

AI RoboGenius

5

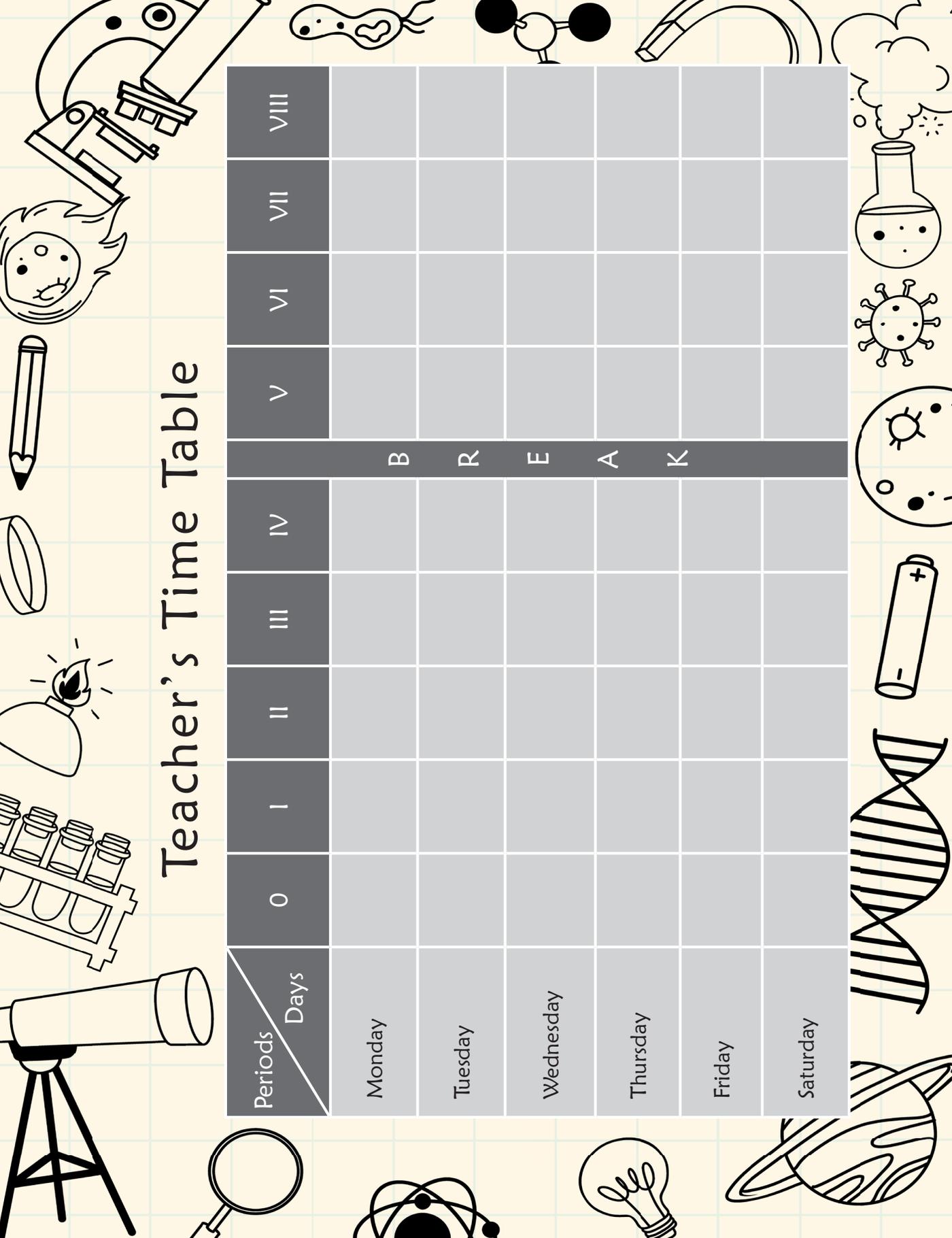
TEACHER'S MANUAL
Extended Support for Teachers



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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

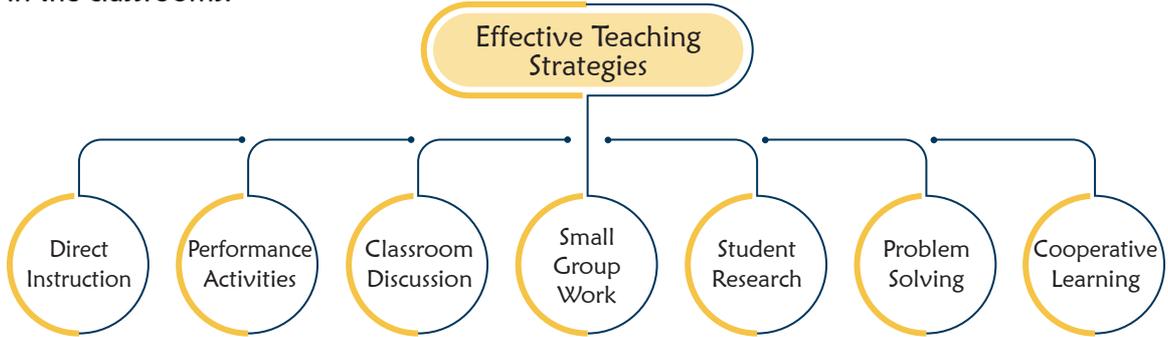
- May show increased gender stereotyping of attitudes and behaviour
- May have a conventional moral orientation

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. ”

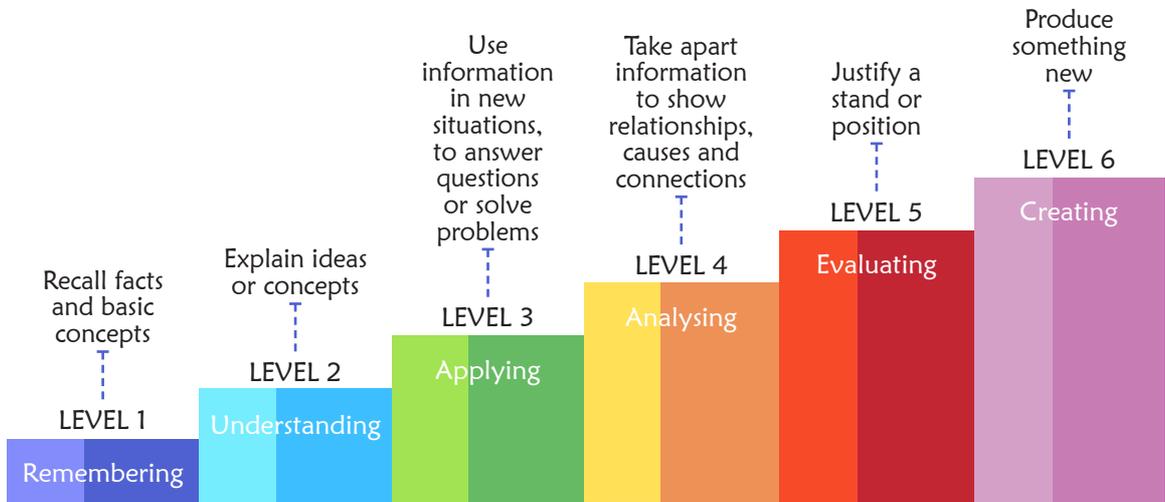
Teaching Strategies

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 Simple and Complex Machines

Teaching Objectives

Students will learn about:

- ✦ Popular AI applications such as Siri, Meta AI, Google Assistant, Alexa, Practo, Google Maps, Swiggy, YouTube, and Netflix
- ✦ AI-powered apps work and their practical uses
- ✦ Impact of AI on daily life

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Ask students how they use AI-powered apps like Siri, Google Assistant, and YouTube.

Explain the concept of AI, such as how it powers voice assistants, recommendation systems, and learning from data.

Discuss how Siri helps users on iPhones with tasks like setting reminders, sending texts, and providing information through voice commands.

Introduce Meta AI, explaining how it helps users on platforms like Facebook, Instagram, and WhatsApp by making recommendations, helping with conversations, and planning events.

Explain how Google Assistant works across mobile and smart home devices to assist with tasks such as answering questions, controlling devices, and providing directions.

Discuss Alexa's capabilities, such as controlling smart home devices (e.g., lights, TVs), playing music, and providing weather updates.

Explain how Practo uses AI to help with minor health problems, analyse patient data, and improve healthcare services.

Discuss how Google Maps uses AI to provide real-time traffic updates, directions, and estimated travel times to millions of users.

Explain how Swiggy uses AI to optimise delivery routes and improve order accuracy, ensuring a better user experience.

Discuss how YouTube uses AI to remove offensive content and recommend videos based on users' previous search history and preferences.

Explain how Netflix uses AI to suggest movies and TV shows based on user viewing habits and preferences.

Extension

Ask the students some questions based on this chapter:

- Q. How does Siri help in completing daily tasks?
- Q. How does AI in Practo help with healthcare?
- Q. Which AI-powered app do you use most often, and why?
- Q. How does AI help YouTube recommend videos?
- Q. How can AI improve services for older adults?
- Q. Can you think of other areas where AI could be applied?

Evaluation

Complete the **AI GAME** task on page **13** and **15** answering questions related to the activity.

Guide the students to complete the sections, such as **AI TASK** provided on page **14**.

Ask the students to complete the **AI IN LIFE** activity provided 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 and technology literacy.

After explaining the chapter, let the students do the **ROBO CHECK** on pages **16, 17** and **18** in the main course book.

Suggested Activity

Ask students to design an app layout they would create using AI. This could be a simple drawing or mock-up using tools like Paint 3D or MS Word.

2

AI Industry 5.0: Smart Robots

Teaching Objectives

Students will learn about

- ✦ AI Industry 5.0
- ✦ Need for AI Industry 5.0
- ✦ Basic components of robots

- ★ Future possibilities of AI and robotics in various industries

Number of Periods	
Theory	Practical
3	1

Teaching Plan

Introduce AI Industry 5.0 as the next evolution of AI, focusing on human-robot collaboration, creativity, sustainability, and improving life through teamwork.

Discuss how Industry 5.0 combines artificial intelligence and human skills, unlike Industry 4.0, which focused on automation and machines.

Discuss how robots are used in various fields, such as healthcare, farming, space exploration, and defence.

Explain how robots enhance efficiency, safety, and productivity by automating tasks, analysing data, and interacting safely with people.

Highlight the growing importance of AI robots in industries like healthcare, manufacturing, and education.

Explain how robots are used in factories to automate repetitive tasks such as welding, assembly, and packing.

Describe how robots are used in homes to perform tasks like cleaning, vacuuming, and assistance with household chores.

Discuss the use of drones for reconnaissance and armed robots like MAARS and DOGO.

Discuss how robots are used in healthcare to perform precise surgeries, provide prosthetics, and support rehabilitation.

Talk about how robots are used in agriculture to automate tasks like harvesting and weed control, making farming more sustainable.

Explain how delivery robots use GPS and sensors to deliver food, parcels, and medicines in urban areas.

Introduce the role of robots in space exploration, such as NASA's Mars Rover, which studies the surface of Mars and sends data back to Earth.

Discuss how robots are used in entertainment, such as managing cameras, creating effects, and performing stunts.

Explain how travel robots assist with luggage, navigation, and support at airports, hotels, and tourist spots.

Discuss how robots use sensors to detect motion, pressure, temperature, light, and distance, providing data for decision-making.

Explain how actuators convert electrical signals into movement, allowing robots to perform tasks.

Discuss how motors drive a robot's joints, wheels, or limbs and the different types of motors (e.g., DC, servo, and stepper).



Explain how controllers process sensor data and send commands to actuators, effectively acting as the robot's brain.

Discuss the future of AI Industry 5.0, focusing on human-robot collaboration.

Highlight possibilities such as personalised product creation, eco-friendly methods, and enhanced safety in various sectors.

Extension

Ask the students some questions based on this chapter:

- Q. How do robots help in reducing human effort and increasing productivity in factories?
- Q. How could farming robots help your uncle if he's struggling with manual farm work?
- Q. Can robots help in medical fields? Give examples of medical robots.
- Q. How do robots improve safety in dangerous environments?
- Q. What are the key components that make a robot work?
- Q. What are the possibilities for robots in the future? How do you think they will change society?

Evaluation

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

After explaining the chapter, let the students do the **ROBO CHECK** on pages **24, 25** in the main course book.

Suggested Activity

Ask students to design a robot that can assist in a specific task, such as cleaning, farming, or healthcare. They should explain the functions and components of their robot.