8

TOUCHPAD

Play 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	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.

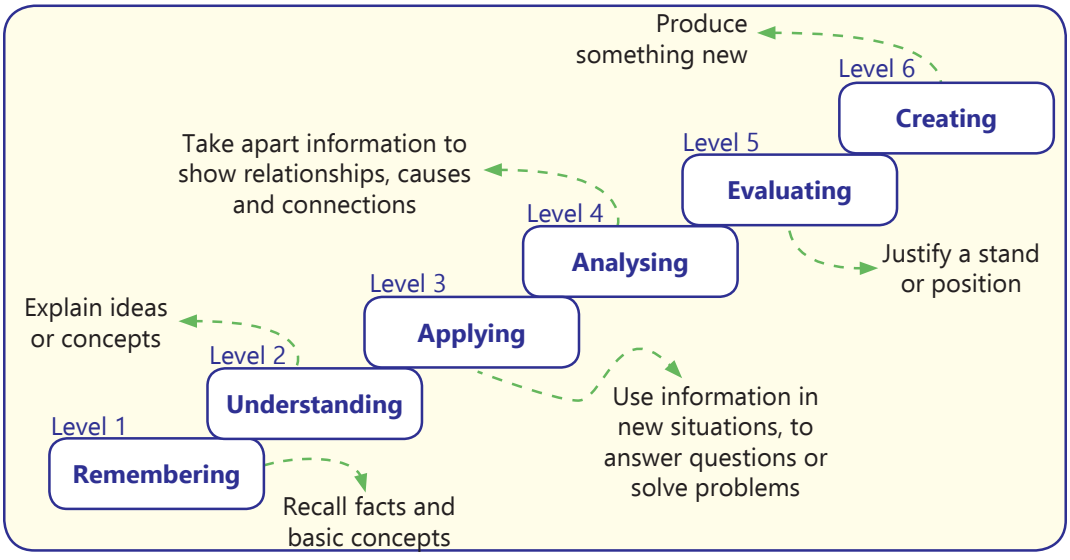
"Knowing yourself is the beginning of all wisdom."

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."

LESSON PLAN

Touchpad PLAY Ver 2.0
Class-8

1. Number System

Teaching Objectives

Students will learn about

- ☞ Number System
- ☞ Binary to Decimal Conversion
- ☞ Decimal to Binary Conversion
- ☞ Operations on Binary Numbers

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that a number system is simply a method of counting.

Introduce base or radix as the total number of digits used in a number system.

Inform them that there are four important types of number systems – Decimal (base 10), Binary (base 2), Octal (base 8) and Hexadecimal (base 16).

Make the students recall the method of writing expanded form of a number under Decimal number system.

Let the students know that there are four types of number systems. They are as follows:

- In decimal number system, the numbers are expressed using ten digits, 0 to 9 and expanded with base 10.
- In binary number system, 'bi' implies two. The binary numbers have the base of two.
- In octal number system, the numbers are expressed using eight digits, 0 to 7 and expanded with base 8.
- In hexadecimal number system, the numbers are expressed using sixteen digits, 0 to 9 and A to F, and expanded with base 16.

Show to the students the method of converting:

- Decimal number to Binary number by successive division by 2 and arranging the remainders in reverse order.
- Binary number to Decimal number by multiplying digits with 2 raised to the power of place of that digit starting from 0 on the left.

Share the rules of binary addition, subtraction, multiplication and division.

Show to the students the method of carrying out mathematical operations on binary numbers and verifying the results by corresponding conversions to decimal numbers.

Ensure that the scope of Teacher's Corner given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a number system?

Q. What is the radix of decimal / binary / octal / hexadecimal number system?

Q. Which digits are used to express a decimal / binary / octal / hexadecimal number?

Q. What is the value of addition of binary digits 1 and 1?

Q. What is the value of subtraction of binary digits 0 and 1?

Q. Which number system is used by computers?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 13, 14 and 15 of the main course book as Exercise.

Ask the students to try Competency-based/Application-based questions to imbibe elements like experiential learning in them.

Take the students to the computer lab and let them practise the activity IN THE LAB given on page 15 of the main course book as Exercise. It will enhance the ability of the students and will serve as an interdisciplinary and information literacy activity.

Suggested Activity

1. Convert the last four digits of your parents' mobile numbers into binary number.
2. Ask the students to prepare a comparative chart with four columns, the first one listing the digits used in Hexadecimal number system and in the remaining three columns, their equivalent value under decimal, binary and octal number systems.

2. Computer Networking

Teaching Objectives

Students will learn about

- ☞ Computer Network
- ☞ Advantages of Computer Network
- ☞ Components Required for a Network
- ☞ Topology
- ☞ Wireless Networking Technology
- ☞ Need for Computer Network
- ☞ Network Terminology
- ☞ Types of Network
- ☞ Network Architecture
- ☞ Protocol

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter, tell the students that the process of connecting computers and peripheral devices with each other to exchange data is called computer networking.

Tell the students about the meaning and basics of computer network.

Share with the students the need for computer network – for resource sharing and for communication.

Discuss with the students the advantages of a computer network.

Introduce network terms like Server (host computer) and Client (dependent on server).

Explain the different types of servers to the students covering dedicated server, print server, database server, network server and web server.

Tell the students about the components required for a network covering NIC, hub/switch, router, modem and networking cable.

Share with the students that on the basis of geographical area covered, the networks can be classified into LAN (Local Area Network), MAN (Metropolitan Area Network), WAN (Wide Area Network), PAN (Personal Area Network) and CAN (Campus Area Network).

Introduce Topology as geometric arrangement of computers or nodes in a network.

Explain the difference between different types of topologies covering bus topology, ring topology, star topology, tree topology and mesh topology (Refer Suggested Activity also).

Tell the students that the network architecture defines the overall design of the computer network.

Share with the students the two types of network architectures as Peer-to-Peer network and Client-Server network.

Share with the students about the wireless networking technologies detailing about Wi-Fi and Bluetooth.

Introduce Protocol as a set of rules that govern the communication between the computers on a network.

Discuss briefly about the different types of protocols explaining about HTTP, HTTPS, FTP, TC/IP, POP3, IMAP and SMTP.

Ensure that the scope of Teacher's Corner given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. Define computer network.

Q. What is the need for a computer network?

Q. What are the advantages of a computer network?

Q. Differentiate between server and client.

Q. What are the different types of computer servers?

Q. What are the components required for a network?

Q. Describe LAN, MAN, WAN, PAN and CAN briefly.

Q. Define Topology.

Q. Name different types of topologies.

Q. Name the types of network architecture.

Q. What is wireless networking technology? Give Examples.

Q. What is meant by protocol?

Evaluation

After explaining the chapter, let the students do the course book exercises given on pages 22 and 23 of the main course book as Exercise.

Take the students to the computer lab and let them practise the activity IN THE LAB given on page 23 of the main course book as Exercise. It will enhance the ability of the students and will serve as a technology literacy and creativity activity.

Ask the students to try Competency-based/Application-based questions to imbibe elements like experiential learning in them.

Suggested Activity

Ask the students to make models of different types of topologies using marbles and used wire pieces / straws.

3. Windows–Photos and Video Editor

Teaching Objectives

Students will learn about

- ☞ Photo Editing
- ☞ Video Editing

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, give brief description of photo and video to the students.

Introduce the students to Windows Photo Editor.

Show to the students the interface of Windows Photo Editor.

Demonstrate to the students the method of crop, flip and rotate in Windows Photo Editor.

Demonstrate to the students how to apply filters to a photo.

Tell them that Windows Photo Editor can also adjust brightness and contrast by using the Adjustments feature.

Demonstrate the steps to open a video file for editing.

Explain to the students the process of adding title card with text to a video.

Further tell them that how to trim the videos using the trim button.

Also demonstrate the steps to add 3D effects in a video.

Activity can be created on the photo editing and take two printouts before and after editing and display them in front of the class to demonstrate the difference between original photo and edited photo.

Tell the students about the difference between brightness and contrast.

Make the students understand how they add motion effects, filters and adding text in video.

Tell them the various steps involved in editing a photo and video.

Ensure that the scope of Teacher's Corner given at the end of the chapter has been covered.

Extension

Ask the students some oral questions based on this chapter.

Q. What is editing?

Q. What is the use of editing?

Q. How is photo different from a video?

Q. Name some photo editing apps.

Q. What is the difference between brightness and contrast?

Q. What is the meaning of video editing?

Q. What is cropping?

Q. What is rotating?

Q. What is flipping?

Q. What is a filter?

Q. What is trimming?

Q. What are 3D effects?

Evaluation

After explaining the chapter, let the students do the course book exercises given on ages 31 and 32 of the main course book as Exercise.

Ask the students to try Competency-based/Application-based questions to imbibe elements like media literacy and experiential learning in them.

Take the students to the computer lab and let them practise the activity IN THE LAB given on page 32 of the main course book as Exercise. It will enhance the ability of the students and will serve as a technology literacy and creativity activity.

4. Introduction to TUPI 2D

Teaching Objectives

Students will learn about

- ☞ Features of Tupi 2D
- ☞ Components of the Tupi 2D Window
- ☞ Saving a Project in Tupi 2D
- ☞ Exiting Tupi 2D
- ☞ Library
- ☞ Starting Tupi 2D Software
- ☞ Creating a New Tupi 2D Project
- ☞ Opening a Tupi 2D Project
- ☞ Tools of Tupi 2D

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students about Tupi 2D and features of it.

Show the steps to install TubiTube Desk and start the application.

Explain the components of Tupi 2D window: Menu bar, Toolbox, Toolbar, Workspace, Paint Area Action Toolbar, Modules Tab, Left side bar and right side bar along with the functions.

Show the students how to create a document in Tupi 2D with labelled steps.

Demonstrate to the students the steps involved to create shapes in Tupi 2D.

Show the students the steps involved in:

- Saving a program
- Opening an existing project
- Exiting Tupi 2D

While teaching this chapter, tell the students that the various tools present in the Tools panel are quite helpful in creating drawings in Tupi 2D.

Demonstrate the use of some important drawing tools along with some of their important properties to be defined in Tupi 2D covering:

- Pencil Tool – used to draw freehand lines and curves. The properties to be defined are Stroke Color, Stroke Height, Stroke Style and Cap.
- Ink Tool – used to draw in different colors. The properties to be defined are Stroke Color, Stroke Height, Stroke Style and Cap.
- PolyLine Tool – used to draw closed shapes like triangles and those having five or more sides. The properties to be defined are Style and Number of Sides.
- Brushes Tool – used to draw closed rectangles and squares. The properties to be defined are Stroke Color, Fill Color, Stroke Height and Stroke Style.
- Object Selection Tool – used to select parts or whole objects from the stage.
- Node Selection Tool – helps to reorder the nodes which are created while drawing the object.

- Fill Tool – used to fill colour in closed shapes. The properties to be defined are Fill Color.

Explain the use of the Library in Tupi 2D.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Tupi 2D?

Q. How to create a document in Tupi 2D?

Q. How to save a project in Tupi 2D?

Q. How to open an existing project in Tupi 2D?

Q. What is the use of Tools panel?

Q. What is the use of Pencil / Fill / Object Selection tools?

Q. What are the different properties that need to be defined for PolyLine / Brushes / Ink tools?

Q. Which key is pressed to draw a square or a circle?

Q. What is the use of Library?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 43 and 44 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 44 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create any shape in Tupi 2D using the tools taught in this chapter.

5. Animations in Tupi 2D

Teaching Objectives

Students will learn about

- ☞ Exposure Sheet
- ☞ Frames
- ☞ Layers in Tupi 2D
- ☞ Tweening Tool

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that Tupi 2D is an authoring tool to create games, applications, simple animations, etc.

Tell the students about the exposure sheet and how to use it.

Tell the students about Layers and their importance in Flash.
Introduce the concept of frames in Tupi 2D and its purpose.
Make the students understand the meaning of and difference between frames and keyframes.
Explain the concept of animation using tweens.
Show the steps to create various types of tweens covering all types of Tween.
Tell the students that animation can also be done in Flash through Frame by Frame technique.
Tell the students about tweens and different types of tweens –

- Motion Tween
- Rotation Tween
- Scale Tween
- Shear Tween
- Opacity Tween
- Coloring Tween

Extension

Ask the students some oral questions based on this chapter.

Q. What is Tupi 2D used for?

Q. What do you understand by Layers?

Q. How are layers useful?

Q. What is the difference between a frame and a keyframe?

Q. Define Tween.

Q. What is Motion Guide Tweening?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 51 and 52 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 52 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create an animation where two cars are coming on a road from opposite directions and crash in the center.

6. Latest Technological Development

Teaching Objectives

Students will learn about

- ☞ Artificial Intelligence
- ☞ Augmented Reality and Virtual Reality
- ☞ 3D Printing
- ☞ Blockchain
- ☞ Internet of Things
- ☞ RPA (Robotic Process Automation)

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Demonstrate Artificial Intelligence to the students along with the main areas of applications of AI:

- Natural Language processing
- Pattern recognition
- Robotics
- Intelligent Apps (I-Apps)

Explain the following to the students along with the examples in detail:

- Augmented Reality
- Internet of Things (IOT)
- RPA (Robotics Process Automation)
- Virtual Reality
- 3D Printing

Extension

Ask the students some oral questions based on this chapter.

Q. What is an Artificial Intelligence?

Q. What is an Augmented Reality?

Q. What is an Virtual Reality?

Q. What is an Internet of Things?

Q. What is an 3D Printing?

Q. What is an RPA?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 64 and 66 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** on Page 66 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to try any digital assistant like Alexa or Siri and ask "What is Virtual Reality?".

7. Images, Links and Frames in HTML

Teaching Objectives

Students will learn about

- ☞ Inserting Images
- ☞ Adding Audio and Video
- ☞ Creating forms in HTML
- ☞ Linking Web Pages
- ☞ Frames

Number of Periods	
Theory	Practical
2	3

Teaching Plan

While teaching this chapter, tell the students that HTML allows inserting images and frames on web pages as well as interlinking them.

Tell the students that HTML supports JPEG, GIF and PNG image formats.

Tell the students that <IMG> tag is used to insert images and it takes the attributes as SRC, WIDTH, HEIGHT, ALIGN, BORDER and ALT.

Demonstrate to the students to link the web pages and the two types of linking.

Make the students understand that a hyperlink is an underlined text or an image which when clicked takes the user to some other location.

Share with the students that Anchor Tag i.e. <A> is used to create links and the attributes that this tag can take are – LINK, ALINK and VLINK.

Demonstrate the use of <A> tag and its attributes to hyperlink web pages (See Suggested Activity also).

Demonstrate to the students to add an audio and video to a website using an <audio> and a <video> tags.

Introduce Frames as a feature to display more than one web page on a single screen of the web browser.

Explain the use of <IFRAME> tag along with its attributes.

Demonstrate to the students to create forms in HTML using the following tags:

The <FORM> tag

The <INPUT> tag

The <TEXTAREA> tag

The <SELECT>tag

Extension

Ask the students some oral questions based on this chapter.

Q. Which tag is used to insert images on a web page?

Q. State the use of SRC / WIDTH / ALIGN /ALT attribute of IMG tag.

Q. Which image formats are supported by HTML?

Q. Which tag is used to link web pages?

Q. Name the attributes that can be taken by FRAME tag.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 86 and 87 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 88 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to create an e-shopping web site listing categories of items on home page and details of items on separate category pages.

8. Computer Safety and Security

Teaching Objectives

Students will learn about

- ☞ Protecting your Computer from Illegal
- ☞ Other Maintenance Techniques
- ☞ Antivirus
- ☞ How to Backup your Important Files?
- ☞ Malware
- ☞ Firewall

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that computer safety refers to the protection of computer-based resources against unauthorized use or physical damage.

Share with the students the method to protect the computer from illegal access by reference to terms like authentication (verifying user's identity) and covering:

- Password protection
- Biometric authentication including face recognition, iris biometrics, retina biometrics and voice recognition
- Encryption (converting data into cypher text)

Explain the need, importance and process of backing up important files using external hard disk drives and online backup services.

Share with the students some information about some other maintenance techniques like deleting files, defragmenting hard disk drive and disk cleanup.

Introduce malware as programs designed to damage or carry out unwanted actions on a computer system.

Explain to the students information about different types of malware like virus, worms, Trojan horses, spyware, zombie, ransomware, rootkits and backdoors.

Explain the importance of antivirus and firewall in maintain computer safety and security.

Extension

Ask the students some oral questions based on this chapter.

Q. Define authentication.

Q. Where is elastic graph matching technique used?

Q. What is the difference between encryption and decryption?

Q. What is malware?

Q. Define virus / worm / rootkit / backdoor / ransomware.

Q. What is an anti-virus?

Q. Name some commonly used anti-virus software.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 95 and 96 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 96 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to prepare a detailed project on any anti-virus software on an A3 sheet.

9. Loops in Python

Teaching Objectives

Students will learn about

- ☞ The for Statement
- ☞ The Infinite Loop
- ☞ Some More Programs
- ☞ The while Statement
- ☞ The Jump Statements

Number of Periods	
Theory	Practical
2	2

Teaching Plan

While teaching this chapter revise Python for the students and repeat the features of Python from the earlier class.

While teaching this chapter, tell the students that Python has some looping statements.

Demonstrate to the students the steps involved in using these statements using programs and syntax are:

a. FOR statement
   - using the range() statement

b. WHILE statement
   - while loop using else statement
   - infinite loop

c. INFINITE loop

d. JUMP statements

- break statement
- continue statement

Demonstrate to the students the steps involved in using the FUNCTIONS using programs and syntax.

Extension

Ask the students some oral questions based on this chapter.

Q. What are looping statement?

Q. What is the function of FOR statement?

Q. What is the function of WHILE statement?

Q. What is the function of JUMP statement?

Q. Which keyword in Python is used for bringing the program control out of the loop?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 108 and 109 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 109 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Suggested Activity

Ask the students to make a list of series where you can apply the FOR and JUMP statements.

10. Domains of AI

Teaching Objectives

Students will learn about

- ☞ Natural Language Processing (NLP)
- ☞ Computer Vision (CV)
- ☞ Big Data
- ☞ Advantages of Artificial Intelligence

Number of Periods	
Theory	Practical
2	1

Teaching Plan

While teaching this chapter, tell the students that there are three domains of Artificial Intelligence.

Define the following to the students along with proper examples:

- Natural Language Processing (NLP)
- Big Data
- Computer Vision (CV)

Also, tell the advantages, applications and usage of these point.

Explain the advantages of Artificial Intelligence along with:

- Process Automation
- Quick Decision Making
- Accuracy
- Quicker Data Analysis
- Take Decisions Rationally
- Ability to Complete Dangerous Tasks

Extension

Ask the students some oral questions based on this chapter.

Q. What is NLP?

Q. What is Big Data?

Q. Explain Computer Vision.

Q. What is AI?

Q. Explain the advantages of AI.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 115 and 116 in the main course book as **Exercise**.

Take the students to the computer lab and let them practice the activity given in the **In The Lab** section on Page 117 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.