3

TOUCHPAD

Artificial Intelligence

Teacher's Manual

Extended Support for Teachers

ORANGE
www.orangeeducation.in
www.thetouchpad.com

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.

↓

During the class:

Present the lesson plan.

↓

After the class:

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

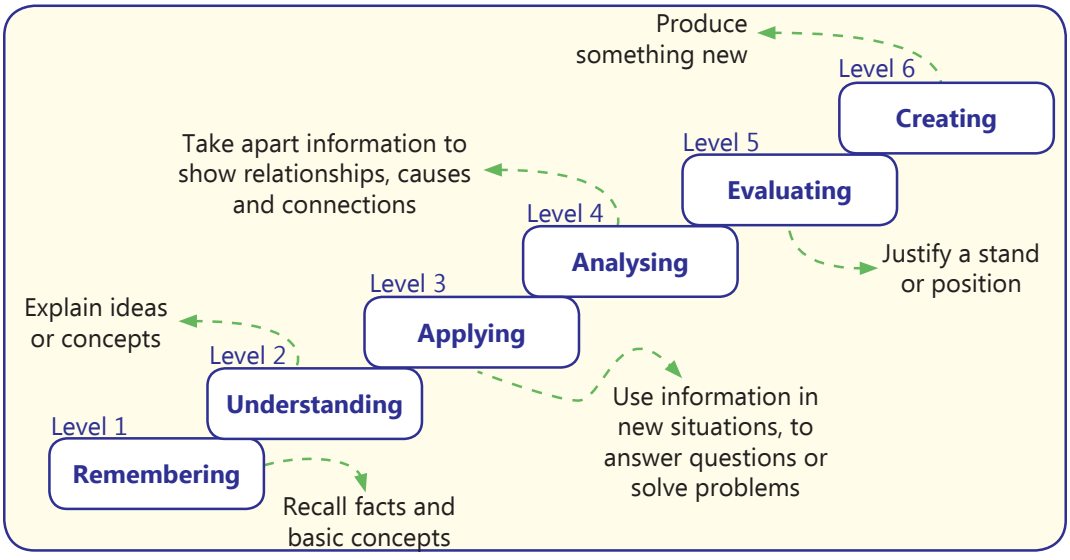
"Knowing yourself is the beginning of all wisdom."

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 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 3

LESSON PLAN

Artificial Intelligence

1. Computer Timeline

Teaching Objectives

Students will learn about

- 1970 – 1990
- 1990 – 2000
- 2000 – Till Date
- Future of Computer Science

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that the computer has become a part of our lives in a variety of ways, and over the years, the size of the computer has changed dramatically.

Tell them about significant developments that took place during the following period.

- 1970 – 1990
- 1990 – 2000
- 2000 – Till Date

Show the picture of significant developments that took place during the period 1970 to till date.

Explain to the students about

Tell the students about the future of Computer Science.

Also, teach the students through Topic Animation.

Ask the students to solve the exercise given on page 13 as **AI Reboot**.

Ask the students to solve the task given on page 19 as **AI Task**.

Ask the students to read the **Brainy Fact** given on pages 13 and 19.

Extension

Ask the students some oral questions based on this chapter.

Q. In which year graphics and music were used in computers?

Q. When was the first modern computer created?

Q. Define the Timeline of computers.

Q. Who started Apple computers?

Q. In which year did Apple release its Apple watch?

Q. Which app in 2016 became the fastest growing App?

Q. Which is the first digital voice-enabled assistant introduced for iPhones?

Q. Which is the most popular Operating system from Microsoft that was rolled out in the market on 25th October 2001?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 20 to 22 of the main course book as **AI Quiz** and **Exercise**. Tell them to solve the critical and computational skill-developing exercises as **AI in Life** given on page 22.

Take the students to the computer lab and let them practice the activity given in the **AI Lab** section on Page 22 in the main course book. This will enhance the abilities of the students and serve as a Subject Enrichment Activity.

Suggested Activity

Ask the students to draw a timeline showing how computers became smaller and more powerful with the passage of time in an A-3 size sheet.

2. Chatbots

Teaching Objectives

Students will learn about

- ☞ Chatbot
- ☞ Famous Chatbots

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that a chatbot is also known as a bot which is a computer program that allows humans to interact with computing devices through voice, text, gesture, and touch.

Tell the students about the famous AI chatbots that have won the famous Loebner award which are given below:

- Mitsuku
- Replika
- Andy – An English-Speaking Bot
- Domino's Pizza Bot
- Mondly: Learning Bot

Also, show pictures of these famous chatbots.

Ask the students to solve the task given on page 28 as **AI Task**.

Ask the students to read the **Brainy Fact** given on pages 24

Extension

Ask the students some oral questions based on this chapter.

Q. What is a chatbot?

Q. What are the examples of chatbots?

Q. What does the Replica chatbot do?

Q. Name the chatbot which acts as your private friend.

Q. Which company has launched a new chatbot called Dom on Facebook Messenger?

Q. Name a chatbot that encourages users to practice English, Spanish, German or French.

Q. Which bot is also known as kuki?

Q. What is the purpose of Turing Test?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 28 to 30 of the main course book as **AI Quiz** and **Exercise**. Tell them to solve the critical and computational skill-developing exercises as AI Deep Thinking 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 the abilities of the students and serve as a Subject Enrichment Activity. Ask the students to think and answer the exercise as Test Sheet 1 is given on page 31.

Suggested Activity

Ask the students to try Quizzes and play games on the Kuki chatbot by using the link given below:

https://chat.kuki.ai/chat

3. Robots Around Us

Teaching Objectives

Students will learn about

- ☞ Characteristics of Robots
- ☞ Artificial Intelligence in Robotics
- ☞ AI and Non-AI Robots

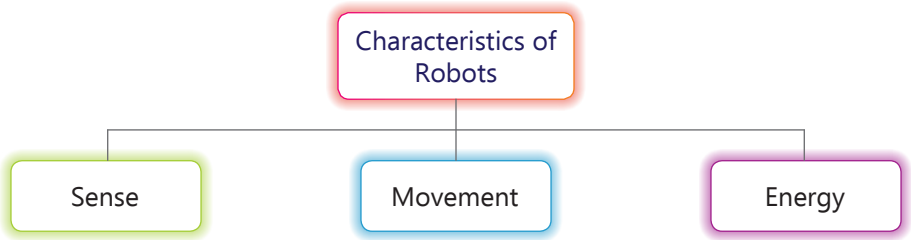
Number of Periods	
Theory	Practical
◯	◯

Teaching Plan

While teaching this chapter, tell the students that robots are machines programmed by computers capable of automatically doing difficult or complex tasks.

Make them understand that there are some essential characteristics that a robot must possess that define whether any machine is a robot or not.

Explain these characteristics of robots in detail:



Teach the concept of Artificial Intelligence in Robotics.

Also, teach the difference between AI and Non-AI Robots to the students.

Introduce to the students some of the popular AI robots. Those are:

- Kuri
- Sophia
- Aibo
- E2-DR
- Handle
- NASA Puffer
- Snake Robot
- Humanoid Shalu

Introduce to the students some of the popular Non-AI robots. Those are:

- Cobots
- Industrial Robots
- Agriculture Robots

Also, teach the students through Topic Animation and show the video about Industrial Robots that have Transformed the Manufacturing Industry on the link given on page 40 as Video Session.

Ask the students to solve the task given on page 34 as **AI Reboot**.

Ask the students to read the **Brainy Fact** given on pages 36,39 and 40.

Extension

Ask the students some oral questions based on this chapter.

Q. What are the three characteristics of robots? Name them

Q. Define the term robots.

Q. What do you mean by Robotics?

Q. Which are also called collaborative robots?

Q. What is the main area of application of robots in agriculture today?

Q. Who is one of the most famous social humanoid?

Q. What will happen when Robotics and AI come together?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 45 to 47 of the main course book as **AI Quiz** and **Exercise**. Tell them to solve the critical and computational skill-developing exercises as **AI in Life** and **AI Deep Thinking** given on page 47

Take the students to the computer lab and let them practice the activity given in the **AI Lab** section on Page 47 in the main course book. This will enhance the abilities of the students and serve as a Subject Enrichment Activity.

Suggested Activity

Ask the students to gather pictures of at least 10 different robots and paste them into an A3-size sheet. Also, write the names of the robots on the sheet.

4. AI in Games and Movies

Teaching Objectives

Students will learn about

- ☞ AI in Games
- ☞ AI in Movies

Number of Periods	
Theory	Practical
◯	◯

Teaching Plan

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 Shadow art which is an age-old game where one would make a shadow with one hand and ask our friends to guess.

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

Also, teach the students through Topic Animation and show the video about artificial intelligence on the link given on page 58 as Video Session.

Ask the students to solve the task given on pages 51 and 52 and as **AI Reboot** and **AI Task**.

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?

Q. Name the game which uses the Zodiac sign.

Q. Why do children's robot films have a special place?

Evaluation

Encourage the students to walk through the chapter and ask them to play the games, their links given on pages 49, 50, and 52 on their own after learning about the rules and basics.

After explaining the chapter, let the students do the exercises given on Pages 58 to 60 of the main course book as **AI Quiz** and **Exercise**. Tell them to solve the critical and computational skill-developing exercises as **AI Deep Thinking** given on page 60.

Take the students to the computer lab and let them practice the activity given in the **AI Lab** section on Page 60 in the main course book. This will enhance the abilities of the students and serve as a Subject Enrichment Activity. Ask the students to think and answer the exercise as **Test Sheet 2** and **AI Ready 1** are given on pages 61 and 62.

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.