2

Computer Genius!

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

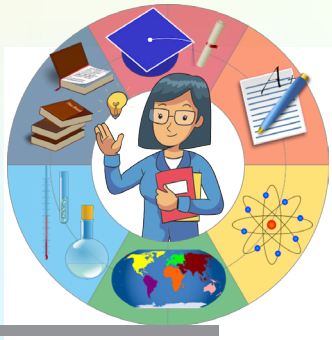
"If you cannot do great things, do small things in a great way."

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.

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During the class:

Present the lesson plan.

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After the class:

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

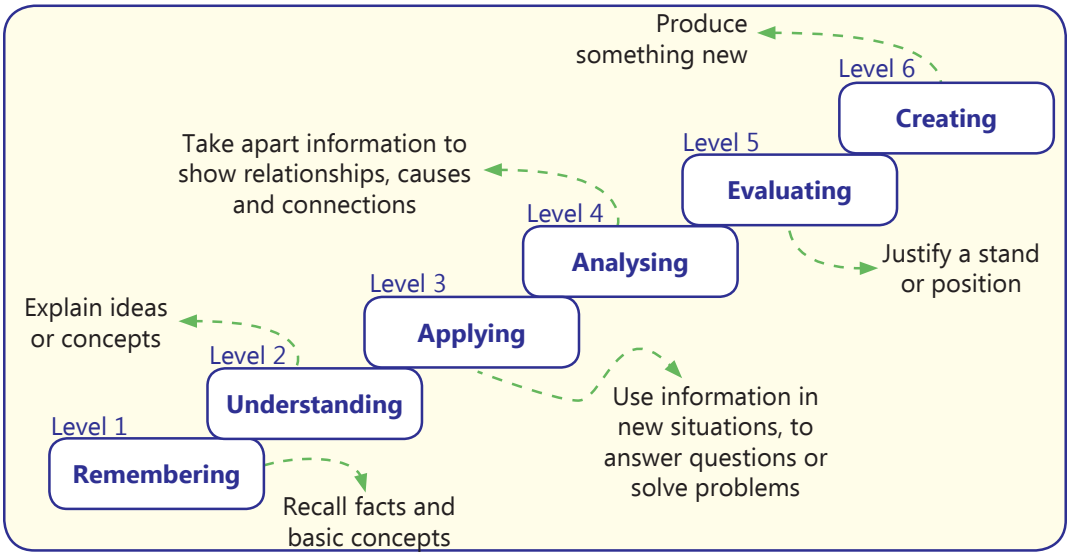
"Knowing yourself is the beginning of all wisdom."

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 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 2

Lesson Plan

Computer Genius

1. Working of a Computer

Teaching Objectives

Students will learn about

- IPO Cycle
- IPO Devices

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 7 of the main course book.

While teaching this chapter, tell the students that a computer works according to the commands or instructions given by us.

Tell the students about the working of some machines like:

- **Juicer** – we put fruit pieces inside it, the juicer squashes the fruits and gives out fresh juice.

Share with the students that in both these cases, the first step is input, the second step is process and the third step is output.

Share with the students that this cycle of working of machines is called Input-Process-Output cycle or IPO cycle.

Introduce the term Input as giving instructions to the computer.

Ask the students to solve the exercise Quest given on page number 9 and 10.

Tell the students that keyboard and mouse are used as input devices in a computer.

Introduce the term Process as action performed by computer on the instructions given by us.

Tell the students that Central Processing Unit (CPU) is processing device of a computer and is called Brain of the computer.

Introduce the term Output as result given by the computer after processing.

Tell the students that monitor and printer are used as output devices in a computer.

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Extension

Ask the students some oral questions based on this chapter.

Q. What does IPO stand for?

Q. What is Input-Process-Output cycle?

Q. Define Input / Process/ Output.

Q. Name two input / output devices.

Q. Which part of the computer is called Brain of the computer?

Q. Why is CPU called brain of the computer?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 11 and 12 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 12 of the main course book. Help the students to solve these questions.

In Creative Assignment, activities like Lab Activity given on page 13 of the main course book will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Show some more machines with input and output to the students and ask the students to arrange these in correct order of the IPO cycle.

2. More on Paint

Teaching Objectives

- ☞ Selecting an Image
- ☞ Rotating an Image
- ☞ Copying/Cutting and Pasting
- ☞ Flipping an Image
- ☞ Zooming an Image

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 14 of the main course book.

While teaching this chapter, tell the students that they will learn more features of paint like copy, paste, flip and rotate.

Tell the students that Select command is used to select a drawing or part of a drawing and have two types of selection which are Rectangular selection and Free form selection.

Show to the students how a drawing or part of a drawing can be selected.

Tell the students that Rectangular selection is used to select the drawing in rectangular form.

Demonstrate to the students the steps involved in using Rectangular selection.

Explain the students that Free form selection is used to select the drawing in free form.

Demonstrate to the students the steps involved in using Free form selection.

Demonstrate to the students the meaning of and steps involved in:

- Resizing an image
- Flipping an image
- Rotating an image
- Zooming an image

Ask the students to solve the exercise Quest given on page number 17.

Make the students understand the difference between Copying-Pasting an image and Cutting-Pasting an image.

Demonstrate to the students the steps involved in both these activities (Copy-Paste and Cut-Paste).

Tell the students the method to save a drawing.

Extension

Ask the students some oral questions based on this chapter.

Q. What can Paint be used for in computers?
Q. What do you understand by the term flipping an image?
Q. What is the meaning of zooming an image?
Q. What is the difference between Cut-Paste and Copy-Paste?
Q. Can drawings made in Paint be set as Desktop Backgrounds?

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. After solving the course book exercises, tell the students to solve Fun Zone given on page 21 of the main course book. Help the students to solve these questions.

In Creative Assignment, activity like Lab Activity given on page 21 of the main course book will enhance the ability of the students and serve as a creativity art integration learning.

Suggested Activity

Ask the students to draw a picture of a mouse representing single-click, double click, right-click, drag.

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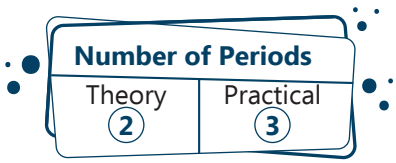
3. Introduction to Word 2016

Teaching Objectives

Students will learn about

- ☞ Uses of Word 2016
- ☞ Components of Word 2016 Window
- ☞ Starting Word 2016
- ☞ Working with Word 2016



Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 23 of the main course book.

While teaching this chapter, tell the students that Microsoft Word is word processing software in the category of application software.

Make the students aware of the various uses of Word 2016.

Demonstrate to the students the steps involved in starting Word 2016.

Show the students the various components of Word 2016 window covering Title Bar, Quick Access Toolbar, Ribbon, Rulers, Horizontal and Vertical Scroll Bars, Text/Document Area and Status Bar.

Demonstrate to the students the steps involved in:

- Creating a new Word file
- Selecting the text
- Inserting the text
- Opening a saved document
- Exiting Word
- Typing text
- Deleting the text
- Saving a document
- Printing a document

Ask the students to solve the exercise Quest given on page number 32.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Word 2016?
Q. What are the various uses of Word 2016?
Q. Name some important components of Word 2016 window.
Q. Which company developed Word 2016?
Q. What are the shortcut keys to open, save and print a document?
Q. What are the various ways in which the user can exit from Word 2016?

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Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 32 to 34 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone activity given on page 34 of the main course book to in them. Help the students to solve these questions.

In Creative Assignment, activity like Lab Activity given on pages 35 of the main course book will enhance the ability of the students and serve as experiential learning and interdisciplinary learning.

Suggested Activity

Ask the students to create a Word document on Myself. The students should take a printout of the document and paste it in their computer notebook/practical file.

4. Reasoning and Analysis

Teaching Objectives

Students will learn about

- ☞ Number Pyramid
- ☞ Number Grid
- ☞ Secret Message: Decoding

Number of Periods

Theory

1

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 36 of the main course book.

Introduce Number Pyramids to the students in details with the help of pictures or charts.

Tell the students about Number Grid. Also, tell them how to solve by giving some examples which will improve their understanding of the topic.

Make the students aware of Secret Message: Decoding.

Show examples for all the topics for better clarity of the lesson at the end.

Ask the students to solve the exercise Quest given on pages number 37, 38 and 39.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a number pyramid?

Q. What is a number grid?

Q. Define decoding.

Q. In what forms can the hidden message be present?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 40 in the main course book. Tell the students to try sections such as Fun Zone given on pages 41 and 42 in the main course book.

Suggested Activity

Ask the students to practise more questions based on decoding.

5. More on Google Blockly Games

Teaching Objectives

Students will learn about

- Bird Game
- Turtle Game

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 45 of the main course book.

While teaching this chapter, tell the students that they will learn about next games in Blockly.

Introduce to the students with Bird game and tell them about its uses.

Demonstrate the steps involved to play the Bird game.

Tell the students about the blocks present in Bird game.

Explain the students about the Turtle game and the uses of this game.

Tell the steps involved to play this game.

Ask the students to solve the exercise given on page 49 as Quest.

Extension

Ask the students some oral questions based on this chapter.

Q. Which game uses Rotate the pen?

Q. What does Bird game teaches?

Q. What are the uses of Bird game?

Q. Name any two blocks of bird game.

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 52 & 53 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone activity given on pages 54 of the main course book.

In Creative Assignment, activity like Lab Activity given on Page 54 of the main course book will enhance the ability of the students and serve as a Critical Thinking and Information Literacy activity.

Suggested Activity

Ask the students to find more about Blockly game and make a collage of them.

6. More on ScratchJr

Teaching Objectives

Students will learn about

- ☞ Components of ScratchJr Window
- ☞ Blocks in ScratchJr

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 55 of the main course book.

While teaching this chapter, tell the students that in this chapter they will learn about blocks of ScratchJr.

Tell the students to recall the Components of ScratchJr Window.

Explain the students that Blocks in ScratchJr are divided into different categories based on their functions.

Introduce the students with Motion Blocks which are used to control the movement of a character and are blue in colour.

Tell them that some of the commonly used Motion blocks are:

- Move Right (moves the character to the right)

- Move Left (moves the character to the left)
- Move Up (moves the character up)
- Move Down (moves the character down)
- Turn Right (rotates the character clockwise)
- Turn Left (rotates the character anti-clockwise)

Introduce the students with Looks Blocks which are used to modify the character's costumes and colours.

Tell them that some of the commonly used Looks blocks are:

- Say (show a specific message)
- Grow (increase the character's size)
- Shrink (decrease the character's size)
- Hide (fade out the character)
- Show (fade in the character)

Introduce the students with Control Blocks which are used to repeat and pause the character.

Tell them that some of the commonly used Control blocks are:

- Wait (pauses the script)
- Stop (stops all of a character's script)

Introduce the students with Sound Blocks which are used to control the sound functions and they are green in colour.

Tell them that some of the commonly used Sound blocks are:

- Pop (plays a "pop" sound)
- Play Recorded Sound (plays a sound recorded by the user)

Explain the students about Events Blocks which control how the blocks in a script will start to run.

Tell them that some of the commonly used Events blocks are:

- Start on Green Flag (starts by clicking Green Flag)
- Start on tap (start by tapping)

Ask the students to solve the exercise given on page 60 as Quest.

Extension

Ask the students some oral questions based on this chapter.

Q. Name any two components of ScratchJr window.

Q. Tell about some commonly used motion blocks.

Q. What is Say Block?

Q. Tell the uses of Say / Grow / Shrink / Hide / Show.

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 Fun Zone activity given on pages 54 of the main course book.

In Creative Assignment, activity like Lab Activity given on pages 62 of the main course book will enhance the ability of the students and serve as Critical Thinking and Technology Literacy activity.

Suggested Activity

Ask the students to create a scene of their choice using different blocks of ScratchJr.

7. AI Machine Around Us

Teaching Objectives

Students will learn about

- ☞ AI in Toys
- ☞ AI in Factories
- ☞ AI in Television
- ☞ AI in Smartphones

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 64 of the main course book.

While teaching this chapter, tell the students about Artificially Intelligent devices.

Explain to the students about AI devices and their uses:

- AI Toys
- AI in Factories
- AI in Television
- AI in Smartphones

Ask the students to solve the exercise given on page 67 as Quest.

Extension

Ask the students some oral questions based on this chapter.

Q. How AI is used in Smartphones?

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Q. How AI is used in television?

Q. What is the name of the artificial dog who has AI?

Evaluation

Encourage the students to walk through the chapter and ask them to play the game given on page 68 on their own under the name AI Game after learning about the rules and basics.

After explaining the chapter, let the students do the exercises given on Pages 69 and 70 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone activity given on pages 71 of the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on Page 71 in the main course book. This will enhance the abilities of the students and serve as Creativity and Art Integration Learning Activity.

Suggested Activity

Ask the students to draw a picture of an Artificial intelligent devices.

8. AI in Games and Movies

Teaching Objectives

Students will learn about

- ☞ AI in Games
- ☞ AI in Movies

Number of Periods	
Theory	Practical
1	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 72 of the main course book.

While teaching this chapter, tell the students that modern education revolves around game-based learning and Artificial Intelligence ensures that children learn and have fun together.

Make them understand that CodeMonkey Jr. is a platform where they can learn computational thinking skills and the basic concepts of coding. It is a block-based coding platform.

Make them understand that the Emoji Scavenger Hunt game uses AI to identify emojis in the real world using the mobile device's camera. Also, tell the steps to play the game.

Tell the students about Data Games which is loaded with a collection of games related to math and statistics aimed at keeping students.

Introduce them to AutoDraw which is a powerful tool used for drawing images.

Introduce to the students about the role of AI in Movies. Also, tell them about the movies in which AI is used. Those are:

- Robots
- Wall-E
- I, Robot
- The Iron Giant
- Big Hero 6
- A.I. Artificial Intelligence

Ask the students to solve the task given on pages 80 and as Quest.

Extension

Ask the students some oral questions based on this chapter.

Q. Which movie of 2001 revolves around a "Kid Robot" with real emotions?

Q. Which game allows kids to learn how to make shadow puppets just by using their hands?

Q. Which is an AI-based coding platform?

Q. What is the moral of the movie Big Hero 6?

Q. Name the three AI movies for kids.

Q. Which movie is about a kind-hearted garbage collector robot?

Evaluation

Encourage the students to walk through the chapter and ask them to play the games, their links given on pages 73 to 76 on their own after learning about the rules and basics.

After explaining the chapter, let the students do the exercises given on pages 81 and 82 of the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone activity given on pages 82 of the main course book.

Take the students to the computer lab and let them practice the activity given in the Lab Activity section on page 82 in the main course book. This will enhance the abilities of the students and serve as Critical Thinking and Technology Literacy Activity.

Suggested Activity

Ask the students to create their own AI Superhero on an A4-size sheet and speak about its role in approximately five lines.