



thinkcode

Ver. 2.0

Teacher's Manual

Extended Support for Teachers

Teacher's Time Table

[illegible]



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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Vocabulary reaches about 10,000 words• Vocabulary increases rapidly throughout middle childhood
Emotional/Social	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none"> • Motor skills develop resulting enhanced reflexes
Cognitive	<ul style="list-style-type: none"> • Applies several memory strategies at once • Cognitive self-regulation is now improved
Language	<ul style="list-style-type: none"> • Ability to use complex grammatical constructions enhances • Conversational strategies are now more refined
Emotional/Social	<ul style="list-style-type: none"> • Self-esteem tends to rise • Peer groups emerge

Age 11 - 20 Years	
Physical	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Is now more self-conscious and self-focused • Becomes a better everyday planner and decision maker
Emotional/Social	<ul style="list-style-type: none"> • 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."

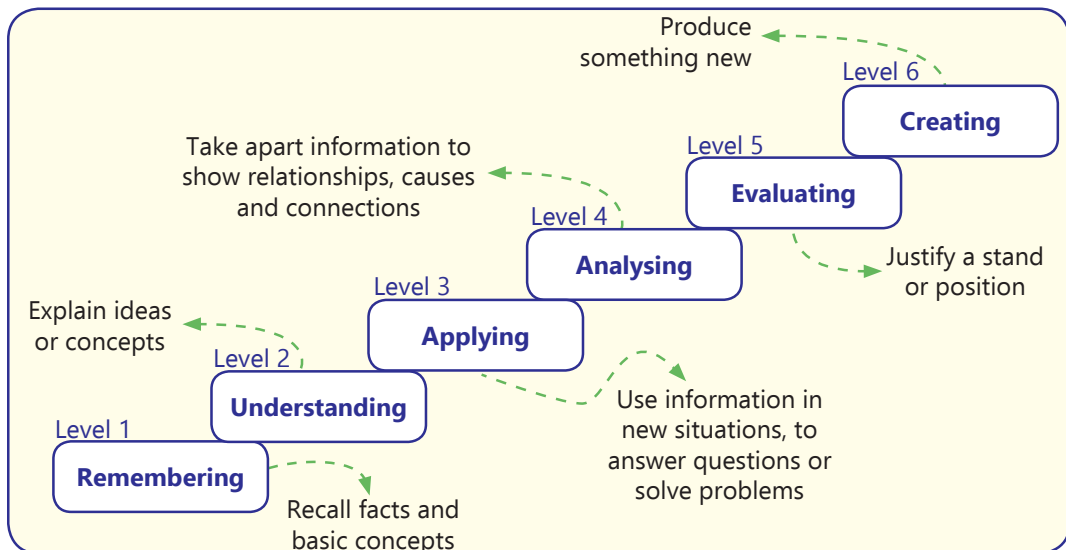
Teaching Strategies

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."

1. Evolution of Computers

Teaching Objectives

Students will learn about

- | | |
|---|-----------------------------------|
| ☞ Early Counting Tools | ☞ Abacus—First Calculating Device |
| ☞ Pascaline Adding Machine | ☞ Leibniz Step Reckoner |
| ☞ Charles Babbage's Analytical Engine | ☞ Lady Ada Lovelace's Programs |
| ☞ Herman Hollerith's Tabulating Machine | ☞ Computer Generations |

Number of Periods

2

Teaching Plan

While teaching this chapter, tell the students that the computer is an outcome of labour of a number of minds.

Tell the students about the early counting tools like knots tied on a rope, marks carved in clay, fingers, pebbles, etc.

Explain to the students about invention of Abacus – the first calculating device.

Share with the students the importance and usefulness of Abacus even today and is being taught in schools also.

Give a brief account of these calculating machines:

- Pascaline Adding Machine
- Leibniz Step Reckoner

Tell the students about Charles Babbage, the father of computers, and his invention of Difference Engine which was later improved by him into Analytical Engine, the first working model of a mechanical computer.

Inform the students about Lady Ada Lovelace, accredited as the first computer programmer as the programmer to the Analytical Engine of Charles Babbage.

Share with the students about Herman Hollerith who built Tabulating Machine and later his company became a part of IBM.

Explain to the students about the concept of generations of computers and need for classification on this basis.

Share with the students the characteristic features of the different generations of computers covering:

- First Generation (1940s) – MARK-I, ENIAC, UNIVAC
- Second Generation (1950s)
- Third Generation (1960s)
- Fourth Generation (1970s)
- Fifth Generation (Present) (See Suggested Activity also)

Ensure that the scope of For The Teacher given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

- Q. Name some early counting tools.
- Q. What is Abacus?
- Q. Who invented Adding Machine?
- Q. Which is the first mechanical calculator?
- Q. Which is the first mechanical computer?
- Q. Who is called the Father of Computers?
- Q. Why is Lady Ada Lovelace famous?
- Q. How many generations of computers are there?
- Q. What was the technology used in First / Second / Third / Fourth / Fifth generation of computers?
- Q. Give three characteristic features of First / Second / Third / Fourth / Fifth generation of computers.

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 13, 14 and 15 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 15. Help the students to solve these questions.

In Creative Assignment, activities like Let's Get Better and Practical Zone given on Page 15 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 prepare a collage of different models of computers depicting its evolution over the generations.



2. Tables in Word 2016

Teaching Objectives

Students will learn about

- | | |
|---|-------------------------------|
| ✎ Inserting a table | ✎ Entering Data in a Table |
| ✎ Selecting cells, rows, columns and tables | |
| ✎ Adding and deleting rows | ✎ Adding and deleting columns |
| ✎ Changing column width and Row Height | ✎ Merging cells |
| ✎ Splitting cells | ✎ Moving and resizing tables |
| ✎ Border and Shading | ✎ Table styles |
| ✎ Aligning Text in Table | |

Number of Periods

3

Teaching Plan

While teaching this chapter, tell the students that a table is an arrangement of text in the form of columns and rows.

Also tell them that an intersection of a row and a column is called a cell.

Demonstrate to the students the method of inserting a table in a Word document.

Show to the students how to select a cell, a group of cells, a row, a column or the whole table.

Demonstrate to the students the steps to:

- Entering Data in a Table
- Add more rows to a table
- Delete rows from a table
- Add more columns to a table
- Delete columns from a table
- Change width of a column and row height
- Aligning text in table

Introduce merging of cells as combining two or more cells in the same row or the same column into a single cell.

Show to the students the steps to merge two or more cells. Introduce splitting of cells as dividing one cell into two or more cells, Show to the students the steps to split a cell. (See Suggested Activities also)

Demonstrate to the students the steps to move a table and resize a table. Tell the students that Word 2016 allows to apply borders to tables and cells as well as to shade the cells and table.

Make the students understand that Word offers some built-in formats as Table Styles to apply to a table.

Ensure that the scope of For The Teacher 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 table?
- Q. How we can enter data in a table?
- Q. Define a cell.
- Q. What is the shape of the mouse pointer selecting a cell / row / column / table?
- Q. Can more rows or columns be added to a table?
- Q. Define merging / splitting of cells.
- Q. What is the difference between moving a table and resizing a table?
- Q. What is the use of Table Styles feature of Word 2016?
- Q. How we can align text in table?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 26, 27 and 28 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 28. Help the students to solve these questions.

In Creative Assignment, activity like Practical Zone given on Page 28 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 comparative mark sheet for your marks in different subjects for last three classes.

3. Formatting a Presentation

Teaching Objectives

Students will learn about

- ☞ Applying Themes
- ☞ Working with Slide Master
- ☞ Changing the Background
- ☞ Inserting SmartArt

Number of Periods

3

Teaching Plan

While teaching this chapter, tell the students that PowerPoint 2016 is used to create electronic presentations. Tell the students that a theme is a set of predefined layouts that can be used to add a professional touch to the presentations.



Demonstrate the steps to choose a theme, change theme colours, fonts and backgrounds. Introduce students with Slide Master and the steps involved in using this action into a presentation. Show to the students how to insert SmartArt and the steps involved in adding it into a presentation. Ensure that the scope of For The Teacher 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 theme?
- Q. What do you mean by customizing a theme?
- Q. Can you change background, colour, fonts, etc. of a theme?
- Q. What is Slide Master?
- Q. What is SmartArt?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 38 and 39 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 40. Help the students to solve these questions.

In Creative Assignment, activity like Practical Zone given on Page 40 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Divide the class into two teams. Ask one team to prepare charts on various types of pollution.

Ask the other team to prepare a PowerPoint presentation on the same topic. Make the students share the benefits enjoyed and limitations faced by each team while working on their project.

4. Animation and Transition in PowerPoint 2016

Teaching Objectives

Students will learn about

☞ Animations

☞ Slide Transitions

Number of Periods

1

Teaching Plan

Explain to the students that transitions are used to determine how the presentation moves from one slide to the next.

Tell the students about categories of animation effects.

Demonstrate the application of transitions to slides in a presentation.

Introduce animation as the feature that gives a moving effect to text and other objects on the slide.

Show to the students the steps involved in applying custom animation to various objects on a slide.

Tell the students the animation effects applied to different objects on a slide can be reordered.

Demonstrate to the students the various steps involved to apply a transition.

Ensure that the scope of For The Teacher 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 Animation?

Q. What is a Transition?

Q. How to add animation in a slide?

Q. How to add transition in a presentation?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 46 and 47 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 47. Help the students to solve these questions.

In Creative Assignment, activity like Practical Zone given on Page 48 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Divide the class into two teams. Ask one team to prepare presentation on different planets of the solar system. Use appropriate animation and transition effects

5. Introduction to Excel 2016

Teaching Objectives

Students will learn about

- | | |
|-----------------------------------|--------------------------|
| ☞ Excel 2016 | ☞ Entering Data |
| ☞ Features of Excel 2016 | ☞ Working with Worksheet |
| ☞ Starting Excel | ☞ Saving a Workbook |
| ☞ Components of Excel 2016 Window | ☞ Opening a Workbook |
| ☞ Changing the Active Cell | ☞ Closing a Workbook |
| ☞ Creating a New Workbook | |



Teaching Plan

While teaching this chapter, tell the students that MS Excel is an application software that helps us to store and analyse data.

Familiarize the students with the various components of MS Excel 2010 window covering:

Title Bar, File Tab, Quick Access Toolbar, Ribbon, Formula Bar, Name Box, Worksheet Window, Worksheet Tab, Worksheet Tab Scrolling Buttons, Status Bar, Row, Column, Row and Column Heading Buttons, Cell, Active Cell, Mouse Pointer, Workbook and Cell Range.

Tell the students that just click on the cell you want to make active.

Demonstrate to the students the steps to:

- Create a new workbook.
- Enter data in a worksheet.
 - Adding a worksheet.
 - Renaming a worksheet.
 - Removing a worksheet.
- Save a workbook.

Demonstrate to the students the steps to:

- Opening a workbook
- Closing a workbook

Ensure that the scope of For The Teacher given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

- Q. What is Excel 2016?
- Q. What are the features of Excel 2016?
- Q. Name any five components of Excel 2016.
- Q. Define Formula Bar / Name Box / Row / Column / Cell / Active Cell / Cell Range.
- Q. What are the steps to rename a worksheet?
- Q. State the shortcut key to save an Excel worksheet.

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 60 and 61 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 61. Help the students to solve these questions.

In Creative Assignment, activities like Let's Get Better and Practical Zone given on Page 62 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 design their class time-table in Excel 2016.

6. Editing Cell Contents in Excel 2016

Teaching Objectives

Students will learn about

- ☞ Selecting Cells
- ☞ Changing Cell Contents
- ☞ Copy and Move Data
- ☞ AutoFill
- ☞ Entering Date and Time
- ☞ Undo and Redo Commands
- ☞ Deleting Cell Contents

Number of Periods

5

Teaching Plan

Tell the students that to enter data in a cell, simply click on the cell and enter data.

Demonstrate how to select cells in a worksheet in Excel. Show them the labeled steps to modify the cell content.

Tell the students the methods of modifying data by cut, copy and paste.

Demonstrate to the students the steps involved in:

- To select a row
- To select a column
- To change the format of date or time
- To change the data partially
- To copy data
- To move data

Introduce to the students AutoFill feature of Excel as automatically filling a series of data in the worksheet and the steps involved in the same.

Ensure that the scope of For The Teacher given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. Define UNDO and REDO commands.



- Q. What is the difference between copy and move data?
- Q. How we can select a cell?
- Q. What is the use of AutoFill feature?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 72 and 73 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 74. Help the students to solve these questions.

In Creative Assignment, activities like Let's Get Better and Practical Zone given on Page 74 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 prepare a table in this format for their family members.

S.No.	Name	Relation with Me	Date of Birth	Age

7. Computer Virus

Teaching Objectives

Students will learn about

- ☞ What is a computer virus?
- ☞ Types of Computer Virus
- ☞ How does a computer get infected with virus?
- ☞ How do you know your PC has a virus?
- ☞ How to prevent from a virus?
- ☞ Malware
- ☞ Antivirus
- ☞ Firewall

Number of Periods

2

Teaching Plan

While teaching this chapter, tell the students that a computer virus can destroy the programs and files saved in a computer. Introduce computer virus as a program that can infect the system and/or duplicate itself reducing the storage space.

Share examples of some computer viruses with the students. Tell the students about the harms that may be caused by a computer virus. Explain to the students the various methods by which a computer system may get infected with virus.

Make the students aware of the symptoms that tell that a computer system is infected by a computer virus.

Explain in detail to the students the various methods by which prevention can be taken from a

computer virus.

Introduce the students to the concept of antivirus as a program developed to detect and remove virus from a computer system.

Share the names of some commonly used antivirus programs. (See Suggested Activity also).

Ensure that the scope of For The Teacher 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 virus?
- Q. State any two harms caused by a computer virus.
- Q. State any two methods by which a computer may get infected by Computer Virus.
- Q. State any two symptoms that show that a computer system has been infected by a virus.
- Q. State any two ways in which the user can prevent from a computer virus.
- Q. What is antivirus program?
- Q. What is the main purpose of an antivirus program?

Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 82 and 83 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 83. Help the students to solve these questions.

In Creative Assignment, activity like Practical Zone given on Page 83 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 collect information about any computer virus and narrate it in the class.

8. Internet Services

Teaching Objectives

Students will learn about

- | | |
|---|-----------------------------------|
| ☞ Requirements to connect to the Internet | ☞ Ways to connect to the Internet |
| ☞ Services on Internet | ☞ Netiquettes |

Number of Periods

2

Teaching Plan

While teaching this chapter, tell the students that a computer network is a connection between two or more computers.



Introduce Internet as a network in which millions of computers are connected to each other to share information and in an abbreviation of International Network.

Share with the students the various requirements for an internet connection covering computer, telephone/cable line, modem/network card, software and company providing the connection.

Introduce the students to services on internet like:

E-mail

Online Shopping

Online Chatting

Video Conferencing

Social Networking

Familiarize the students with the rules that are expected to be followed during Online conversation as NETIQUETTES

Ensure that the scope of For The Teacher given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is internet?

Q. What are the uses of internet?

Q. What are the requirements for an internet connection?

Q. Define Dial-up / Broadband Connection / Wi-Fi / Mobile Internet / Hotspot.

Q. What does E-mail stand for?

Q. Which is the most common e-shopping websites?

Q. What is the Etiquettes?

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. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 90. Help the students to solve these questions.

In Creative Assignment, activities like Let's Get Better and Practical Zone given on Page 90 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 paste a picture of popular e-shopping websites in their computer notebook / practical file that are discussed in the chapter.

9. Conditional Blocks in Scratch

Teaching Objectives

Students will learn about

- Blocks Shapes in Scratch
- Sensing Blocks
- Variables
- Conditional Blocks
- Creating a Game

Number of Periods

4

Teaching Plan

While teaching this chapter, tell the students that Scratch is a block-based programming language.

Tell the students that Scratch allows changing the appearance of the selected sprite.

Show the students the shapes of blocks:

- Hat Blocks
- Boolean Blocks
- C Blocks
- Stack Blocks
- Reporter Blocks
- Cap Blocks

Explain the Sensing block to the students and the steps involve in the use of this block.

Tell the students what are variable using appropriate examples along with-

- Types of variables
- Creating variables

Explain the Conditional Blocks to the students and the steps involved in this in detail.

Demonstrate how can one create a game in Scratch using appropriate blocks.

Ensure that the scope of For The Teacher given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Scratch?

Q. Define:

- Hat Blocks
- Stack Blocks
- Boolean Blocks
- Reporter Blocks
- C Blocks
- Cap Blocks

Q. What is a sensing block?

Q. What is a variable?

Q. What are conditional blocks?



Evaluation

After explaining the chapter, let the students do the course book exercises given on Pages 101 and 102 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Activity Zone activity given on Page 102. Help the students to solve these questions.

In Creative Assignment, activities like Let's Get Better and Practical Zone given on Page 103 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 the story of Rabbit and Tortoise in Scratch.