9

TOUCHPAD

Artificial Intelligence Ver. 2.0

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		V	VI	VII	VIII
Monday										
Tuesday						B				
Wednesday						R				
Thursday						E				
Friday						A				
Saturday						K				

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	• 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 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 needs 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.

```
                    Direct
                  Instruction
    Performance                     Classroom
    Activities                      Discussion
                   Effective
    Student        Teaching          Small
    Research       Strategies      Group Work

         Problem              Cooperative
         Solving               Learning
```

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.

```
                                          Produce
                                       something new
                                                          Level 6
                                                             Creating
    Take apart information to
    show relationships, causes               Level 5
    and connections                            Evaluating
                          Level 4
                            Analysing                      Justify a stand
                Level 3                                     or position
    Explain ideas    Applying
    or concepts
           Level 2                        Use information in
             Understanding                new situations, to
    Level 1                               answer questions or
       Remembering                        solve problems

                 Recall facts and
                 basic concepts
```

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."

1. Communication Skills-I

Teaching Objectives

Students will learn about

- ☞ What is Communication?
- ☞ Factors Affecting Perspectives in Communication
- ☞ Effective ways of Communication
- ☞ 3P's of Public Speaking
- ☞ Phrases
- ☞ Construction of a Paragraph
- ☞ Use of Articles
- ☞ Perspectives in Communication
- ☞ Types of Communication
- ☞ Writing Skills
- ☞ What is a Sentence?
- ☞ Parts of Speech
- ☞ When no Articles are used

Number of Hours

Theory

10

Teaching Plan

Before starting the chapter, give an introduction of Communication to the students.

Tell the students that the word 'communication' is derived from the Latin word communicate, meaning "to share". It is defined as a way of conveying a meaningful message from one entity to another.

Explain the elements of communication to the students:

- Sender
- Ideas/Message
- Encoding
- Communication Channel
- Receiver
- Decoding
- Feedback

Elements of Communication: Feedback, Sender, Ideas/Message, Encoding, Communication Channel, Receiver, Decoding

Explain the importance of communication to the students and that it is a two way process. It is important for many reasons like:

- Information
- Brings Clarity
- Motivation
- Persuasion

Define the perspective of communication to the students in detail. Tell the students that perspective is the fixed idea or thinking that affects our communication. It can be a sender or a receiver of the message affecting the interpretation of the message thus altering the intended meaning of it.

Explain the factors affecting the perspectives in communication which are:

- Language
- Visual Perception
- Past Experience
- Prejudice
- Feelings
- Environment
- Culture

Share to the students that in order to ensure the communication in the most effective and engaging manner we need to have a clear vision of 7 C's:

- Clear
- Concise
- Concrete
- Correct
- Coherent
- Complete
- Courteous

Tell the students about the types of communication in detail:
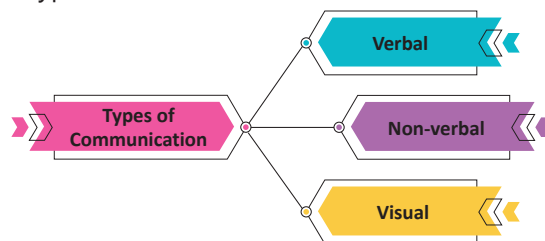
Also, define the types of Verbal Communication which are Oral and Written Communication. After this, explain the types of Non-Verbal communication which are hand movement, body language, facial expression, eye contact, touch, and body posture.

Share the 3P's of Public Speaking in detail for better understanding:

- Prepare
- Practice
- Perform

Share the meaning and purpose of writing skills with the students that it is an ability to express your ideas or thoughts. A good writing skill uses perfect words to express the accurate meaning of the message with more clarity. Also explain the types:

- Capitalization
- Punctuation Marks

Define the meaning of Phrase and Sentence with the students for better clarity. Also, define:

- Rules for writing a sentence
- Parts of a sentence
- Types of sentences

Tell the students about the Construction of a Paragraph along with the rules for writing a paragraph in detail.

Share with the students about the Parts of Speech in detail:
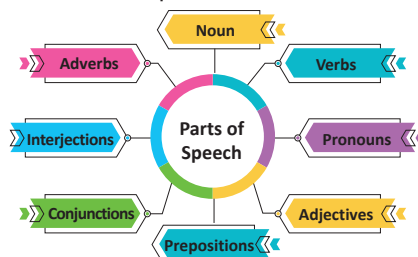
Define the use of articles which are Definite- The and Indefinite- A & An to the students. Also, explain When no Articles are used to the students.

Ask the students to read the **Brainy Fact** given on page 25.

Extension

Ask the students some oral questions based on this chapter.

Q.   What is communication?

Q.   What are the elements of communication?

Q.   What is the importance of communication skills?

Q.   What is the perspective of communication?

Q.   What are effective ways of communication?

Q.   Define the types of communication.

Q.   What is verbal communication?

Q.   What is non-verbal communication?

Q.   What are 3P's of public speaking?

Q.   Define writing skills.

Q.   What is a phrase?

Q.   What is a sentence?

Q.   How we can construct a paragraph?

Q.   Define parts of speech.

Q.   What is the use of Articles?

Encourage the students to walk through the chapter and ask them to solve the questions given on page 23 and 28 on their own under the name **Task**.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 30 to 36 in the main course book as **Exercise (Solved and Unsolved Questions)**.

Take the students to the computer lab and let them practice the activity given in **Lab Activity** section given on page 37 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Ask the students to practice the activity in class given in **Class Activity** section given on page 37 in the main coursebook. This will help the students to understand the importance of all components of Communication.

Suggested Activity

Ask the students to search about more Communication Activities that can be performed in class.

1. Introduction to AI

Teaching Objectives

Students will learn about

☞ What is Intelligence?

☞ Types of AI

☞ AI Around Us

☞ History of AI

☞ Importance of AI

☞ Future of AI

☞ Domains of AI

☞ What are Sustainable Development Goals (SDGs)?

☞ Role of AI to Achieve SDGs

☞ Dynamic Waves in AI Research

☞ Case Study of AI Start-ups in India

☞ AI Bias & AI Access

☞ Advantages of AI

☞ Conclusion

☞ Introducing AI

☞ How do Machines Become Intelligent?

☞ What is Not AI?

☞ World Famous AI Machines

☞ AI in India

☞ Human-Machine Interaction

☞ The Concept of Smart Living

☞ Applications of AI in Real-Life

☞ Careers in AI

☞ AI Ethical Issues and Concerns

☞ AI Access

☞ Disadvantages of AI

Number of Periods

Theory	Practical
10	8

Teaching Plan

Before starting the chapter, tell the students that Intelligence is the ability to learn from experience, to recognize problems and to solve problems. According to **Sternberg**— "Intelligence is the capacity to learn from experience, using metacognitive processes to enhance learning, and the ability to adapt to the surrounding environment."

Introduce the student with AI and tell them that **Artificial Intelligence (AI)** is a branch of computer science that simulate human intelligence into machines, especially in computer systems, so that they can think and perform actions similar to humans.
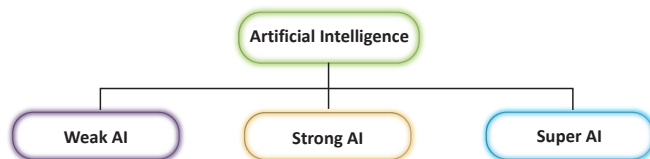
Explain the types of AI to the students with the help of proper examples:

Define the meaning and purpose of following AI to the students.

- Weak AI
- Strong AI
- Super AI
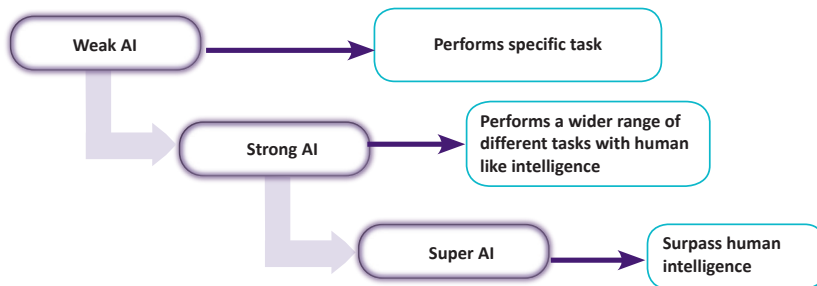
Explain the students about how machines became intelligent to the students.

Share the details about AI around us in detail with the students:

- Smartphones
- Email Spam Filters
- Virtual Assistants
- Social Media
- Music and Media Streaming Services
- Video Games
- Navigation
- Security and Safety
- Social Media Filters

Explain to the students about what is not AI in detail with proper examples:

Share the history of AI with the students.

Tell the students about some World-Famous AI Machines with detail and purpose:

- IBM Watson
- Sophia
- Chatbots
- Honda Asimo
- Boston Dynamics AI Robot

Explain the students that AI has impacted all the fields and sectors. It has changed the conventional functioning of machines. AI means equipping the machines with the power to think and make decisions just like human beings.

Tell them that AI as a technology has evolved in every field. It is the fastest growing sector with India having a biggest stake in AI development. This technology has its roots from our country's leading technology institutes. These institutes have initiated and encouraged AI researchers and start-ups.

Explain the Future of AI to the students with the concept that is being planned in fields.

Explain the meaning of Human-Machine Interaction and also tell the brief history of HMI to the students in details.

Explain the Domains of AI to the students in details along with the usage/ application of the same.
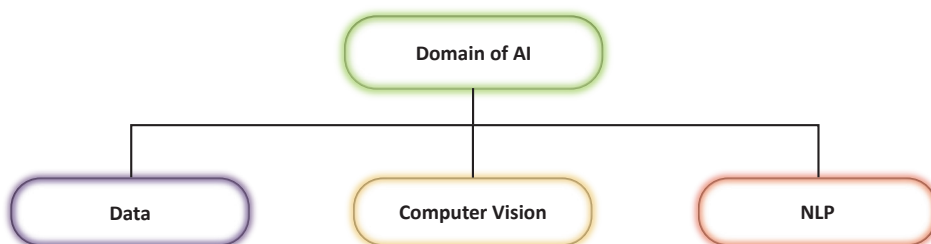
Explain Natural Language Processing (NLP) to the students and tell the usage of the same.

Tell the students about Data and explain the usage of the same in the field of AI.

Share the information with the students about Computer Vision along with the applications of Computer Vision.

Explain the meaning and advantages of Smart Cities and Smart Schools.

Explain the meaning and purpose of Smart Homes to the students. Also, tell them how these devices are beneficial like:

- Power Saver
- Increased energy Efficient
- Protect Home and its Belongings
- Interactive Home
- One Point Access
- Flexibility
- Remote Control
- Climate Control
- Protection

Share the devices which are used in smart homes to the students:

- Smart Hubs
- Video Doorbells
- Smart Cameras
- Smart Smoke Detectors
- Smart Lighting
- Smart Thermostats
- Smart Speakers
- Ego Lawnmower and Eve Aqua
- Smart Remote Controllers

Briefly explain all the SDGs in detail along with their motives and purpose:

Explain the applications of AI in real-life to the students in details.

Share the following in details with the students:

- Dynamic Waves in AI Research
- Careers in AI
- Case Study of AI Start-ups of India
- AI Ethical issues and concerns
- AI Bias
- AI Access
- Advantages of AI
- Disadvantages of AI
- Conclusion

Ask the student to solve the exercise given on pages 149, 158, 167, 177 and 182 as **AI Reboot**.

Ask the students to solve the task given on pages 146, 147, 151, 159, 162, 163, 168, 174, 179, 181, 182, 184, 186 and 187 as **AI Task**.

Make sure to ask the students to scan and watch the video given on pages 150, 151, 154, 157, 159, 161, 164, 168, 174 and 182 as **Video Session**. Encourage the students to make presentation on the topic learned and discuss in class.

Encourage the students to complete the Ice Breaker Activity given on pages 160 and 188 for learning by doing.

Ask the students to read the **Brainy Fact** given on pages 144,149, 152, 156 and 172.

Extension

Ask the students some oral questions based on this chapter.

Q. What is intelligence?

Q. What is AI?

Q. Explain the types of AI.

Q. How do machines become intelligent?

Q. What is not AI?

Q. What is the future of AI?

Q. What is HMI?

Q. What is the importance of AI?

Q. Define domains of AI.

Evaluation

Encourage the students to walk-through the chapter and ask them to play the games given on pages 154, 156, 157, 168 and 174 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 189 to 199 in the main course book as **Exercise (Solved and Unsolved Questions)**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on pages 199 and 200.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on pages 200 to 205 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment Activity. Ask the students to think and answer the exercise as **AI Ready 1** given on page number 208.

Ask the students to practice the activity in Class given in **Class Activity** section given on Page 200 in the main coursebook. This will help the students to know how AI help them in their daily life and they can generate ideas about Smart Homes.

Suggested Activity

Ask the students to describe their dream smart home.