorithm.

Introduce flowcharts as diagrammatic representation of an algorithm.

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

Make the students learn the rules for drawing a flowchart.

Let the students know about advantages of a flowchart.

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

Explain to the students that brainstorming is a strategy to generate ideas. Brainstorming involves a group of people who sit together to discuss a topic and come up with ideas.

Make the students learn about Mind Maps and its structure.

Tell the students that computer languages are categorized as low-level languages (machine dependent) and high level languages (machine independent).

Share with the students that low level languages are further classified as machine language (first generation language made up of 0s and 1s) and assembly language (second generation language made up of alphanumeric symbols).

Make the students learn that the high level languages are further classified as third generation languages (examples: **BASIC, FORTRAN, PASCAL**, etc.), fourth generation languages (examples: **SQL, Perl, Python,** etc.) and natural language or fifth generation languages (Examples: Mercury, OPS5 and Prolog) involving artificial intelligence.

Tell the students the advantages and disadvantages of high level languages over low level languages.

Introduce the concept of language translators as software that convert a high level language into a machine language covering:

- **Assembler** – It is used to translate assembly language into machine language.
- **Compiler** – It is used to convert source program at once into machine language before executing it.
- **Interpreter** – It reads one line of instruction at a time and translates it into machine language before executing it.

Ask the students to solve the exercise **I Know** given on page number 103.

Ask the students to solve the exercise **Quiz Bee** given on page number 108.

Extension

Ask the students some oral questions based on this chapter.

Q. What is an algorithm?

Q. What is a flowchart?

Q. What is brainstorming?

Q. What is a mind map?

Q. What are computer languages?

Q. What is Low-Level language?

Q. What is High-Level language?

Q. Give examples of each:

a. Machine Language b. Assembly Language

c. Third Generation Language d. Fourth Generation Language

e. Fifth Generation Language

Q. What is a language translator?

Q. What is an assembler?

Q. What is the difference between a compiler and an interpreter?

Q. Explain the working of language translators.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 109, 110 and 111 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 111.

Take the students to the computer lab and let them practise the activity given in the Lab Activity and Fun Activity section on page 111 in the main course book. This will enhance the ability of the students and serve as an interdisciplinary, technology literacy, creativity and critical thinking activity.

Suggested Activity

Ask the students to find some questions which can be solved using algorithm and flowchart. Also, ask the students to collect more information about the computer languages and translators.

10. Introduction to Python

Teaching Objectives

Students will learn about

- Python
- Programming Modes in Python
- Variables in Python
- Comments in Python
- Saving a Python Program
- Getting Started with Python
- Input and Output
- Data Types in Python
- Operators in Python
- Executing a Python Program

- ☞ Opening a Saved Python Program
- ☞ More Programs
- ☞ Exiting Python Idle

Number of Periods	
Theory	Practical
2	3

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 112 to understand the recap of the topic.

While teaching this chapter, tell the students that Python is a popular high-level programming language and it is a powerful language used for general-purpose programming.

Introduce the students with Python and its use.

Share with the students the features of Python briefly that it is:

- Easy to code • Open-source language
- Object-oriented • Integrated and Extensible language
- Interpreted language • Dynamically Typed language

Demonstrate to the students the steps to install Python.

Show to the students the components of IDLE Shell window.

Tell the students that Programming in Python has two basic modes:

- Script Mode
- Interactive Mode

Explain to the students the Input and Output functions in a Python program with syntax and pictures.

Let the students know that a variable is the name of the memory location that is used to store data values that can be accessed or changed later.

Explain to the students the data types in Python, they are into, float and string.

Make the students aware of comments and its types in Python.

Let the students that operators are the special symbols in python that are used to perform computations.

Explain to the students how to save a Python program.

Make the students aware of executing a program in Python.

Let the students know how to open a saved Python program.

Make the students aware of exiting Python IDLE.

Ask the students to solve the exercise **I Know** given on page number 116.

Ask the students to solve the exercise **Quiz Bee** given on page number 118.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Python?

Q. What are features of Python?

Q. What are the steps to install Python?

Q. What are the two modes of programming in Python?

Q. What is the purpose of input() function?

Q. What is the purpose of print() function?

Q. What are variables in Python?

Q. What are comments in Python?

Q. What are operators in Python?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 121, 122 and 123 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 123.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 123 in the main course book. This will enhance the ability of the students and serve as an interdisciplinary and technology literacy activity.

Also ask the students to carry out Group Discussion session given on page 123 in the class to enhance social interaction and communication skills.

Suggested Activity

Ask the students to create a program in Python. Tell them to use all the functions taught in this chapter.

11. Intelligence and AI Approaches

Teaching Objectives

Students will learn about

- Intelligence
- Exploring Intelligence
- Types of Intelligence
- AI Approach

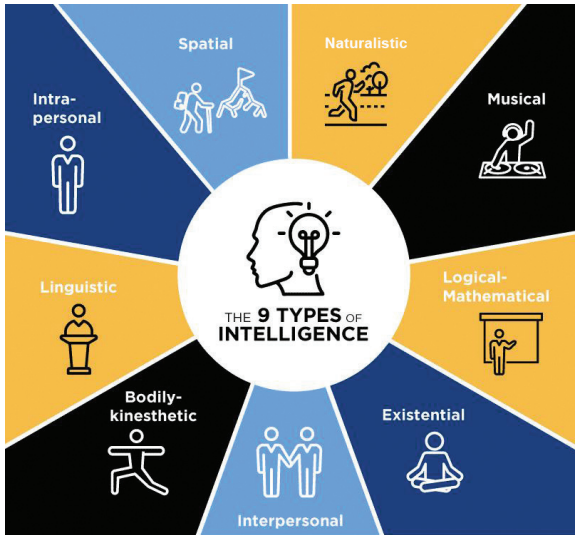
Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to read the comic given on page 124 to understand the recap of the topic.

Define the meaning of Intelligence to the students.

Explain the types of Intelligence along with the qualities of the same to the students:



- Visual-Spatial Intelligence
- Verbal-Linguistic Intelligence
- Logical-Mathematical Intelligence
- Bodily-Kinesthetic Intelligence
- Musical Intelligence
- Interpersonal Intelligence
- Existential Intelligence
- Intrapersonal Intelligence
- Naturalistic Intelligence

Make the students do some activities for exploring Intelligence.

Define the AI Approach which simulates human attribute:

- Rule Based Approach
- Learning Based Approach

Ask the students to solve the exercise **I Know** given on page number 126.

Ask the students to solve the exercise **Quiz Bee** given on page number 127.

Extension

Q. Define Intelligence.

Q. Define the qualities of these:

- Visual-Spatial Intelligence
- Verbal-Linguistic Intelligence
- Logical-Mathematical Intelligence
- Bodily-Kinesthetic Intelligence
- Musical Intelligence
- Interpersonal Intelligence
- Existential Intelligence
- Intrapersonal Intelligence
- Naturalistic Intelligence

Q. Define the two AI approaches:

- Rule Based Approach
- Learning Based Approach

Evaluation

After explaining the chapter, let the students do the exercises given on pages 128 and 129 in the main course book in the form of Assess Yourself. Tell them to solve the computational skill developing exercise as Coding Zone given on page 130.

Take the students to the computer lab and let them practise the activity given in the Lab Activity section on page 130 in the main course book. This will enhance the ability of the students and serve as a creativity and technology literacy activity.

Suggested Activity

Make a presentation showing different types of intelligence and their qualities.