10

TOUCHPAD®

MODULAR Ver 1.0

Teacher's Manual

Extended Support for Teachers

ORANGE™
www.orangeeducation.in
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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 to 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 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 needs 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.

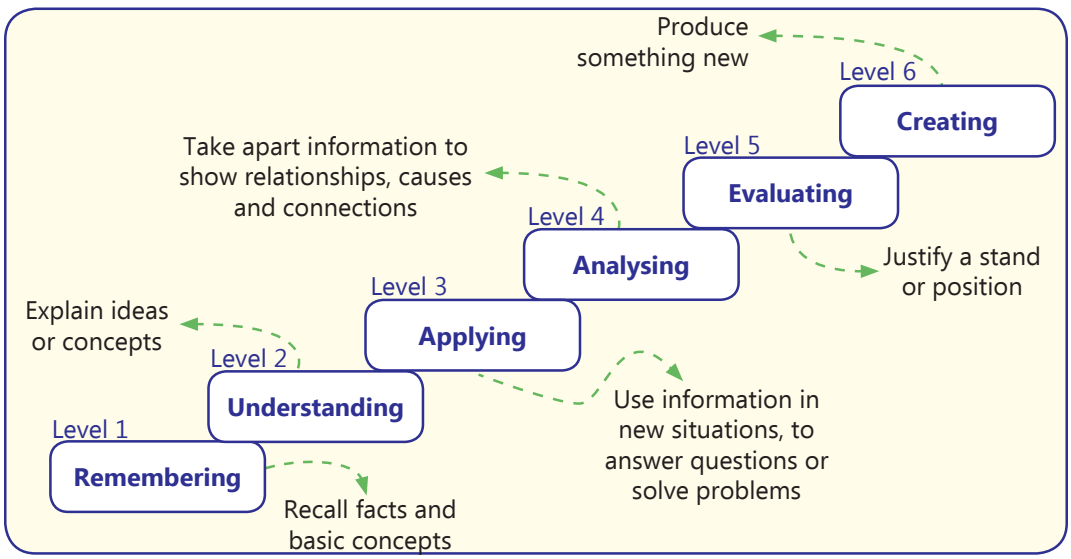
"Knowing yourself is the beginning of all wisdom."

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."

LESSON PLAN

Touchpad MODULAR Ver 1.0
Class-10

1. Introduction to C++

Teaching Objectives

Students will learn about

- ☞ Features of C++
- ☞ Structure of a C++ Program
- ☞ Starting Turbo C++

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that C++ is a general-purpose and object-oriented programming language developed by Bjarne Stroustrup at AT&T Bell Labs. It is an extension of the C language.

Explain the what is C++ and the features of C++ to the students.

Show to the students the detailed steps to start Turbo C++.

Tell the students the steps involved in:

- Creating the "Hello World" Program
- Compiling a Program
- Saving a Program
- Running a Program

Explain the structure of a C++ program in details to the students.

Extension

Ask the students some oral questions based on this chapter.

Q. What is C++?
Q. What is Turbo C++?
Q. How to create a program in C++?
Q. How to save a program in C++?
Q. How to compile a program in C++?
Q. How to run a program in C++?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 11 and 12 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 12 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create "Good Morning Everyone" program in C++.

2. Getting started with C++

Teaching Objectives

Students will learn about

- ☞ C++ Character Set
- ☞ Solved Programs

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students the basic concepts of C++ such as character set and tokens used in C++ programming.

Tell the students about the C++ Character Set which are:

- Tokens in C++
- Variables
- Operators
- Keywords
- Constants
- Data Types
- Delimiters

Show the students some solved programs with usage of these character sets.

Extension

Ask the students some oral questions based on this chapter.

Q. What is character set?

Q. What is a token?

Q. What is a keyword?

Q. What is a data type?

Q. What is a variable?

Q. What is a contant?

Q. What is a delimiter?

Q. What is an operator?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 19 and 20 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 20 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program in C++ using character sets like variables, keywords, operators, etc.

3. Operators in C++

Teaching Objectives

Students will learn about

- ☞ Operators
- ☞ Expressions
- ☞ Operator Precedence
- ☞ Type Casting

Teaching Plan

Number of periods: 4

While teaching this chapter, tell the students that C++ is a versatile language that allows the user to perform various mathematical operations.

Tell the students about operators and its types:

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Assignment Operators
- Increment and Decrement Operators
- Ternary Operator

Explain the purpose of Operator Precedence with suitable examples.

Demonstrate the use in details for the following:

- Expressions
- Type Casting

Also, show them the use of the two types of type casting- Implicit and Explicit.

Extension

Ask the students some oral questions based on this chapter.

Q. What are operators?

Q. What are the types of operators?

Q. What are expressions?

Q. What is type casting?

Q. Define Operator Precedence.

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 30, 31 and 32 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 32 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program for solving sums using the operators in Turbo C++.

4. Input and Output in C++

Teaching Objectives

Students will learn about

- ☞ Output
- ☞ Escape Sequence Characters
- ☞ Input
- ☞ Comments

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that C++ also allows you to give input to a program and get the output from the program.

Tell the students about Output in C++ and explain how it works.

Demonstrate to the students how Input works in C++ and how to use it.

Tell the students about the Escape Sequence Characters and their use.

Show the students the purpose and meaning of Comments. Also tell them about the types of Comments:

- Single Line
- Multiple-Line

Extension

Ask the students some oral questions based on this chapter.

Q. What is Input?

Q. What is Output?

Q. What are Escape Sequence Characters?

Q. What are comments?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 36 and 37 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 37 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to make a C++ program to insert Input and generate Output. Try to use some escape sequence characters too.

5. Conditional Statements

Teaching Objectives

Students will learn about

- ☞ The if Statement
- ☞ The if...else...if Ladder
- ☞ Difference between if and switch Statements
- ☞ The if...else Statement
- ☞ The switch Statement

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that conditional statements are also known as decision making statements or selection statements.

Explain the students about the following statements along with their syntax and some programs:

- The if statement
- The if...else statement
- Nested if statement
- The if...else...if ladder
- The Switch statement

Tell the students about the difference between If and Switch statement.

Extension

Ask the students some oral questions based on this chapter.

Q. What are conditional statements?

Q. Define the following:

a. if statement

b. if...else statement

c. if...else...if statement

d. switch statement

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 52 and 53 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 53 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program in C++ using:

a. The if statement

b. The if...else statement

c. The if...else...if statement

6. Loops

Teaching Objectives

Students will learn about

- ☞ The for Loop
- ☞ The do-while Loop
- ☞ Infinite Loop
- ☞ Jump Statements
- ☞ The while Loop
- ☞ Nested Loop
- ☞ Difference Between while and do-while Loops
- ☞ Solved Programs

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that statements that are used to repeat a set of instructions are called iterative or looping statements.

Explain the students about loops and its use.

Explain the students about the following statements along with their syntax and some programs:

- The For loop
- Variable declaration inside loop
- The do-while loop
- Infinite loop
- Using comma (,) operator with for loop
- The While loop
- Nested loop

Demonstrate the difference between while and do-while loops to the students with examples.

Tell the students about the Jump statements and their use with examples:

- The break statement
- The continue statement
- The goto statement

Show some solved examples for each statement for better understanding.

Extension

Ask the students some oral questions based on this chapter.

Q. What is loop?

Q. What is the use of:

a. for loop b. while loop c. do-while loop

d. nested loop e. infinite loop

Q. What are jump statements?

Q. Explain the use of:

a. Break statement b. continue statement c. goto statement

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 64, 65 and 66 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 66 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program using jump statements to display numbers 1 to 100 in Turbo C++.

7. OOP Concepts

Teaching Objectives

Students will learn about

- ☞ Object-Oriented Programming
- ☞ Principles of OOP

Teaching Plan

Number of periods: 2

While teaching this chapter, tell the students that Object-oriented programming is a programming paradigm that focuses on objects instead of routines or functions.

Explain the meaning of Object-Oriented Programming to the students and also tell them about the two elements of it:

- Object
- Class

Demonstrate the principles of OOP to the students and explain them in details:

- Encapsulation
- Data Abstraction
- Inheritance
- Polymorphism

Extension

Ask the students some oral questions based on this chapter.

Q. What is OOP?

Q. What is object?

Q. What is class?

Q. What is Encapsulation?

Q. What is Data Abstraction?

Q. What is Inheritance?

Q. What is Polymorphism?

Evaluation

fter explaining the chapter, let the students do the course book exercises given on Pages 70 and 71 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 71 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program in C++ defining class and objects.

8. Functions in C++

Teaching Objectives

Students will learn about

- ☞ Function
- ☞ Different Methods to Call a Function
- ☞ Solved Programs
- ☞ Types of Parameters and Arguments
- ☞ Scope of Variables

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that a function is a block of organized and reusable code used to perform a particular task.

Explain the students about Functions and types of functions in detail:

- Built-in Functions
- User-defined Functions

Tell the students about the proper use of the following parts of user-defined functions:

- Declaration
- Definition
- Function Call

Show the students the types of parameters and arguments using proper examples.

Explain the students the different methods to call a function:

- Call by value
- Call by reference

Also, show them how to use them using some examples.

Define the meaning of Scope of Variable and the types:

- Local Variables
- Global Variables
- Show some solved examples for each statement for better understanding.

Extension

Ask the students some oral questions based on this chapter.

Q. What is function?

Q. Define:

a. built-in function b. user-defined function

Q. Define:

a. Declaration b. Definition c. Function Call

Q. Define:

a. Call by value b. Call by reference

Q. What is scope of variable?

Q. Define:

a. Local variable b. Global variable

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 81 and 82 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 82 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create a program using call by value and call by reference in C++.

9. Header Files and Library Functions

Teaching Objectives

Students will learn about

- ☞ Header Files
- ☞ Functions of stdlib.h Header File
- ☞ Functions of math.h Header File
- ☞ Solved Programs

Teaching Plan

Number of periods: 3

While teaching this chapter, tell the students that C++ provides a number of header files to perform different types of operations like mathematical calculations, character manipulations, input/output and error checking.

Explain the header files and show the description of some of them to students.

Tell the students about the functions of ctype.h header file and their output.

Demonstrate the students the functions of math.h header file using examples and their output.

Tell the students the functions of stdlib.h header file using examples and their output.

Show some solved examples for each statement for better understanding.

Extension

Ask the students some oral questions based on this chapter.

Q. What are header files?

Q. Define the function of:

a. ctype.h header file b. math.h header file c. stdlib.h header file

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 88 and 89 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 89 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to write a program to find the square root of 6400.

10. App Development

Teaching Objectives

Students will learn about

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

Teaching Plan

Number of periods: 2

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

Tell the students that an App is a software program primarily developed for hand-held smart devices such as mobile and tablet.

Explain to the students the difference between the Android and iOS in detail.

Demonstrate the types of Mobile Apps to the students with example, that are:

- Native Apps
- Web Apps
- Hybrid Apps

Explain the following categories of Apps to the students along with the examples:

- Gaming Apps
- Productivity Apps
- Entertainment Apps
- Utility Apps • Educational Apps
- Social Networking Apps
- Communication Apps
- E-Commerce Apps

Explain to the students the steps involved in downloading and installing the Apps.

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

Extension

Ask the students some oral questions based on this chapter.

Q. What is an App?

Q. Define the following:

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

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 97, 98 and 99 of the main course book as Exercise.

In Creative Assignment, activities like In The Lab given on Page 99 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

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