FOURTH EDITION

FOR GRADE 2

KEYBOARD

Computer Science with Application Software

TEACHING GUIDE

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Introduction

Keyboard: Computer Science with Application Software teaching guide is designed to empower educators and engage young learners, providing a valuable tool for teaching computer concepts to students in grades 1-5.

Features

Scheme of Work

This is a comprehensive curriculum outline for the grade that ensures a structured and coherent learning journey. It provides a detailed breakdown of the number of lessons for each chapter and topic and the core competencies and digital content mapped for teachers' convenience.

Sample Lesson Plan

This instructional sequence outlines teaching strategies for one topic from the chapter learning objectives for students and teachers. It highlights core competencies and includes measures of success, like formative assessments and performance indicators, to help teachers track student progress effectively and design their own lesson plans accordingly.

Engagement Activities

Additional exercises to reinforce core lessons are designed to be engaging and interactive. These activities may include hands-on projects, problem-solving tasks, research assignments, and group work. It offers alternative explanations and additional practice opportunities that allows students to succeed, regardless of their current performance level.

This collaborative guide has compiled insights from educational experts and the latest teaching methods to offer a comprehensive resource for computer education in the primary grades. It serves to create an engaging and effective learning environment that promotes the curiosity of students.

CONTENTS

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Scheme of Work

Chapter	No. of Periods	Core Competencies	Learning Objectives	Teaching Objectives	Additional Resources	
Using a computer	4	• Develop an understanding of how computer parts work. • Explore the differences between input and output devices and recognise how they help us. • Discuss the different forms of information (text, images, sound, multimedia) and understand their uses	Digital literacy, critical thinking, communication and collaboration	• Facilitate students' comprehension of the functions of various computer components. • Differentiate between input and output devices and elucidate their significance. • Introduce and analyse different forms of information (text, images, sound, multimedia) and their practical applications.	• Websites with games and activities that teach about computer parts (e.g., "How Computers Work" for Kids) • Apps that simulate computer components or teach about input/output devices • Books that explain computer concepts in a simple and engaging way.	
Navigating Touchscreen Devices	4	• Explore the basics of touchscreen interactions. • Demonstrate how to open and close apps on an Android phone. • Identify computer viruses and antiviruses	Digital literacy, problem-solving, fine motor skills, information literacy	• Guide students through the fundamentals of touchscreen interactions. • Demonstrate the process of opening and closing applications on an Android phone. • Educate students on the identification and prevention of computer viruses.	• If available, provide students with old or donated Android phones for hands-on practice. • If available, use tablets for interactive learning activities. • Apps that teach basic touchscreen gestures and simple navigation. • Books that explain the basics of using smartphones and tablets.	
Organising Data	4	• Master digital organization through creation of logical file hierarchies • Develop systematic approaches to data management using child-friendly interfaces • Understand digital storage concepts through interactive exploration	Digital organisation, problem-solving, information literacy	• Instruct students on the systematic organisation of information and data using files and folders. • Provide guidance on creating, naming, and renaming folders. • Illustrate methods for locating files through folder navigation.	• Simple file management simulations or games. • Books that explain basic computer organisation concepts. • Use everyday examples of organisation (e.g., school folders, toy boxes) to illustrate the concept.	

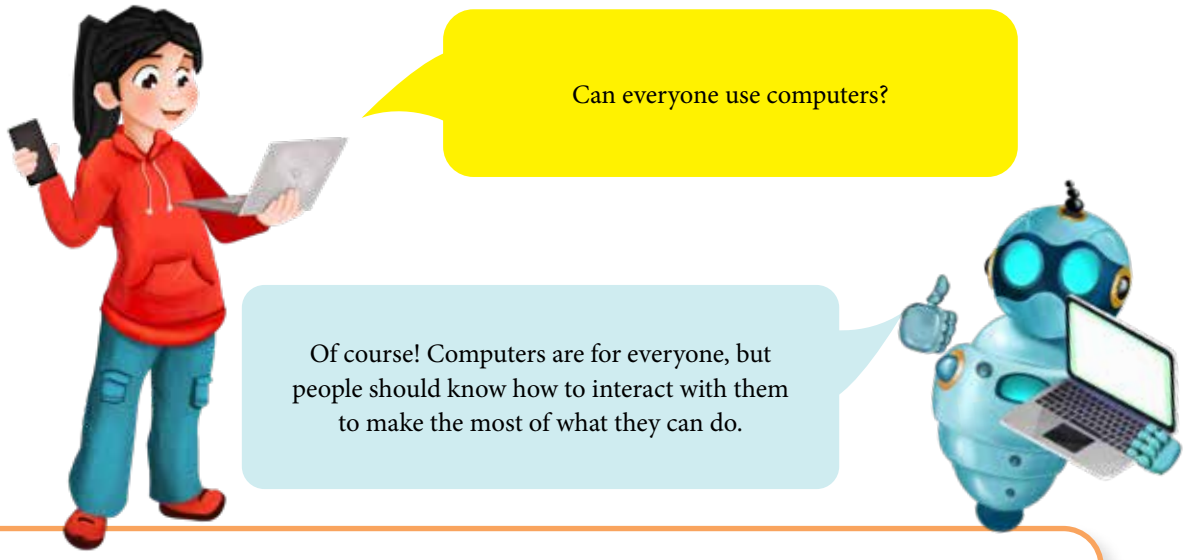
	Reasoning	Communication	Connection	ICT Activities	Additional Strategies
	• Have students brainstorm what would happen if a specific computer component (e.g., the mouse) didn't work. • Provide students with a list of devices and have them categorise them as input or output. • Have students match different types of information (e.g., a song, a picture, a story) with their appropriate uses.	• Have students design their own "dream computer" by drawing and labelling its components. • Have students research and present to the class on a specific input or output device. • Have students write a short paragraph about how they use computers at home or school.	• Invite a local IT professional to speak to the class about their job and how they use computers. • Visit a local computer repair shop or a technology museum. • Introduce students to the history of computers and how they have evolved over time.	• Use educational software that allows students to interact with virtual computer components. • Play educational games reinforcing computer concepts (e.g., matching games for input/output devices).	• Use real computer parts (if available) or build simple models to help students understand how they work. • Provide different learning activities for students with varying learning styles (e.g., visual aids, hands-on activities, group work). • Relate computer concepts to everyday life (e.g., how computers are used in stores, hospitals, and schools). • Emphasise the importance of safe and responsible computer use (e.g., cyberbullying, online safety).
	• Discuss what happens if you accidentally close an app or if you can't find a specific app. • Provide visual cues or demonstrations of touchscreen gestures and have students identify or perform them. • Present simple scenarios (e.g., "The phone is locked") and have students brainstorm solutions.	• Have students present their favourite app to the class, explaining how to open it and what it does. • Have students create a poster illustrating basic touchscreen gestures and tips for using a phone safely. • Have students write simple descriptions of different apps they use.	• Interview or Invite a parent or family member to demonstrate their smartphone or tablet use. • Visit the school library or community centre to learn about using library computers or tablets. • Discuss how touchscreen devices are used in various settings (e.g., schools, stores, restaurants).	• Have students explore a simple educational app under teacher supervision. • Play simple games on tablets that involve touchscreen interactions. • Use simple drawing or painting apps to create artwork.	• Provide ample opportunity for students to practice using touchscreen devices under close supervision. • Provide different levels of support and challenges for students with varying learning styles and abilities. • Emphasise the importance of responsible phone use, including screen time limits and online safety. • Encourage students to use touchscreen devices for learning, creativity, and communication.
	• Discuss the importance of organising files (e.g., easy to find, prevents clutter). • Present scenarios where a student cannot find a file and have them brainstorm solutions. • Create a set of simple rules for naming files and folders (e.g., use descriptive names and avoid spaces).	• Have students create a presentation showcasing their organised folder structure. • Have students create creative and descriptive folder names. • Create a class poster with tips for organising files and folders.	• Discuss how people organise information in the real world (e.g., libraries, offices). • Invite a librarian or a technology specialist to discuss information organisation. • Encourage students to help organise files on their home computers (with parent supervision).	• Use educational software that simulates a computer file system. • Have students create a digital portfolio of their work, organised into folders.	• Use physical folders and papers to simulate creating and organising files. • Provide different levels of challenge (e.g., simple file structures for beginners, more complex for advanced learners). • Use diagrams and flowcharts to illustrate folder structures. • Praise students for organising their digital work effectively.

Chapter	No. of Periods	Core Competencies	Learning Objectives	Teaching Objectives	Additional Resources	
Adventures with Paint and Tux Paint	6	• Master digital art tools through creative exploration • Develop visual communication skills using digital mediums • Understand colour theory and digital design principles • Create meaningful digital artwork using various tools	Creativity and imagination, digital art skills, fine motor skills	Instruct students on utilizing the features of Paint and Tux Paint to create illustrations (curve tool, shapes, polygon, eraser, fill color, text, select, magnifier, color picker, magic effect in Tux Paint).	Simple video tutorials demonstrating basic painting techniques. Display images of student artwork or professional artwork for inspiration. Connect digital art to real-world art forms (e.g., painting, drawing, sculpture).	
Getting started with Word	6	• Indicate the names and functions of key Word interface components. • Understand how to create, edit, and save documents. • Explore text formatting options and styles to use on text in documents. • Label parts of the word window	Digital literacy, communication, problem-solving, information literacy	• Identify and explain the names and functions of the Word interface components. • Guide students in creating, editing, and saving documents. • Explore and apply text formatting options and styles within documents. • Label and describe the parts of the Word window.'	• Simple online tutorials or videos for beginners. • Worksheets with simple typing and formatting exercises. • Provide examples of well-formatted documents (e.g., letters, stories).	
Patterns and Problem solving	4	• Understand complex patterns and their real-life applications. • Explore how computers use advanced pattern recognition with examples. • Engage in challenging pattern recognition activities for grade 2.	Critical thinking, problem-solving, computational thinking	• Explain and analyze complex patterns and their real-life applications. • Demonstrate how computers utilise advanced pattern recognition with practical examples. • Engage students in challenging pattern recognition activities appropriate for grade 2. • Promote computer etiquette (e.g., avoid eating near computers, keep devices away from direct sunlight, prevent overheating). • Explain the concept of a sequence as an algorithm. • Discuss the importance of selecting the correct sequence. • Illustrate the proficiency of computers in recognising patterns.	• Manipulatives for exploring patterns (e.g., triangles, squares, circles). • Cards with visual patterns for students to analyse and extend. • Books that feature patterns in stories and illustrations. • Interactive websites and games that focus on pattern recognition.	

	Reasoning	Communication	Connection	ICT Activities	Additional Strategies
	• Present challenges like' Draw a house' or 'Create a self-portrait' and have students brainstorm how to achieve it using the tools. • Discuss what happens when you change the brush size, colour, or tool.	• Have students write a short description of their artwork, explaining their ideas and the tools they used. • Encourage students to provide constructive feedback on each other's artwork. • Showcase student artwork on a classroom projector or website.	• Introduce students to famous artists and their works. • Participate in a community art project that incorporates digital art. • Encourage students to use nature as inspiration for their digital artwork.	• Follow step-by-step tutorials to create simple digital artwork. • Set weekly or bi-weekly creative challenges (e.g., 'Draw an animal,' 'Create a fantasy landscape'). • Create simple digital stories using images and text.	• Provide different levels of complexity for each activity. • Encourage experimentation and celebrate student creativity. • Emphasize the creative process and the joy of experimentation. • Ensure that the software and activities are accessible to all students.
	• Discuss what happens if you accidentally delete text or cannot find the save button. • Discuss the importance of using formatting to make documents look neat and professional. • Have students identify the appropriate tool for a given formatting task (e.g., 'How do I make this text bold?').	• Have students create a simple story, poem, or short report in Word. • Create a class poster illustrating different text formatting options. • Have students exchange documents and provide feedback on each other's formatting.'	• Discuss how Word is used in various professions (e.g., writing letters, creating reports, drafting stories). • Invite a writer, teacher, or office worker to discuss how they use word processing software. • Encourage students to use Word at home to create simple documents with their families.	• Follow step-by-step tutorials to learn basic Word features. • Use online typing games and exercises to improve typing speed and accuracy. • Have students work together to create a class newsletter using Word.	• Provide ample opportunity for students to practice using Word independently. • Provide varying levels of complexity and support for different learners. • Encourage students to explore and experiment with different features. • Make learning Word engaging and enjoyable through games, activities, and creative projects.
	• Present students with pattern sequences and have them predict the next element. • Provide puzzles and challenges that require students to identify and extend patterns. • Encourage students to find and describe patterns in their everyday lives.	• Have students create a story or poem based on a pattern. • Have students present their findings on a specific pattern to the class. • Encourage students to create artwork that incorporates patterns.	• Take a nature walk to observe patterns in leaves, flowers, and other natural objects. • Explore how patterns are used in music (e.g., rhythm, melody). • Discuss how pattern recognition is used in everyday technology (e.g., barcode scanners, self-driving cars).	• Play online games that involve identifying and extending patterns. • Use drawing software to create and manipulate digital patterns. • Explore simple pattern recognition software (if available).	• Use manipulatives, building blocks, and other materials to create and explore patterns. • Provide varying levels of challenge and support for different learners. • Emphasise the importance of pattern recognition in everyday life. • Incorporate games and puzzles that develop pattern recognition skills.

CHAPTER
1

USING A COMPUTER



Learning Objectives

Students will be able to:

- Develop an understanding of how computer parts work.
- Explore the differences between input and output devices and recognise how they help us.
- Discuss the different forms of information (text, images, sound, multimedia) and understand their uses.

Sample Lesson Plan

Lesson Title: The Computer—A Machine

Page numbers: 2 and 3

Core Competencies

- **Digital Literacy:** Understand basic computer concepts and functions.
- **Critical Thinking:** Analyze and classify information.
- **Communication:** Effectively communicate information about technology.
- **Collaboration:** Work together to complete a class project.

Keywords

Input, Output, Device, Keyboard, Mouse, Microphone, Scanner, Monitor, Printer, Speakers, Headphones

Resources Required

- Textbook
- Computer with Internet access
- Board/Projector/interactive whiteboard
- Whiteboard and markers
- Chart paper or butcher paper
- Markers, crayons, or coloured pencils
- Pictures or images of different input and output devices
- Old computer peripherals (if available)
- Educational software or apps related to input/output devices

Activities

1. **Brainstorming:** Begin with an engaging video or story about how computers work. Ask students, 'What do you use to talk to a computer?' and 'What does the computer use to talk to you?' Introduce the concepts of input and output and provide simple definitions.
2. **Interactive Exploration:** Present common input devices using a slideshow or interactive whiteboard. If available, allow students to interact with a keyboard and mouse. Divide students into small groups. Provide each group with pictures of different input devices. Have them classify the devices as input and discuss their functions. Continue the presentation with standard output devices.
3. **Show and Tell:** If possible, demonstrate different output devices (e.g., printer, speakers). Repeat the group activity, this time focusing on output devices. Play a matching game where students match input devices with their corresponding actions (e.g., keyboard-typing, mouse-clicking). Present scenarios where input or output devices are missing (e.g., 'What if a computer had no keyboard?').
4. **Creative Activity:** Have students work in pairs to create a 'computer' using recycled materials. They should identify and label the input and output devices on their creations.

Performance Indicators

Students can:

- ✓ identify and describe at least three input devices.
- ✓ identify and describe at least three output devices.
- ✓ explain the difference between input and output devices in their own words.
- ✓ participate actively in group discussions and activities.
- ✓ create a 'computer' model that accurately represents input and output devices.

IN THE LAB

Activity 1

Make a list of the number of desktop and laptop computers:

a. in your school

b. at home

Instructions

- Discuss the difference between desktop and laptop computers.
- Show pictures of both types of computers.
- Have students make a list of the number of desktop and laptop computers.
- Take a walk around the school to count the computers.
- Ask students to discuss with their parents and note down the numbers.
- Compare the numbers and discuss why there might be more of one type than the other.

Activity 2

Form groups of two students each. One will start and the other will shut down the computer. Note down the steps to start and shut down the computer in your notebook.

Instructions

- Explain the importance of properly starting and shutting down a computer.
- Form groups of two students each.
- One student will start the computer, and the other will shut it down.
- Students will note down the steps in their notebooks.
- Discuss the steps as a class and ensure everyone understands the process.

Activity 3

Explore the different ways in which icons can be rearranged on the desktop. Would it be a good idea to arrange them so that all the similar topics are together? Do you think a left-handed computer user needs to have the icons in a different place on the screen to a right-handed user?

Instructions

- Discuss what desktop icons are and why they are important.
- Have students explore different ways to rearrange icons on the desktop.
- Discuss whether it's a good idea to group similar topics together.
- Consider if left-handed users might need a different arrangement.
- Share findings and discuss the best ways to organise icons.

Activity 4

Draw a figure of a computer system in your notebook and label its parts.

Instructions

- Show a diagram of a computer system and explain its parts.
- Have students draw a computer system in their notebooks and label its parts.
- Display some drawings and discuss the parts of the computer.

Activity 5

Search for the antivirus software installed on your computer.

Instructions

- Explain what antivirus software is and why it's important.
- Have students search for the antivirus software installed on their computers.
- Discuss how to identify if the software is up to date.
- Share findings and discuss the importance of keeping antivirus software updated.

GROUP PROJECT

Activity 1

Your younger schoolmates are curious to learn more about the different input and output devices of the computer. Using cartoon characters, create an explanatory cartoon strip to show different ways of inputting and outputting information through devices. Illustrate in your cartoon strip if something funny happens during this process..

Instructions

- Talk about input and output devices and show pictures.
- Explain that students will make a cartoon strip to teach younger kids.
- Think of ideas for cartoon characters and a funny story.
- Decide which devices to include in the cartoon.
- Draw the cartoon strip showing input and output devices.
- Include a funny incident in the story.
- Help students as they work on their strips.
- Share the cartoon strips with the class.
- Talk about the different devices and the funny stories for help.

Activity 2

Maham has received an email in her inbox stating that she has won a bonus of PKR 500,000/- The email also says that she needs to enter the details of her bank account to process the payment. Maham doesn't recall participating in any lucky draw or contest. However, she is very excited to open the email. Do you think it's a good idea to open and respond to the email? What would you advise her?

Instructions

- Talk about phishing emails and why they are bad.
- Show an example of a phishing email.
- Present the scenario: Maham gets an email saying she won money.
- Ask if it's a good idea to open and respond to the email.
- Form small groups and give each group a phishing email example.
- Find the red flags and discuss what to do.
- Act out a conversation advising Maham on the email.
- Emphasise not sharing personal information.
- Review email safety tips.
- Discuss why it's important to be careful with emails.

Engagement Activities

Input vs. Output Device Match

- Prepare flashcards with images of various devices (e.g., keyboard, mouse, printer, monitor).
- Ask students to categorise the devices into input or output.
- Discuss why they categorised each device the way they did.

Mystery Sound Challenge

- Play different sounds (e.g., keyboard typing, printer printing, music).
- Have students guess what device made the sound.
- Discuss how each device provides input or output.

Picture This

- Show students images of different input and output devices.
- Ask them to identify which input devices are output devices and what information they handle (text, images, sound).
- Discuss their everyday experiences with these devices.

Multimedia Showcase

- Show a short video or animation highlighting the differences between input and output devices.
- Ask students to raise their hands whenever they see an input or output device.
- Discuss the types of information each device handles.

Would You Rather Questions

1. Would you rather use a keyboard or a touchscreen to type your homework?
2. Would you rather watch a video on a big screen or listen to a podcast on your computer?
3. Would you rather design a game that uses images or one that uses sound?

Applied Scenario-Based Question

- If you were to create a story using a computer, which input, and output devices would you use and why?

Thought Experiment

- Imagine if there were no output devices (like screens or printers). How would you share information with others?

Answer for Exercise

1. Fill in the Blanks

a. Pictures
b. Desktop
c. Fingers
d. Start
e. Serial

2. True and False

a. T
b. T
c. F
d. F
e. F

3. Choose the correct option

a. All of these
b. Personal computer
c. Microphone
d. Both i. and iii. (Virus and Malware)
e. All of them

4. Answer the following question

a. It is important to turn on and off the computer correctly to ensure that the operating system and data are properly loaded and saved. This helps prevent file corruption, hardware damage, and loss of unsaved data. Using improper shutdown methods (like turning off the power directly) can lead to malfunction or damage over time.

b. The term 'icons' comes from the Greek word 'eikon,' meaning 'image' or 'likeness.' Icons represent applications, files, or commands in a visual format, similar to religious icons that symbolise various figures and messages. Icons remind me of symbols or signs that convey information quickly and efficiently, allowing users to easily navigate through a digital environment.

c. List reasons:
- Perform complex calculations at incredibly high speeds.
- Analyse vast amounts of data to identify patterns (data mining).
- Operate continuously (24/7) without fatigue.
- Understanding these abilities is important because it highlights how computers complement human capabilities and assist in tasks that require speed, precision, and efficiency. This awareness can help in leveraging technology effectively in various fields.

d. Main parts of computer are:
- Central Processing Unit (CPU)
- Memory (RAM)
- Storage (Hard Drive or SSD)
- Motherboard

e. Input devices allow users to submit data and commands to the computer (e.g., keyboard, mouse, microphone), while output devices render and display data from the computer to the user (e.g., monitor, printer, speakers). In essence, input devices capture information, whereas output devices communicate results or feedback to the user.

f. The monitor is crucial as it displays the user interface and visual outputs of the computer's processes, allowing users to interact effectively. The keyboard and mouse serve as input devices to provide commands and data to the computer. Together, they form a cohesive interaction system, where the user inputs information through the keyboard or mouse and receives visual feedback or outputs on the monitor, enabling seamless communication and operation.

g. List of ways to protect your devices from getting attacked by malicious programs:
- Install and regularly update antivirus and anti-malware software.
- Keep your operating system and applications updated to patch vulnerabilities.

- Avoid clicking on suspicious email links or downloading unknown attachments.
- Use firewalls to monitor and control incoming and outgoing network traffic.
- Practice safe browsing habits and avoid visiting unsecured or questionable websites.
- Backup important data regularly to recover from any potential attacks.
- By implementing these measures, users can significantly reduce the risk of malware infections and enhance the overall security of their devices.

CHAPTER
2

NAVIGATING TOUCHSCREEN DEVICES

How do touchscreens work?

Touchscreens have sensors that can feel your touch.

When you tap, swipe, or even pinch the screen, it sends a command to the computer and tells it what task you want it to do.

Learning Objectives

Students will be able to:

- Explore the basics of touchscreen interactions.
- Demonstrate how to open and close apps on an Android phone.
- Identify computer viruses and antiviruses.

Sample Lesson Plan

Lesson Title: The Computer—A Machine

Page numbers: 2 and 3

Core Competencies

- **Digital Literacy:** Understanding touch screen technology.
- **Critical Thinking:** Evaluating the ease of use of touch screens.
- **Communication:** Describing parts of an Android phone.

Keywords

Touch Screen, Android Phone, Power Button, Volume Buttons, Display Screen, Icons, Home Screen

Resources required

- Textbook
- Board/Projector/interactive whiteboard

- Android phone (real or model)
- Pictures of various touchscreen devices
- Worksheets for labelling parts of an Android phone

Activities

1. **Touchscreen Exploration:** Display various touchscreen devices (tablets, smartphones). Write student responses to 'What is a touchscreen?' on the board. Discuss how touchscreens work and their advantages/disadvantages.
2. **Group Activity:** Have students brainstorm a list of devices that use touchscreens. Display student lists and discuss common themes.
3. **Visual Learning:** Use a large image or real device to point out key parts of an Android phone that are also shown on page 13 in the textbook:
    - Touchscreen buttons (home, back, recent apps)
    - Power button
    - Volume buttons
    - Display screen
    - Icons
    - Home screen

Performance Indicators

Students can:

✓ explain what a touch screen is.

✓ name devices that use touch screens.

✓ identify and label the parts of an Android phone.

IN THE LAB

Activity 1

Use a touchscreen device to play a favourite game. Write down the steps you took to open the device and launch the game application.

Instructions

- Discuss the importance of knowing how to use touchscreen devices.
- Explain that students will write down the steps to open a device and launch a game.
- Show the class how to turn on a touchscreen device.
- Demonstrate how to find and open a game application.
- Give each student a tablet or touchscreen device.
- Have them practice turning on the device and launching their favourite game.
- Ask students to list the steps they took to open the device and launch the game.
- Encourage them to be clear and detailed in their instructions to a friend.
- Let students share their written steps with the class.
- Discuss any differences and ensure everyone understands the correct process.

APPLICATION BASED QUESTIONS

Activity 1

Think about your favourite game on a touchscreen. Can you describe how you use your fingers to play it?

Instructions

- Discuss what a touchscreen is and how it works.
- Ask students to think about their favourite game on a touchscreen.
- Have students describe their favourite game and how they use their fingers to play it.
- Encourage them to use words like swipe, tap, and drag.
- Give students drawing paper and coloured pencils.
- Ask them to draw a picture of themselves playing their favourite game on a touchscreen.
- Have them label their actions (e.g., swipe, tap).
- Let students share their drawings and descriptions with the class.

- Discuss the different ways they use their fingers to play games.
- If tablets or touchscreen devices are available, let students demonstrate how they play their favourite game.

Activity 2

Think about your tablet or computer at home. How do you take care of the Touchscreen to keep it clean and working well?

Instructions

- Discuss why it's essential to take care of touchscreens.
- Show a clean and a dirty touchscreen to illustrate the difference.
- Ask students how they care for their tablets or computers at home.
- Write their ideas on the board.
- Demonstrate how to clean a touchscreen using a soft cloth.
- Show how to apply a screen protector (if available).
- Divide students into small groups.
- Give each group a cleaning cloth and a tablet or touchscreen device (if available).
- Have them practice cleaning the screen and discuss other ways to take care of it.
- Let each group share their cleaning tips and practices.
- Discuss the importance of regular maintenance.

GROUP PROJECT

Activity 1

Discuss and list down the reasons why it is important to be gentle when touching a touchscreen.

Instructions

1. Brainstorm reasons why it's essential to be gentle with touchscreens.
2. Guide discussion towards preventing scratches, ensuring accurate touch responses, and prolonging the device's life.
3. Provide students with a simple touchscreen activity (e.g., drawing app).
4. Encourage gentle touch while completing the activity.
5. Observe and discuss the results.
6. Discuss potential consequences of rough touchscreen use: Scratches on the screen, Unintended actions (e.g., accidental taps), and Possible damage to the device.

Engagement Activities

App Show and TellTouchscreen Simon Says

- Play a quick game of 'Simon Says' using touchscreen commands like 'swipe left,' 'double tap,' and 'pinch to zoom.' Students can follow along on their devices.
- Ask students to quickly show their favourite app on their Android phone and explain what it does in one sentence. This encourages the identification of different apps and their purposes.

Virus vs. Antivirus Match

- Provide images of cartoon viruses and antivirus symbols. Students match the virus with the antivirus by drawing a line between them on a worksheet.

Open and Close Race

- Have students race to open and close a specific app on their devices. Call out the app name; the first to complete the task wins a sticker.

Touchscreen Drawing

- Give students 2 minutes to draw a simple shape or character using a drawing app. Share their creations with the class to explore touchscreen interactions.

Would You Rather Questions

1. Would you rather have a phone that only allows you to play games or lets you read books?
2. Would you rather open an app with a swipe or a tap?
3. Would you rather never have to update your apps again or always get the latest version immediately?

Deep Question

- Why do you think it's important to keep our devices safe from viruses?

Applied Scenario-Based Question

If you found out that your favourite app was acting funny and not working properly, what steps would you take to fix it?

Thought Experiment

- Imagine if your touchscreen device could talk to you. What would you want it to say when you opened an app, and why?

Answer for Exercise

1. Multiple Choice Questions

a. Favorites

b. Desktop

c. Swipe up from the bottom of the screen.

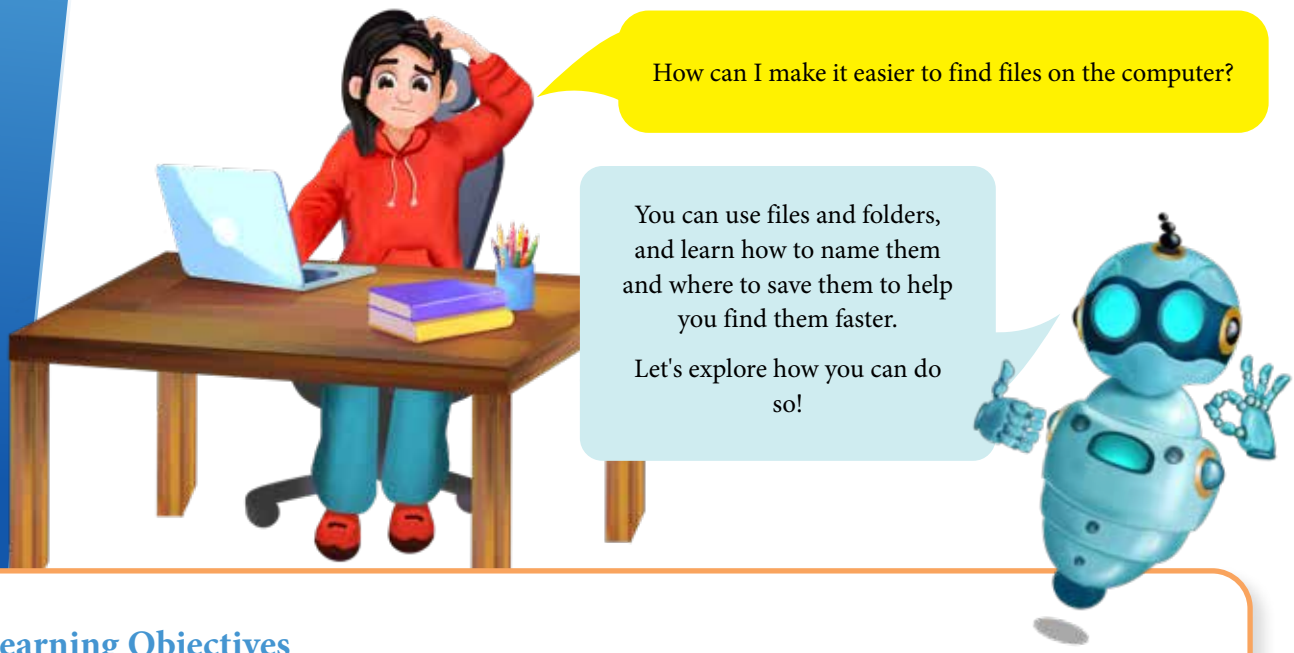
2. Answer the following questions

a. Screen time is the time you spend looking at screens like phones, tablets, and computers. It's important to find a balance. To reduce screen time, I can read books instead of using tablets, play outside more, and spend time with family and friends.

b. I once used a touchscreen to learn how to draw animals. I used a drawing app on my tablet. The touchscreen made it easy to draw lines and colours. I could also easily undo mistakes, which made it fun to experiment and learn.

CHAPTER
3

ORGANISING DATA



Learning Objectives

Students will be able to:

- Master digital organisation through the creation of logical file hierarchies
- Develop systematic approaches to data management using child-friendly interfaces
- Understand digital storage concepts through interactive exploration

Sample Lesson Plan

Lesson Title: How Files and Folders Help Organise Information

Page numbers: 22 and 23

Core Competencies

- **Critical Thinking and Problem Solving:** Identifying and solving problems about organising digital information.
- **Digital Literacy:** Gaining proficiency in managing files and folders using computer systems.
- **Information Management:** Systematically organising and managing digital information.
- **Communication:** Explaining the steps and importance of organising files and folders.
- **Self-Management:** Maintaining a clutter-free digital workspace.

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Keywords

- Organisation, Files, Folders, Cluttered System, File Explorer, Address Bar, Navigation Pane, Search Bar

Resources required

- Textbook
- Whiteboard or projector
- Markers or interactive whiteboard pens
- Pictures or diagrams of a cluttered desktop vs. an organised desktop
- Simple file organisation simulation in lab or through screenshots as images

Activities

1. **Clutter vs. Clean:** Show pictures of a cluttered desktop vs. an organised desktop. Discuss with students the challenges of finding things in a messy room. Explain how a cluttered computer is similar - it's hard to find files, it looks messy, and it can make the computer run slower.
2. **Folder Fun:** Use the analogy of a school backpack or a toy box to explain how folders are like boxes to keep things organised. Have students brainstorm how to organise their drawings, stories, and games into 'digital folders.'
3. **Organising Steps:** Introduce the basic steps of organising files:
    - Create a new folder.
    - Name the folder appropriately.
    - Drag and drop files into the correct folders.
    - Rename files and folders for clarity.
4. **File Explorer Exploration:** Use a simplified diagram, screenshot, or real-life example of a file explorer window. Guide students to identify and label key components:
    - Address Bar: Simplified as 'the path that shows where you are.
    - Folder Icons: Explain that these represent folders.
    - Navigation pane Allows quick access to different folders.
    - File Icons: Explain that these represent documents, pictures, etc.

Performance Indicators

Students can:

✓ identify at least two disadvantages of a cluttered computer system.

✓ create a new folder and name it appropriately.

✓ drag and drop files into the correct folders.

✓ rename files and folders for clarity.

✓ label the parts of the File Explorer interface (address bar, navigation pane, file list, search bar).

✓ explain the function of each part of the File Explorer interface.

IN THE LAB

Activity 1

Analyse your lab's desktop screen. Are all your files well-organised? Tidy up your desktop by placing them in correct folders with appropriate names.

Instructions

- Begin with a discussion on the importance of keeping things organised, relating it to their daily lives (e.g., keeping their room tidy).
- Introduce the task of organising the desktop and explain why it is important for efficiency and ease of access.
- Show an example of a cluttered desktop using the projector.
- Ask students to analyse their own desktop screens and identify if their files are well-organised.
- Discuss the common issues found on a cluttered desktop.
- Demonstrate the steps to organise files into folders:
  a. Create a new folder.
  b. Name the folder appropriately.
  c. Drag and drop files into the correct folders.
  d. Rename files and folders for clarity.
    - Provide handouts with these steps for reference.
    - Allow students to work in pairs to organise their desktops, offering guidance and support as needed.

Activity 2

Draw the icons in your notebook to represent an image file and a folder.

Instructions

- Begin with a discussion on the importance of icons in helping us identify different types of files and folders.
- Show examples of common icons for image files and folders.
- Provide students with printed examples of icons or display them on the board.
- Explain the key features of each icon (e.g., a picture frame for an image file, a folder shape for a folder).
- Allow students to draw the icons in their notebooks, encouraging them to add their own creative touches.
- Offer colouring materials for students who wish to colour their icons.
- Have students share their drawings with the class or in small groups.
- Encourage positive feedback and suggestions for improvement.

APPLICATION BASED QUESTIONS

Activity 1

Ahmed's computer has a cluttered desktop. He shares his computer with his brother. Suggest a way to organise Ahmed's desktop.

Instructions

- how they play their favourite game.
- Begin with a discussion on the importance of keeping things organised, relating it to their daily lives (e.g., keeping their room tidy).
- Introduce the scenario of Ahmed and his brother sharing a cluttered desktop.
- Show an example of a cluttered desktop using the projector.
- Discuss the common issues found on a cluttered desktop and why it is important to keep it organised.
- Demonstrate the steps to organise Ahmed's desktop:
    a. Create Separate Folders: Make two main folders on the desktop, one for Ahmed and one for his brother.
    b. Categorise Files: Within each main folder, create subfolders based on categories such as 'School Work,' 'Games,' 'Photos,' etc.
    c. Name Folders Clearly: Use clear and descriptive names for each folder.
    d. Move Files: Drag and drop files into the appropriate folders.
    e. Regular Maintenance: Set a reminder to organise the desktop regularly.
        - Provide handouts with these steps for reference.
        - Allow students to work in pairs to organise a sample desktop, offering guidance and support as needed.

GROUP PROJECT

Activity 1

As a group, list the names of five documents, five images, and five multimedia files in the 'Documents' or the 'Downloads' folder of your computer.

Instructions

- Begin with a discussion on the different types of files we use on computers (documents, images, multimedia).
- Show examples of each file type using the projector.
- Explain the group activity: Each group will list the names of five documents, five images, and five multimedia files found in the 'Documents' or 'Downloads' folder on their computer.
- Provide handouts with examples of file types and their icons for reference.
- Divide the class into small groups and assign each group a computer.
- Instruct each group to open the 'Documents' or 'Downloads' folder and start identifying files.
- Each group will list the names of five documents, five images, and five multimedia files on chart paper.
- Encourage students to help each other and discuss their findings within the group.

Engagement Activities

Folder Race

- Divide students into small groups. Give them a scenario where they need to create a specific folder structure on a computer (e.g., 'Create a folder for school projects, with subfolders for each subject'). Set a timer for 3 minutes and see which group can complete it the fastest.

File Hunt

- Create a list of specific files (e.g., 'Find a file named 'Math Homework' in your documents'). Students will have 5 minutes to locate these files on their computers. Discuss their strategies afterward.

Rename Challenge

- Give students a list of poorly named files (e.g., 'Document1', 'New Folder'). In 4 minutes, ask them to come up with more descriptive names and present their ideas.

Folder Structure Diagram

- Provide students with a blank sheet of paper and ask them to draw a diagram representing an organised folder structure for a fictional project (e.g., 'Personal Portfolio'). They have 5 minutes to complete this.

Quick Navigation Quiz

- Prepare a set of quick questions about navigation (e.g., 'How do you create a new folder?'). Students can answer as many

Would You Rather Questions

1. Would you rather have a perfectly organised digital workspace but lose your files every month or have a messy workspace but never lose any files?
2. Would you rather spend an hour organising files and folders or spend an hour searching for a misplaced file?
3. Would you rather have unlimited storage space on your computer but no organisation tools or have limited storage but the best organisation tools available?

Deep Question

- How does the organisation of digital files impact your productivity and efficiency in completing assignments?

Applied Scenario-Based Question

Imagine you are working on a group project. How would you organise the shared files among your group members to ensure everyone can easily access the materials they need?

Riddles

1. I contain many folders but no clothes. I'm a place where your files may decompose. What am I?

   Answer: A computer's file system.
2. I can hold your data, but I have no weight. You can find me in your computer, a place to create. What am I?

   Answer: A folder.
3. I am not a drawer, but I store your files. I can be renamed, and I bring you smiles. What am I?

   Answer: A folder on a computer.

Answer for Exercise

1. Multiple Choice Questions

a. All of them

b. My Naran expedition

c. Recycle Bin

d. address bar

2. Answer the following questions

a. Organising files and folders on a computer has many advantages. It's like keeping your toys in a toy box – it makes it much easier to find what you need! When your files are organised, you don't have to spend a lot of time searching for them. It also keeps your computer neat and tidy, just like a clean room. Plus, an organised computer can run faster and smoother.

b. Some common default folders you might find on your computer include 'Documents' for your writing and schoolwork, 'Pictures' for your photos, 'Downloads' for files you get from the internet, 'Music' for your songs, and 'Videos' for your videos.

c. You can't have two files or folders with the exact same name. It's like having two toys with the same name – you wouldn't know which one is which!

d. To create a new folder, you usually click on a little yellow folder icon. Then, you type a name for your folder and press 'Enter.' To rename a folder, you right-click on it and choose 'Rename.' Then, you type the new name and press 'Enter' again.

CHAPTER
4

ADVENTURES WITH PAINT AND TUX PAINT

Paint and Tux Paint are drawing programs that let us create digital art. They have different tools that help us explore different styles and techniques.

Can computers be used to draw?

Learning Objectives

Students will be able to:

- Master digital art tools through creative exploration
- Develop visual communication skills using digital mediums
- Understand colour theory and digital design principles
- Create meaningful digital artwork using various tools

Sample Lesson Plan

Lesson Title: Drawing tools in Tux Paint

Page numbers: 37-40

Core Competencies

- **Creativity & Imagination:** Uses imagination to create original drawings.
- **Fine Motor Skills:** Develop hand-eye coordination while using the mouse and drawing tools.
- **Problem-solving:** Experiments with different tools to achieve desired effects.
- **Digital Literacy:** Understands and uses basic drawing software features.

Keywords

Tux Paint, Drawing Tools (Brush, Pencil, Eraser, Shapes, Lines, Text), Magic Effects, Colours, Creativity, Imagination, Digital Art

Resources required

- Textbook
- Computers with Tux Paint installed
- Projectors or interactive whiteboards
- Whiteboard and markers

Activities

- **Introduction:** Briefly introduce Tux Paint as a fun and easy-to-use drawing program. Guide students through the basic interface of Tux Paint and read the pages and labelling's from pages 37-40.
- **Demonstration:** Demonstrate each tool (Paintbrush, Lines, Shapes, Text, Eraser, Magic Effects) on the projector and along with the text from the book.
    a. **Paintbrush:** Show how to adjust brush size and colour.
    b. **Lines:** Demonstrate drawing straight lines and curves.
    c. **Shapes:** Explore different shapes (rectangles, circles, triangles, etc.).
    d. **Text:** Introduce basic text formatting (font size, colour).
    e. **Eraser:** Show how to erase parts of the drawing.
    f. **Magic Effects:** Briefly demonstrate simple magic effects (e.g., sparkles, rainbows).
- **Guided Practice:** Provide a simple drawing prompt (e.g., 'Draw a house,' 'Draw a self-portrait'). Encourage students to use a variety of tools to complete their drawings. Circulate and provide individual assistance as needed.
- **Free Exploration:** Allow students to experiment with different magic effects on their drawings. Have students share their creations with the class. Encourage positive and constructive feedback among students.
    - Observe student participation and engagement in activities.
    - Assess student ability to use basic Tux Paint tools.
    - Evaluate the creativity and effort demonstrated in student artwork.

Performance Indicators

Students can:

✓ Create simple drawings using various tools (brush, lines, shapes).

✓ Use the filling tool to colour shapes and drawings.

✓ Experiment with different colours and brush sizes.

✓ Complete a simple drawing task using Tux Paint tools.

✓ Show effort and persistence in completing drawing activities.

✓ Participate actively in class discussions and share ideas.

✓ Demonstrate an understanding of basic safety and care for the computer.

IN THE LAB

Activity 1

It is a popular myth that there is a pot of gold at the end of the Rainbow. Create your own rainbow with a pot of gold in Paint, using the appropriate tools. Make a list of the colors of the rainbow, too. Leave enough room to create a little pot of gold at either end of your rainbow. Do not forget to set your rainbow in the sky and decide where the pot of gold will be? By a house, a tree, or a mountain?

Instructions

- Begin with a brief discussion about the myth of the pot of gold at the end of the rainbow.
- Show example images of rainbows and pots of gold to inspire students.
- Use the projector to demonstrate how to create a rainbow in Paint:
  a. Select the curve tool to draw the arcs of the rainbow.
  b. Choose the appropriate colours for each arc (red, orange, yellow, green, blue, indigo, violet).
  c. Draw the rainbow in the sky.
  d. Create a small pot of gold at one or both ends of the rainbow.
  e. Add additional elements like a house, tree, or mountain.
    - Provide handouts with the list of rainbow colours for reference.
    - Allow students to work on their computers to create their rainbow with a pot of gold.
    - Encourage them to be creative and decide where to place the pot of gold (e.g., by a house, tree, or mountain).
    - Walk around the classroom to offer guidance and support as needed.

Activity 2

Make a poster using Tux Paint on any one of the topics given below using the Lines, Paint, Text, Shapes, and the Magic tools.

- Use Paper Bags
- Save Electricity
- Save Water
- Save Environment

Instructions

- Discuss the importance of the topics (Use Paper Bags, Save Electricity, Save Water, Save Environment).

- Use a projector to give a live demonstration of Tux Paint, making the learning process visual and engaging.
- Demonstrate using Lines, Paint, Text, Shapes, and Magic tools.
- Create a simple poster as an example, explaining each step.
- Students can now choose one of the topics. They can use Tux Paint to create their posters, incorporating the tools demonstrated.
- Encourage creativity and assist as needed.
- Students can present their posters to the class.

Activity 3

- Explore the different kinds of special effects in the Magic tool in Tux Paint and see what you can use to create a drawing of your dream school. (Also make sure you show the green fields around it!)

Instructions

- Discuss what a 'dream school' means to them and the importance of green fields.
- Ask open-ended questions about their dream school (e.g., 'What special features would your dream school have?').
- Open Tux Paint on the projector. Demonstrate how to use the Magic tool and explore different special effects.
- Create a simple drawing of a dream school, highlighting the green fields, and explain each step.
- Encourage students to share ideas and help each other explore different special effects.

APPLICATION BASED QUESTIONS

Activity 1

Name the tool used to write 'Snowman' in the picture given below. Which tool would you use to draw the face and body of the Snowman?

Instructions

- Looking at the image, the word 'Snowman' is written in a clear, stylised font. This indicates that the Text Tool was used to create the text.
- The Shapes tool is the most appropriate tool for drawing the circular shape of the snowman's body. Specifically, the Oval or Circle shape within the Shapes tool would create the snowman's body.

GROUP PROJECT

Activity 1

A skyline is an outline of buildings, trees, and hills, seen against the sky. Have you ever wondered what the skyline of your nearest town or city looks like? Your task is to work out together how you could recreate that skyline using Paint.

Instructions

- Introduce the concept of a skyline.
- Discuss what a skyline is and show examples of different skylines (buildings, trees, hills).
- Show photos or images of the local skyline.
- Discuss the key features of the skyline (e.g., tall buildings, specific landmarks, trees, hills).
- Encourage students to share what they notice about the skyline.
- Open Paint on the projector. Demonstrate how to use basic tools in Paint (e.g., Line, Shape, Fill, Brush) to create a simple skyline.
- Create a basic outline of a skyline, explaining each step. Students can start by sketching the outline of their local skyline.
- They can use Paint to recreate the skyline, incorporating buildings, trees, and hills.

Activity 2

Your challenge as a group is to draw the solar system using Tux Paint. No small task! It doesn't have to be an accurate scaled picture but should include the essentials (planets and stars). Explore various tools to draw and paint planets and their orbits, with the Sun in the centre. Adding a secret astronaut, that would be fun. Work together as a team, helping one another and taking turns using the software.

Instructions

- Welcome the students and introduce the activity.
- Discuss the solar system and its components (planets, stars, Sun).
- Show images of the solar system for reference.
- Open Tux Paint on the projector. Demonstrate how to use various tools to draw and paint planets, orbits, and stars.
- Create a simple example of the solar system, explaining each step.
- Show how to add a 'secret astronaut' for fun.
- Divide students into small groups. Each group can collaborate to draw the solar system, with the Sun in the centre and planets in their orbits.
- Encourage students to explore different tools and take turns using the software.

Engagement Activities

Colour Palette Challenge

- Give students a prompt (e.g., 'sunset,' 'ocean') and ask them to create a colour palette using a digital art tool. They should select five colours that convey the theme.

Quick Sketch

- Ask students to create a 1-minute sketch using a digital drawing tool. They should apply visual communication skills by representing an emotion (e.g., happiness, confusion) through their drawing.

Shape Composition

- Have students use basic shapes in a digital art program to create a simple composition that represents a concept (e.g., balance, chaos) within 5 minutes.

Typography Exploration

- Instruct students to select a word or a short phrase and design it using a digital text tool. They should focus on color and font choice to convey the word's meaning within 5 minutes.

Digital Collage

- Provide a theme (e.g., 'nature,' 'technology') and ask students to create a quick digital collage using images from free resources or their own digital assets within 5 minutes.

Applied Scenario-Based Question

Imagine you are tasked with designing a digital poster for an Eid Milan party at your house. What digital tools and design principles would you use?

Riddles

1. I can change hues and shades, but I am not a chameleon. What am I?

   Answer: A colour palette.

2. I can create depth and dimension, yet I am just a flat surface. What am I?

   Answer: A digital canvas.

3. I can convey messages without a single word spoken, yet I am formed of shapes and colours. What am I?

   Answer: Visual art.

Answer for Exercise

1. Fill in the blanks

a. Shapes
b. Polygon
c. Text
d. drawing
e. Undo

2. Choose the correct option

a. Magnifier tool
b. Rectangular selection
c. Shapes
d. Brush
e. Quit

3. Answer the following questions

a. A computer virus is like a tiny bug that can make your computer sick. It can make your computer run slowly or even stop working properly.
b. Antivirus software is like a special medicine for your computer. It helps keep your computer safe from these 'computer bugs' called viruses.
c. Some signs include the computer running very slowly, strange pop-ups appearing on the screen, and programs not working correctly.
d. You can help by not clicking on unknown links or downloading files from unknown sources.

CHAPTER
5

GETTING STARTED WITH WORD

We have learnt about Notepad and WordPad. What makes Word any different?

Word is a useful software that helps people format and edit their text. It has many useful features to organise documents.

Learning Objectives

Students will be able to:

- Indicate the names and functions of Word interface components.
- Understand how to create, edit, and save documents.
- Explore text formatting options and styles to use on text in documents.
- Label parts of the word window

Sample Lesson Plan

Lesson Title: Changing the Font Size and Font Colour

Page numbers: 59 and 60

Core Competencies

- **Digital Literacy:** Understanding basic text formatting in Word.
- **Creativity:** Using different font sizes and colours to make the text visually appealing.
- **Collaboration:** Working together to explore and apply text customisation options.

Keywords

Font Size, Font Colour, Text Formatting, Word Processor

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Resources required

- Textbook
- Computers with Microsoft Word installed
- Projector and screen for demonstration
- Sample text for practice

Activities

- Read pages 59 and 60. Refer to the Word interface through the projector or in the lab. You can use the screenshots in the textbook for reference. Explain the importance of text formatting in making documents look friendly and easy to read.
- Show examples of text with different font sizes and colours.
- Open Microsoft Word on the projector.
- Demonstrate how to change the font size:
    a. Highlight the text.
    b. Go to the 'Home' tab.
    c. Click on the font size dropdown menu and select a different size.
- Demonstrate how to change the font colour:
    a. Highlight the text.
    b. Go to the 'Home' tab.
    c. Click the font colour button (usually an 'A' with a colour bar underneath) and select a different colour.
- Show how to choose custom colours using the 'More Colours' option.
- Provide students with a sample text.
- Guide them through changing the font size and colour step-by-step.
- Encourage them to experiment with different sizes and colours.
- Ask students to type a short sentence or their name.
- Have them change the font size and colour on their own.
- Encourage creativity and individual expression.
- Students can share their formatted text with the class.
- Ask students why they chose specific sizes and colours.
- Highlight the importance of readability and visual appeal.

Performance indicators

Students can:

✓ change the font size of text in Word.

✓ change the font colour of the text in Word.

✓ demonstrate creativity in their choice of font sizes and colours.

✓ explain why they chose specific sizes and colours for their text.

IN THE LAB

Activity 1

Write five sentences about the following in Word:

a. Your school
b. Your best friend
c. Your mother
d. Yourself

Instructions

- Discuss the importance of writing clear and complete sentences.
- Introduce the topics: their school, best friend, mother, and themselves.
- Have students brainstorm ideas for each topic.
- Encourage them to think about specific details they can include in their sentences.
- Write some example ideas on the board.
- Ask students to write five sentences about each topic on paper first.
- Provide guidance and support as needed to help them organise their thoughts.
- Have students open Microsoft Word on their computers or tablets.
- Show them how to type their sentences into the document.
- Demonstrate basic formatting tools such as changing fonts, colours, and text size.
- Allow students to experiment with these features to make their documents visually appealing.
- Encourage students to review their sentences for any spelling or grammar mistakes.
- Show them how to use the spell check feature in Word.
- Ask students to share their documents with a partner or the class.
- Discuss the different ideas and formatting choices students made.
- Praise students for their effort and creativity.

Activity 2

You are on a campaign to keep your environment clean. Using a Word document, write down your thoughts and then create an action plan to tackle the problem. Use different fonts, colours, and highlights to emphasise your ideas. Why completing this document in Word could be more effective than handwriting it?

- Show them how to type their thoughts and action plans into the document.
- Demonstrate how to use different fonts, colours, and highlights to emphasize their ideas.
- Allow students to experiment with these features to make their documents visually appealing.

Instructions

- Have students brainstorm their thoughts on how to keep the environment clean.
- Encourage them to think about actions they can take at school, at home, and in the community.
- Write down key points on the whiteboard.
- Ask students to write down their thoughts on paper first.
- Guide them to organise their ideas into a clear and coherent format.
- Have students open Microsoft Word on their computers or tablets.

GROUP PROJECT

Activity 1

Conduct a traffic survey in your class. As a group, discuss together what vehicles you saw on your way to school today. Elect one of your members to write down all the different types of vehicles in a Word document to display your findings. You might make a list of all the different vehicles, or you might decide to focus on the number of wheels of each vehicle to see whether there are more two-wheel vehicles than four-wheel vehicles on the road at that time of day.

Instructions

- Ask each group to discuss the vehicles they saw on their way to school.
- Encourage students to think about different types of vehicles (cars, buses, bicycles, motorcycles, etc.).
- Have each group elect one member to write down the different types of vehicles discussed.
- Provide guidance on how to categorise vehicles (e.g., by type or number of wheels).
- Allow groups to use computers or tablets to enter their data into a Word document.
- Show students how to create a list or table in Word to organise their findings.
- Assist students as needed with typing and formatting.
- Have each group present their findings to the class.
- Discuss the results as a class, focusing on any patterns or interesting observations (e.g., more two-wheel vehicles than four-wheel vehicles).

Engagement Activities

Word Component Match-Up

- Provide students with cards featuring images and names of different Word interface components (like the ribbon, toolbar, and document area).
- Have them match the images with the correct names in under 5 minutes.

Quick Formatting Challenge

- Display a sample text on the board and challenge students to format it (bold, italic, underline) using their own devices or paper within 5 minutes.
- Ask them to share what formatting they applied.

Document Creation Race

- Ask students to create a new document and type their name in it.
- Set a timer for 5 minutes to see how many can successfully create and save their document.

Label the Word Window

- Provide students with a blank diagram of the Word window.
- Challenge them to label as many parts as they can in 5 minutes.

Style Showcase

- Give students a short paragraph and ask them to apply different text styles (like headings or lists) in their documents within 5 minutes.
- Invite a few volunteers to share their styled text with the class.

Would You Rather Questions

1. Would you rather use bold text for your entire document or use italics for everything?
2. Would you rather save your document on the computer or on a USB drive?
3. Would you rather create a colourful title for your document or a fun border around it?

Applied Scenario-Based Question

Imagine you are writing a letter to your friend. What formatting options would you use to make your letter look nice and why?

Riddles

1. I help you write, but I'm not a pen. I have tools to play with, again and again. What am I?
   Answer: Microsoft Word.
2. I can make your letters big or small, change the color, and help you with it all. What tool am I?
   Answer: Text formatting tools.

3. I'm a place where you save your work, but I'm not a box. What am I?
   Answer: A file (or document).

Answer for Exercise

1. Fill in the blanks

a. vertical
b. Quick Access
c. Title
d. Minimise
e. Document

2. True or False

a. False
b. True
c. True
d. False
e. True

3. Answer the questions

a. The **Vertical** ruler (goes up and down) and the **Horizontal** ruler (goes left and right).
b. Top to bottom in the Word window:
   i. **Title bar** (shows the name of your work)
   ii. **Ribbon** (has all the tools like drawing, writing, etc.)
   iii. **Document window** (where you type)
   iv. **Status bar** (shows how many pages you have)
c. Click the **X** button in the top right corner.
d. **Minimize** (makes it small), **Maximize** (makes it big), and **Close** (closes the work).
e. Yes! Both are programs on your computer. Both have a **Title bar** and a **Document window**, and you can **Save** your work in both.
f. Order for creating a new word document.
   i. Open **Word**. ii. Click **File**. iii. Click **New**.
g. Word shows you how many words you have written! So, Maham can stop typing when she reaches 200 words.

CHAPTER
6

PATTERNS AND PROBLEM-SOLVING

What happens when computers are able to recognise patterns?

When computers recognise everyday patterns they can predict and detect activities, and improve user experiences in digital platforms. This makes technology more intuitive and efficient.

Learning Objectives

Students will be able to:

- Identify and describe different types of patterns (repeating, growing, shrinking).
- Analyse simple patterns in nature and everyday life.
- Understand how patterns are used in computer systems (e.g., image recognition, music).
- Explain the importance of order in a sequence.
- Recognise that computers can quickly identify and process patterns.

Sample Lesson Plan

Lesson Title: Choosing the Correct Sequence

Page numbers: 68

Core Competencies

- **Critical Thinking & Problem-Solving:** Analyse patterns, identify relationships, and apply knowledge to new situations.
- **Communication & Collaboration:** Discuss ideas with peers, explain reasoning, and work together to solve problems.
- **Information Literacy:** Gather and organise information from various sources (pictures, videos, real-world examples).
- **Creativity & Innovation:** Design and create patterns and explore different solutions to pattern-related problems.
- **Digital Literacy:** Understand basic concepts of how computers process information and recognise patterns.

Keywords

Patterns, Sequences, Algorithms, Coding, Programming, Image Recognition, Artificial Intelligence, Geometry

Resources required

- Textbook
- Pattern blocks, beads, counters, building blocks
- Computers with Internet access, interactive whiteboard, projector
- Pictures and videos of patterns in nature, art, and technology
- Digital Worksheets, activity sheets, examples of algorithms (simple instructions)

Activities

- **Introduction:** Begin with a captivating video or image showcasing natural patterns (e.g., animal stripes, flower petals, seashells). Ask:
  a. What do you notice about these images?
  b. Can you find any patterns?
  c. Where else do you see patterns in your life? (e.g., music, clothing, buildings)
- **Exploring Patterns:** Read pages 67 and 68. Provide students with pattern blocks, beads, or other manipulatives. Have them create their patterns. Encourage them to share their creations and explain the rules of their patterns. Discuss patterns in music (rhythms, melodies) using simple songs or instruments. Show examples of how patterns are used in art (e.g., mosaics, tessellations).
- **Patterns and Computers:** Explain that computers are very good at recognising patterns.
- **Image Recognition:** Show how computers can identify faces in photos or recognise objects in images.
- **Music Recognition:** Discuss how music players can identify songs based on patterns in the sound.
- **Weather Forecasting:** Explain how computers use patterns in weather data to predict future conditions.
- **Sequences as Algorithms:** Explain that a sequence is a set of instructions in a specific order. Provide students with simple instructions for a task (e.g., making a sandwich or brushing their teeth). Discuss the importance of following the steps in the correct order. Explain that computer programs also use sequences of instructions (algorithms) to perform tasks.

Performance indicators

Students can:

- ✓ identify and describe different types of patterns (repeating, growing, shrinking).
- ✓ create their patterns using manipulatives.
- ✓ explain how patterns are used in everyday life (music, art, nature).
- ✓ describe how computers use patterns (image recognition, music recognition).
- ✓ explain the importance of order in a sequence.
- ✓ demonstrate an understanding of how computers can quickly identify and process patterns.

IN THE LAB

Activity

Look at the keyboard below.

Instructions

- Begin by explaining the activity to the students. Discuss the difference between vowels and consonants and briefly review the numbers on the keyboard.
- Ask the students to colour the vowels red, consonants yellow, and number keys blue on the keyboard given on page 72. Ask students to identify vowels and consonants aloud as a class.
- Allow students to work independently.
- Walk around the classroom to assist and ensure students follow instructions correctly.

GROUP PROJECT

Activity

Find and list the differences in the illustrations given below.

Instructions

- Ask students to examine the images on page 73 and discuss their observations about them.
- Model how to compare the images by pointing out one difference and describing it using comparative language (e.g., 'In the first image, the rug is green in colour and in the next one it is orange').
- Work through the worksheet together as a class.
- Have students point out differences and describe them using comparative language.
- Have students work independently to find and write down as many differences as they can in the space given on page 73.
- Encourage them to use comparative language in their descriptions.

Engagement Activities

Pattern Recognition Puzzle

- Provide students with a series of number sequences and ask them to identify the pattern and predict the next number. For example: 2, 4, 8, 16, __?

Real-Life Pattern Hunt

- Ask students to find and share real-life examples of patterns in nature, architecture, or art in under five minutes. For instance, the Fibonacci sequence in flowers or symmetry in buildings.

Algorithm Sequencing Challenge

- Present a simple algorithm in mixed-up steps and have students race to arrange them in the correct order. For example, steps to bake a cake or to solve a math problem.

Quick Fire Examples

- Have students quickly brainstorm in pairs and list as many applications of pattern recognition in technology (like facial recognition and voice assistants) as they can in three minutes.

Guess the Sequence

- Show students a series of images that follow a specific pattern (e.g., geometric shapes increasing in size) and have them guess the next image in the sequence.

Would You Rather Questions

- Would you rather explore pattern recognition in art or nature?
- Would you rather work on a project using pattern recognition in music or computer programming?
- Would you rather analyse patterns in human behaviour or computer algorithms?

Deep Question

- How do you think understanding complex patterns can influence our decision-making processes?

Applied Scenario-Based Question

- Imagine you are developing a facial recognition system. What patterns would you focus on to ensure the system is accurate, and how would you select the correct algorithm for this task?

Thought Experiment

- If computers can recognise patterns more quickly and accurately than humans, what implications does this have for jobs that rely on pattern recognition, such as data analysis or art curation?

Riddles

1 . I can be a sequence of numbers or the rhythm in a song. I guide computers and humans, but I'm not alive. What am I?

Answer: A pattern.

2. I hide in nature and art, in music and code. I help you find the next step, but I'm not always shown. What am I?

Answer: A pattern.

3. I can be found in a series or a string of words, I help computers see things, even in flocks of birds. What am I?

Answer: A pattern.

Answer for Exercise

1. Daily patterns

stripes on animals, tiles on the floor, buttons on your shirt, stairs in your school, etc.

2. Missing patterns

Sun, rainy cloud, sun, rainy cloud, sun, rainy cloud Right Arrow, Up Arrow, Down Arrow, Left Arrow, Right Arrow, Up Arrow.

3. Numbers and colours for pattern

1	2	3	4	5
2	3	4	5	1
3	4	5	1	2
4	5	1	2	3
5	1	2	3	4

4. Patterns in boxes

a. option 2
b. option 3
c. option 1
d. option 1