TOUCHPAD®

PLUS Ver. 4.0

Teacher's Manual

Extended Support for Teachers

ORANGE®

Teacher's Time Table

Periods / Days	0	I	II	III	IV		V	VI	VII	VIII
Monday						B				
Tuesday						R				
Wednesday						E				
Thursday						A				
Friday						K				
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 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

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.
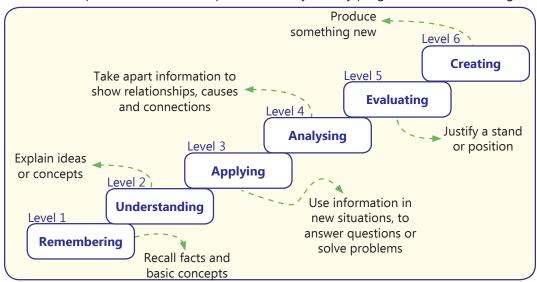
"Knowing yourself is the beginning of all wisdom."

Teaching Strategies

Numerous strategies have evolved over the years to facilitate the teaching-learning process in the classrooms.

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

        Problem                    Cooperative
        Solving                      Learning
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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

Take apart information to show relationships, causes and connections

Explain ideas or concepts

Level 6 Creating

Level 5 Evaluating

Level 4 Analysing

Level 3 Applying

Level 2 Understanding

Level 1 Remembering

Justify a stand or position

Use information in new situations, to answer questions or solve problems

Recall facts and basic concepts

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. Number System

Teaching Objectives

Students will learn about

☞ Number System
☞ Decimal to Binary Conversion

☞ Binary to Decimal Conversion
☞ Operations on Binary Numbers

Number of Periods	
Theory	Practical
2	1

Teaching Plan

Before starting the chapter, ask the students to solve the question in 'Take Off' given on page 11 of the main course book.

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:

- In decimal number system, the numbers are expressed using ten digits, 0 to 9 and expanded with base 10.
- 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 fifteen digits, 0 to 9 and A to F, and expanded with base 16.

Show 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.

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

Ask the students to solve the exercise 'Double Tap' given on page number 15.

Extension

Ask the students some oral questions based on this chapter.

Q.   What is a number system?

Q.   Write 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 decimal number system?

Q.   What is binary number system?

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?

Q.   Which number language is known as machine language?

Q.   Define octal number system.

Q.   What is hexadecimal number system?

Q.   Write the steps to convert a decimal number to a binary number.

Evaluation

After explaining the chapter, let the students do the exercises given on pages 16 and 17 in the main course book. Tell the students to try sections such as 'Scratch Your Brain' and 'Go Online' given on page 18 in the main course book.

Let the students solve the questions given in the DIY In The Lab section on Page 18. This will enhance the ability of the students and serve as a technology literacy activity.

Ask the students to complete the elements like 'Experiential Learning' given on page 12 and 'Interdisciplinary Learning' given on page 14 at home & show it to him/her the next day.

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. Advanced Features of Excel

Teaching Objectives

Students will learn about

☞ Sorting data

☞ Conditional formatting

☞ Filtering data

Number of Periods	
Theory	Practical
2	**2**

Teaching Plan

Before starting the chapter, ask the students to solve the question in 'Take Off' given on page 20 of the main course book.

While teaching this chapter, tell the students that Excel 2019 provides easy options for sorting data and highlighting the required information in a worksheet.

Introduce sorting as arranging the data in ascending or descending order.

Demonstrate to the students the various steps involved in sorting of data in an Excel worksheet.

Explain the concept and use of Custom Sort feature.

Introduce filtering as hiding unwanted data from a set of data.

Show students the various steps involved in applying Filters in a worksheet.

Share with the students that Filters once applied can be easily removed and tell them the method of removing filters.

Introduce conditional formatting as highlighting the required information.

Tell the students about basic difference between filtering (unwanted information gets hidden) and conditional formatting (required information gets highlighted).

Explain the various criteria detailed under conditional formatting.

Demonstrate the steps involved in applying conditional formatting on a worksheet.

Ask the students to solve the exercise 'Double Tab' given on page number 28.

Extension

Ask the students some oral questions based on this chapter.

Q. Define sorting.

Q. In what order can sorting be done?

Q. What is the difference between sort and custom sort features?

Q. What are filters?

Q. How can filters be removed in a worksheet?

Q. What do you understand by conditional formatting feature?

Q. How is conditional formatting different from filtering data?

Q. When is the conditional formatting criteria Highlight Cell Rules / Data Bars / Icon Sets used?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 25 and 26 in the main course book. Tell the students to try sections such as 'Scratch Your Brain' and 'Go Online' given on page 26 and 27 in the main course book.

Take the students to the computer lab and let them practise the activity given in the DIY In The Lab section on page 27 in the main course book. This will enhance the ability of the students and serve as a technology literacy activity.

Ask the students to complete the elements like 'Experiential Learning' given on page 21 at home & show it to him/her the next day, and 'Art Integration Learning' given on page 23 in the computer lab.

Suggested Activity

1. Ask the students to enter their height and weight along with similar information for their nine friends. Sort the data with primary criteria as heights in ascending order and secondary criteria as weights in descending order.

2. Highlight the cells where the heights are less than the height of the student or weight is more than the weight of the student who is preparing the worksheet.