

# AI RoboGenius

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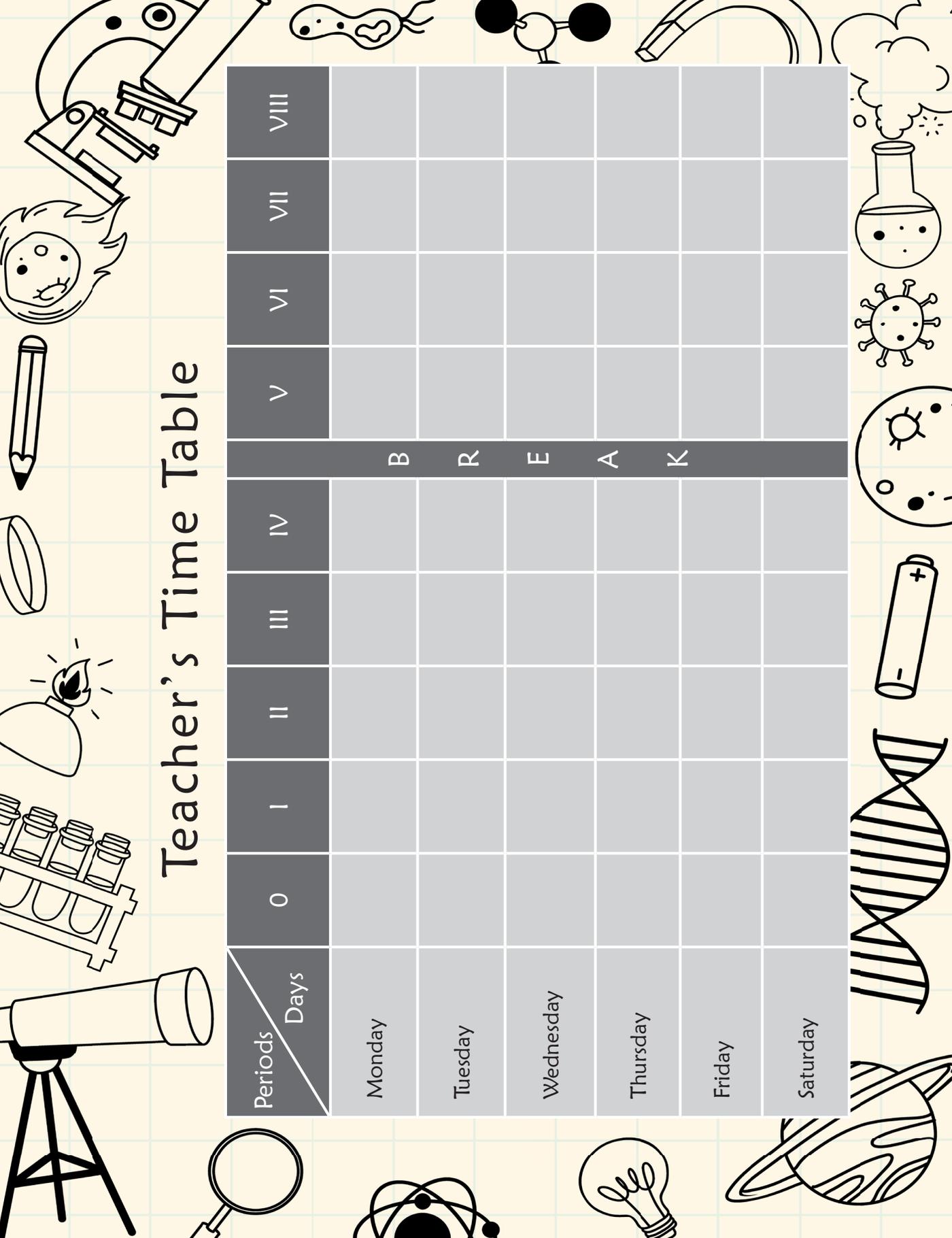
TEACHER'S MANUAL  
Extended Support for Teachers



[www.orangeeducation.in](http://www.orangeeducation.in)

# Teacher's Time Table

Periods \ Days	0	I	II	III	IV	B R E A K					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

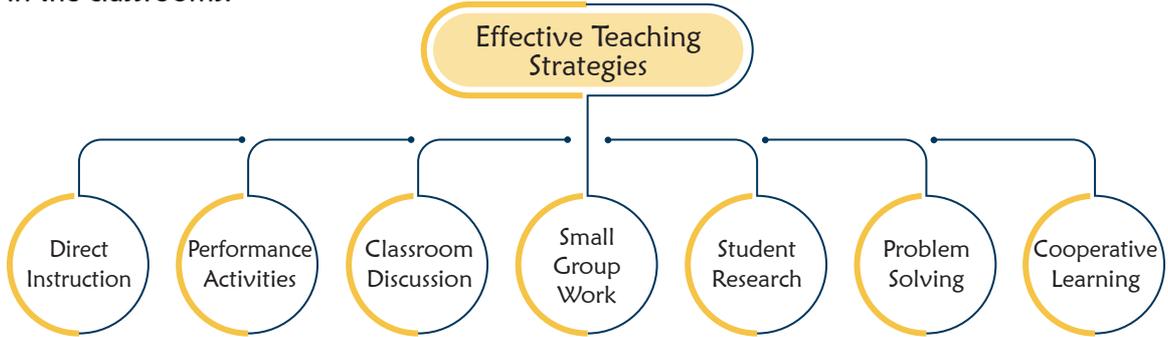
Managing the children's learning needs according to their developmental milestones is the key to a successful teaching-learning transaction in the classroom.

“ Family is the most important thing in the world. ”



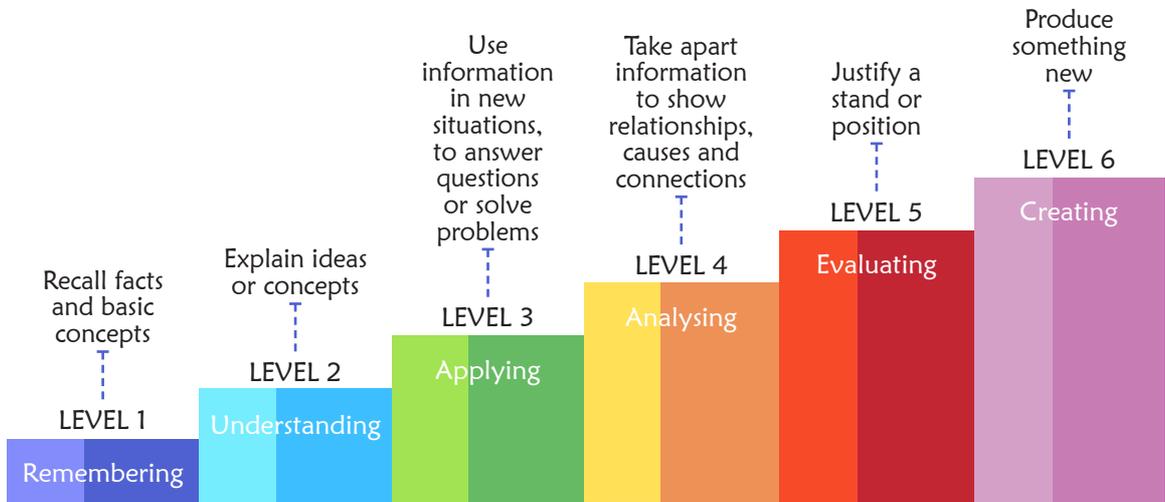
# Teaching Strategies

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 Natural Language Processing (NLP)

## Teaching Objectives

Students will learn about

- ✦ Types of NLP Technologies
- ✦ Importance of Natural Language Processing in AI
- ✦ Uses of NLP
- ✦ How NLP Works?

## Teaching Plan

Number of Periods	
Theory	Practical
2	2

Introduce the students with Natural Language Processing (NLP) as a domain of Artificial Intelligence (AI) that helps computers understand and work with human language.

Ask students about how they use voice assistants like Siri or Google Assistant in their daily life.

Discuss with students about how apps like Siri and Google Assistant use NLP to understand voice commands.

Discuss with the students about the importance of NLP in making machines understand human language, enabling us to communicate in a natural way.

Explain the students about how the NLP is used in various fields such as Sentiment Analysis, Semantic Search, Optical Character Recognition, Speech Recognition, Machine Translation and Natural Language Generation.

Discuss with the students about the importance of NLP in AI and how NLP bridges the gap between human and machine communication by enabling machines to understand and generate human language.

Explain the students about the uses of NLP and how NLP works through the steps of understanding language, cleaning input and using AI to learn from the input.

Discuss with the students about how NLP is used in applications like search engines, smart homes, emotion detection, and social media monitoring and many more.

## Extension

Ask the students some oral questions based on this chapter.

- Q. What is Natural Language Processing (NLP)?
- Q. How does NLP help machines understand human language?
- Q. What are some examples of NLP technologies in daily life?
- Q. What is Sentiment Analysis, and how is it used?
- Q. How do search engines use NLP to improve search results?
- Q. What is Machine Translation, and how does NLP make it possible?
- Q. How does NLP help in smart home devices like Google Home and Alexa?
- Q. What are the steps in how NLP works, and what happens during each step?
- Q. What role does AI play in Natural Language Processing?
- Q. How can NLP be used to assist people with disabilities?

## Evaluation

Guide the students to complete the sections, such as **AI TASK** provided on page **9**.

Encourage the students to solve the question in the **AI REBOOT** section on page **14**.

Ask the students to answer the following question in the **VIDEO SESSION** section on page **15**.

Complete the **AI GAME** task on pages **9 – 10** and **12 - 13**, answering questions related to the activity.

After explaining the chapter, let the students do the **ROBO CHECK** on pages **16** and **18** in the main course book.

Ask the students to complete the **AI IN LIFE** activity provided on page **18**.

Encourage the students to complete the **AI DEEP THINKING** activity given on page **18**.

Take the students to the computer lab and let them practice the activity given in the **AI LAB** section on page **18** in the main course book. This will enhance their skills in creativity.

## Suggested Activity

Students will use Scratch to create a simple chatbot that responds to text input. They will use NLP principles to make it understand and respond logically.

# 2

## Statistical Data

### Teaching Objectives

Students will learn about

- ★ Statistical Data

- ✦ Real-Life Application of Statistical Data
- ✦ Collection and Presentation of Data

Number of Periods	
Theory	Practical
2	1

## Teaching Plan

Introduce the students about statistical data as a way to represent facts and figures that help in making decisions. Discuss how statistical data helps understand and analyse patterns.

Ask the students to think of examples where they have used data in daily life, like checking the weather or monitoring their screen time.

Discuss with students that how the statistical data helps make decisions in different fields, like healthcare, education, business, and urban planning. For example, In healthcare, statistical data helps predict outbreaks and allocate resources.

Explain the students that it is crucial to collect data accurately and present it in a clear and correct manner to ensure that the information is reliable and can be understood properly.

Discuss the methods of data collection like surveys, interviews, and experiments.

Introduce data visualization tools such as bar graphs, pie charts, and line graphs. Discuss how visualizing data helps in better understanding and interpretation.

Discuss how AI uses statistical data to improve decision-making, predictions, and pattern recognition. Explain the role of data analysis in developing smart systems.

Discuss how statistical data is used in various industries like:

- **Education:** Tracking student progress.
- **Healthcare:** Predicting disease outbreaks.
- **Business:** Analysing customer preferences.
- **Urban Planning:** Predicting traffic and pollution.

## Extension

Ask the students some oral questions based on this chapter.

- Q. What is statistical data, and how is it used to make decisions?
- Q. Name some real-life applications of statistical data.
- Q. How do you collect statistical data in real life?
- Q. Why is data visualization important in interpreting information?
- Q. How does AI use statistical data to make predictions?
- Q. What are some tools for visualizing data?
- Q. How can statistical data be used in healthcare?
- Q. What are some examples of how businesses use statistical data?

Q. How does urban planning use statistical data for city development?

Q. How can statistical data help improve education?

### Evaluation

Encourage the students to solve the question in the **AI REBOOT** section on page **25**.

Ask the students to answer the following question in the **VIDEO SESSION** section on page **21**.

Complete the **AI GAME** task on page **23 - 24**, answering questions related to the activity.

After explaining the chapter, let the students do the **ROBO CHECK** on pages **28** and **29** in the main course book.

Ask the students to complete the **AI IN LIFE** activity provided on page **30**.

Encourage the students to complete the **AI DEEP THINKING** activity given on page **30**.

Take the students to the computer lab and let them practice the activity given in the **AI LAB** section on page **30** in the main course book. This will enhance their skills in creativity.

### Suggested Activity

Ask students to collect birthday data from their classmates (e.g., month, season, etc.). They will then create graphs (bar charts or pie charts) to show the number of birthdays per month and analyze the data.