TRACKGPT

iPro Ver. 5.0

8

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

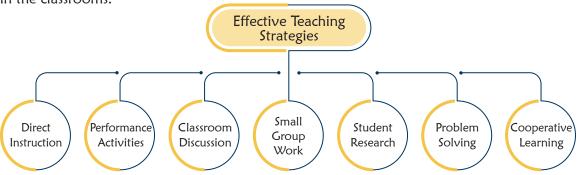Reflect on what worked well and why. If needed, revise the lesson plan.

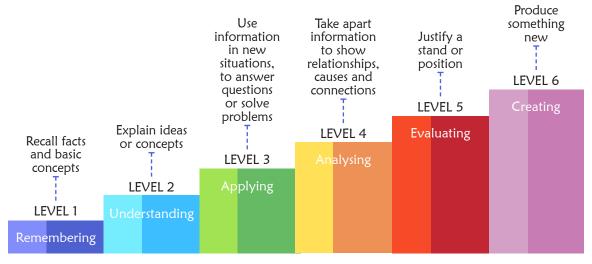> " Knowing yourself is the beginning of all wisdom. "

Teaching Strategies

Numerous strategies have evolved over the years to facilitate the teaching-learning process in the classrooms.

Effective Teaching Strategies

- Direct Instruction
- Performance Activities
- Classroom Discussion
- Small Group Work
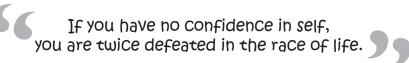- Student Research
- Problem Solving
- Cooperative Learning

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.

Recall facts and basic concepts
LEVEL 1
Remembering

Explain ideas or concepts
LEVEL 2
Understanding

Use information in new situations, to answer questions or solve problems
LEVEL 3
Applying

Take apart information to show relationships, causes and connections
LEVEL 4
Analysing

Justify a stand or position
LEVEL 5
Evaluating

Produce something new
LEVEL 6
Creating

Teachers should focus on helping students to remember information before expecting them to understand it, helping them understand it before expecting them to apply it to a new situation, and so on.

> If you have no confidence in self, you are twice defeated in the race of life.

1 Operating System

Teaching Objectives

Students will learn about

- What is an Operating System?
- Functions of an Operating System
- What is a User Interface?
- Why Do We Need an Operating System?
- Types of Operating Systems
- A Comparison between CUI and GUI

Teaching Plan

While While teaching this chapter, tell the students how a computer works with a combination of hardware and software.

Number of Periods	
Theory	Practical
3	2

Share with the students different categories of software:

- System software
- Application software

Explain the student an operating system

Explain what is the need of an operating system.

Demonstrate to the students different functions of an OS:

- Arranging Files and Folders
- Managing Resources
- Assigning Tasks to CPU
- Managing Devices
- Managing Memory
- Security

Tell the students about the different types of OS:

- Single-user Operating System
- Multi-processing Operating System
- Multi-tasking Operating System
- Multi-user Operating System
- Real-time Operating System
- Distributed Operating System

Introduce user interface and it's advantages and disadvantages.

Explain GUI and it's advantages and disadvantages.

Compare and explain differences between CUI & GUI.

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

Extension

Ask the students some oral questions based on this chapter.

Q.   What is a System Software?

Q.   What is an OS?

Q.   What is the need of an OS?

Q.   What are some different types of OS?

Q.   Explain the use of GUI in an OS.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 12 to 14 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 15 of the main course book. Help the students to solve these questions.

In Creative Assignment, activities like Tangible Task and Digital Drills given on page 15 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness, Collaboration and Teamwork & Digital Literacy, Experiential Learning activity.

Suggested Activity

Ask the students to create an algorithm to add 2 numbers and explain through a flowchart.

2   Spreadsheet—Functions and Charts

In this chapter, you will learn about some advanced features of Excel 2019.

Teaching Objectives

Students will learn about

- ✦   Understanding Cell Range
- ✦   Cell Referencing in Formulas and its Types
- ✦   Functions
- ✦   Sorting data
- ✦   Different Ways to Enter Formulas
- ✦   Customise Worksheet Tab
- ✦   Charts in excel

Teaching Plan

While teaching this chapter, tell the students that Excel has some built-in formulas called functions.

Number of Periods	
Theory	Practical
3	2

Share with the students the cell range in Excel is a group of adjacent cells identified by their start and end addresses (e.g., B2:E3) for performing calculations.

Show to them the different ways of Enter formula.

Introduce cell referencing as 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 student Customizing worksheet tabs in Excel includes renaming, changing tab colors, and adjusting tab positions for better organisation and navigation.

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 , ROUND and ABS.

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

Demonstrate the use of statistical functions – MAX, MIN and AVERAGE and COUNT.

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

Demonstrate the use of logical function- IF, AND and OR.

Show the different components of an Excel chart.

Familiarise the students with the different types of chart options available.

Demonstrate the steps of these:

- Creating a chart.
- Modifying a chart by changing its type, layout and design.

Tell the student sorting in data.

Explain and demonstrate custom sort.

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

Extension

Ask the students some oral questions based on this chapter.

Q. What are Functions in Excel?

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

Q. Define cell referencing.

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?

Q. Define charts in Excel.

Q. What is a legend?

Q. What are gridlines in a chart?

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

Q. In Excel, can we change the type of chart used earlier?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 34 to 36 as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 37. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 37 will enhance the ability of the students and serve as a Experiential Learning, Coding and Computational Thinking activity.

Suggested Activity

1. Ask the students to enter their last mark sheet 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.

2. From the previous mark sheets of Grade 1 to 6, collect data about your attendance in various Grades. Plot a Line Chart in Excel from the data.

3   Algorithms and Flowcharts

Teaching Objectives

Students will learn about

✦   Algorithm

✦   Uses of an Algorithm

✦   Defining Flowchart

✦   Characteristics of a Good Algorithm

✦   Writing an Algorithm

✦   Solving Problems Using Algorithm and Flowchart

Teaching Plan

Number of Periods	
Theory	Practical
3	2

While teaching this chapter, tell the students how to solve problems using various strategies.

Share with the students what is an algorithm and characteristics of a good algorithm.

Explain what are the uses of an algorithm.

Tell the students the steps involved in writing an algorithm.

Introduce flowchart and different symbols used in a flowchart.

Show to the students rules of drawing a flowchart and advantages of flowcharts.

Share with the students use of algorithms and flowcharts for solving problems.

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

Extension

Ask the students some oral questions based on this chapter.

Q. What is an algorithm?

Q. What are advantages of using an algorithm?

Q. What is a flowchart?

Q. What are some rules of drawing a flowchart?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 45 and 46 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 47 of the main course book. Help the students to solve these questions.

In Creative Assignment, activities like Tangible Task and Digital Drills given on page 47 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness, Art Integration and Coding & Computational Thinking, Interdisciplinary activity.

Suggested Activity

Ask the students to create an algorithm to add 2 numbers and explain through a flowchart.

4 Program Coding

Teaching Objectives

Students will learn about

- ✦ Introducing Java
- ✦ What is an Object and a Class?
- ✦ Introducing BlueJ
- ✦ Creating first Project using BlueJ
- ✦ Basic Fundamentals of Java
- ✦ Writing Some More Programs

- ✦ Features of Java
- ✦ Features of OOPs
- ✦ Interface of BlueJ
- ✦ Structure of a Java Program
- ✦ Operators
- ✦ Taking Values as Arguments

Teaching Plan

While teaching this chapter, tell the students how a computer uses various types of applications to perform different operations.

Number of Periods	
Theory	Practical
4	2

Share with the students what is a programming language and difference between procedural and object oriented language.

Explain what is Java and what are it's basic features.

Tell the students the concept of an object and a class.

Explain the student features of OOPS.

Introduce BlueJ and explain it's interface to the students.

Show to the students how to create a project using BlueJ.

Share with the students how to compile and run a Java Program.

Explain the structure of a Java program.

Explain the basic fundamentals of java such as:

- Identifiers   • Keywords   • Data Types • Literals   • Variable   • Comments

Explain to the students what are operators in Java and different types of Java operators:

- Arithmetic Operators   • Relational operators   • Logical operators
- Unary operators   • Assignment operators

Demonstrate some more Java programs and explain how to pass values as arguments in Java.

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

Extension

Ask the students some oral questions based on this chapter.

Q.   What is an object oriented language?

Q.   What are keywords in Java & how are they different from identifiers?

Q.   What is a variable in Java?

Q.   What are some rules of naming a variable in Java?

Q.   What are operators in Java?

Q.   How many types of operators are there in Java?

Q.   What is BlueJ

Q.   What is a literal?

Q.   What are Data Types?

Q.   How do we write a comment in Java?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 64 and 70 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 71 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 72 of the main course book will enhance the ability of the students and serve as a Coding & Computational Thinking, Digital Literacy activity.

Suggested Activity

Ask the students to create a program in BlueJ to swap 2 variables using a 3rd variable or without using a 3rd variable.

5   Conditional Looping and Jumping Statements in JavaStatements in Java

Teaching Objectives

Students will learn about

- ✦ Conditional Statements
- ✦ Jumping Statements
- ✦ Writing Some More Programs
- ✦ Looping Statements
- ✦ Errors in Java

Teaching Plan

While teaching this chapter, tell the students about different statements used in Java with examples:

Number of Periods	
Theory	Practical
3	3

- Conditional statements
  - o If statement
  - o If....else statement
  - o If...else...if statement
  - o Switch statement
- Looping statements
  - o The while loop
  - o The do-while loop
  - o The for loop
- Jumping statements
  - o The break statement
  - o The continue statement

Share with the students what are different types of errors in Java:

- Syntax errors
- Runtime errors
- Logical errors

Demonstrate to the students some basic programs in Java:

- Write a java program to print all the even numbers between 1 and N by using the while loop.
- Write a Java program to print sum of all the odd numbers between 1 and 20 by using the for loop.

- Write a Java program to calculate the factorial of an entered number.
- Write a program to print a table of an entered number.

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

Extension

Ask the students some oral questions based on this chapter.

Q. What are conditional statements in Java?

Q. What are the difference between if...else & if...else...if statements?

Q. What are looping statements in Java?

Q. How many types of jumping statements are there in Java?

Q. Explain different types of errors in java.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 91 to 96 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 96 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 97 of the main course book will enhance the ability of the students and serve as a Coding & Computational Thinking activity.

Suggested Activity

Ask the students to create a program in BlueJ to print the sum of all even numbers up to 10 using while loop.

6 App Development

Teaching Objectives

Students will learn about

- ✦ What is an App?
- ✦ Types of Mobile Apps
- ✦ Downloading and Installing the App
- ✦ Defining Android and iOS
- ✦ Categories of Apps
- ✦ Developing an App

Teaching Plan

While teaching this chapter, tell the students what is an App and about different types of apps developed for different platforms.

Number of Periods	
Theory	Practical
3	2

Explain to the students what is the difference between android and iOS.

Share with the students different types of mobile apps:

- Native Apps
- Web Apps
- Hybrid Apps

Explain to the students different categories in which Apps are categorised.

- Gaming Apps
- Productivity Apps
- Entertainment Apps
- Utility Apps
- Educational Apps
- Social Networking Apps
- Communication Apps
- E-commerce Apps

Demonstrate to the students how to download and install an app.

Explain the process to develop an App.

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

Extension

Ask the students some oral questions based on this chapter.

Q. What is an App?

Q. What is Android OS?

Q. What is the difference between native apps and web apps?

Q. Name some utility apps.

Q. Name some Communication apps.

Q. What are some common E-commerce Apps?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 110 to 113 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 113 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 113 of the main course book will enhance the ability of the students and serve as a Communication and Digital Literacy activity.

Suggested Activity

Ask the students to make a list of commonly used android apps with the help of their teacher and parents and categorise them.

7   Computer Networking

Teaching Objectives

Students will learn about

- ✦ Computer Network
- ✦ Advantages of Computer Network
- ✦ Network Terminologies
- ✦ Types of Networks
- ✦ Network Architecture
- ✦ Protocol

- ✦ Need for Computer Network
- ✦ Components of a Data Communication System
- ✦ Devices Required for a Network
- ✦ Topology
- ✦ Wireless Networking Technology

Teaching Plan

While teaching this chapter, tell the students computer network and need for computer networks.

Number of Periods	
Theory	Practical
3	2

Explain the advantages of a computer network.

Explain to the students what are the components of a network and make them familiar with basic network terminologies such as:

- Server
- Client
- Internet
- Intranet
- URL
- ISP
- IP address
- DNS
- WebPage
- Website
- Web Portal
- Hyper text
- Link
- Hyper link
- Bandwidth

Share with the students different devices required for a network:

- NIC
- Hub or Switch
- Router
- Modem
- Networking Cable
- Gateway

Explain to the students different types of networks based on geographical area they cover.

- LAN
- MAN
- WAN
- PAN
- CAN

Explain to the students what is the concept of Topology in computer networking.

Explain different types of network topologies such as:

- BUS topology
- RING topology
- STAR topology
- TREE topology
- MESH topology

Explain what is the meaning of Network Architecture?

- Peer to Peer network
- Client Server network

Explain wireless networking technologies:

- Wi-Fi
- Bluetooth

Explain what is Protocol and different protocols used in computer network:

- HTTP
- HTTPS
- FTP
- TCP/IP
- POP3
- IMAP
- SMTP

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

Extension

Ask the students some oral questions based on this chapter.

Q.   What is a computer Network?

Q.   Name some components of a computer network.

Q.   What is NIC?

Q.   What is the work of a modem in a computer network?

Q.   Differentiate between LAN and WAN.

Q.   What is a PAN?

Q.   What do you mean by network topology?

Q.   Name some commonly used network topologies.

Q.   In which topology all communication is controlled by a central hub?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 125 to 127 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 127 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 128 of the main course book will enhance the ability of the students and serve as a Creativity & Innovativeness, Collaboration & Teamwork activity.

Suggested Activity

Ask the students to visit their computer lab and find out which topology is being used and all the networking devices which are being used.

8 Cloud Computing

Teaching Objectives

Students will learn about

- ✦ What is Cloud Computing?
- ✦ Benefits of Cloud Computing
- ✦ Characteristics of Cloud Computing
- ✦ Advantages of Cloud Computing
- ✦ Disadvantages of Cloud Computing
- ✦ Storing Data using Cloud Computing

- ✦ Sharing Files
- ✦ Other Cloud Storage Service Providers
- ✦ File Shared with You

Teaching Plan

Number of Periods	
Theory	Practical
4	2

While teaching this chapter, tell the students what a cloud and what is meant by cloud computing.

Explain the benefits of cloud computing.

Explain to the students what are the characteristics of Cloud computing and what are its advantages and disadvantages.

Share with the students store data using cloud computing(using MS one drive).

- Accessing one drive using app
- Accessing OneDrive using web browser
- Creating files on one drive
- Uploading files on one drive
- Uploading folders to one drive

Explain to the students some other cloud storage service providers such as:

- DropBox
- ZipCloud
- Google Drive
- iCloud

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

Extension

Ask the students some oral questions based on this chapter.

Q. What is cloud computing?

Q. Name some benefits of cloud computing.

Q. Explain any 4 characteristics of cloud computing.

Q. What is the advantages of using cloud storage to save and access your files?

Q. What is Microsoft One drive?

Q. How do we upload a folder from local storage to one drive?

Q. Name some commonly used cloud storage services.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 138 to 140 of the main course book as Tech Trivia and Answer Arcade. After solving the course book exercises, tell the students to solve Code Clues activity given on page 140 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Digital Drills given on page 141 of the main course book will enhance the ability of the students and serve as a Digital Literacy and Creativity & Innovativeness activity.

Suggested Activity

Ask the students to find out basic differences between some major cloud storage services such as DropBox and Google Drive.