FOURTH EDITION

FOR GRADE 5

KEYBOARD

Computer Science with Application Software

TEACHING GUIDE

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Oxford University Press is a department of the University of Oxford.
It furthers the University's objective of excellence in research, scholarship,
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Oxford University Press in the UK and in certain other countries

Published in Pakistan by
Oxford University Press
No.38, Sector 15, Korangi Industrial Area,
PO Box 8214, Karachi-74900, Pakistan

First Edition published in India in 2009
First Edition adapted and published in Pakistan in 2009
Second Edition published in India in 2013
Second Edition adapted and published in Pakistan in 2014
Third Edition published in India in 2015
Third Edition adapted and published in Pakistan in 2019
Fourth Edition adapted and published in Pakistan in 2025

Keyboard: Windows 7: Windows 7 and MS Office 2013 (Students' Books with Online Material, and *Teaching Guides 1–8)* was originally published in English in 2014 by Oxford University Press India. This adaptation is published by arrangement. Oxford University Press Pakistan is solely responsible for this adaptation from the original work

This adaptation is published by arrangement with Oxford University Press India for sale/distribution in Pakistan and Pakistani schools in the Middle East only

ISBN 9786275223818

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.

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	
1. Introduction to AI and Its Applications		Critical Thinking, Problem Solving, Digital Literacy	• Understand the evolution of computers to AI, including key milestones and pioneers. • Identify AI applications in various fields, such as healthcare, finance, education, and transportation. • Recognize basic machine learning concepts, including supervised and unsupervised learning, and understand how these concepts work. • Grasp the role of coding in AI and explore how different programming languages are used to develop AI applications. • Analyse the ethical considerations surrounding AI and discuss responsible AI development and use.'	• Explain the history of AI, highlighting key milestones and contributions from different countries and cultures. • Demonstrate the practical applications of AI in various sectors, using real-world examples and interactive simulations. • Introduce supervised and unsupervised learning concepts through engaging activities and visualisations. • Discuss the role of coding in AI, comparing different programming languages and their strengths. • Facilitate a thought-provoking discussion on AI ethics, encouraging students to consider the potential impact of AI on society.	• Code.org AI activities, Scratch projects, AI-powered games, ethical dilemma scenarios (e.g., self-driving cars), AI educational videos, podcasts, and documentaries.	
2. Creating Media		Creativity, Digital Literacy, Collaboration	• Create and edit high-quality videos using Microsoft Clipchamp or similar software, incorporating advanced techniques and storytelling elements. • Design and integrate compelling graphics and visuals into their video projects. • Apply transitions and effects effectively to enhance the visual appeal and storytelling impact of their videos.	• Guide students in using advanced features of Microsoft Clipchamp or other video editing software, such as color correction, sound design, and visual effects. • Demonstrate techniques for creating infographics and other visual elements that effectively communicate information. • Facilitate hands-on activities where students can experiment with transitions and effects, while providing constructive feedback on their creations.	• Microsoft Clipchamp tutorials, sample video projects, online video resources, storyboard templates, graphic design software, video editing software manuals, professional video tutorials.	

	Reasoning	Communication	Connection	ICT Activities	Additional Strategies
	• • Analyse the impact of AI on different aspects of society, both positive and negative. • Debate the ethical implications of AI and formulate solutions to potential challenges. • Compare and contrast different AI technologies and their applications. • Evaluate the role of AI in various fields and its potential for future development.	• Collaborate with peers on coding projects and present their work to the class.	• Engage in class discussions and debates on AI-related topics.	• Code.org AI training, dataset analysis, pattern recognition exercises.	Project-based learning (AI application proposal), gamified learning on code.org, debate on AI ethics.
	• Analyse the use of media in different contexts, such as advertising, education, and entertainment. • Evaluate the effectiveness of different media forms in conveying messages and storytelling. • Critique their own video creations and identify areas for improvement.	• Collaborate with peers to create video projects that address social issues or promote positive change.	• Use video editing software to create documentaries, news reports, music videos, animated films, or other creative projects.	• Incorporate storytelling techniques and narrative elements to enhance their video productions.	Blended learning, peer feedback, video portfolio creation, industry connections, film festival participation.

Chapter	No. of Periods	Core Competencies	Learning Objectives	Teaching Objectives	Additional Resources	
3. Fundamentals of Digital Marketing		Business Acumen, Digital Literacy, Critical Thinking	• Understand core digital marketing concepts, including SEO, social media marketing, email marketing, content marketing, and paid advertising. • Identify and evaluate different digital marketing channels and their effectiveness for various audiences and goals. • Recognize online business strategies and understand the importance of data analytics in optimizing digital marketing campaigns. • Identify digital threats and learn how to stay safe online.	• Explain the sales and marketing process, highlighting the role of digital channels. • Demonstrate the use of digital marketing tools, such as social media management platforms and email marketing software. • Teach online business strategy basics, emphasizing the importance of target audience and customer engagement. • Discuss social media algorithms and how they impact content visibility and reach. • Educate students about digital security risks, such as phishing scams and malware, and teach them how to protect their personal information online.	• Case studies of successful and unsuccessful digital marketing campaigns, social media marketing examples, digital marketing tools demos, cybersecurity awareness quizzes, guest speakers from the digital marketing industry.	
4. Building a Website		Coding Skills, Digital Literacy, Problem Solving	• Understand the basic principles of web development, including HTML, CSS, and JavaScript. • Create simple websites using HTML and CSS, incorporating text, images, and links. • Use Google Sites or similar platforms to build and publish websites, customising templates and adding interactive elements.	• Teach basic HTML tags and structure, emphasizing the importance of semantic markup. • Introduce CSS for styling web pages, demonstrating how to change colors, fonts, and layouts. • Guide students through the process of creating a website using Google Sites, showing them how to add content, customise the design, and publish their work.	• HTML and CSS tutorials, online code editors, website templates, graphic design software, web development resources, website accessibility guidelines.	

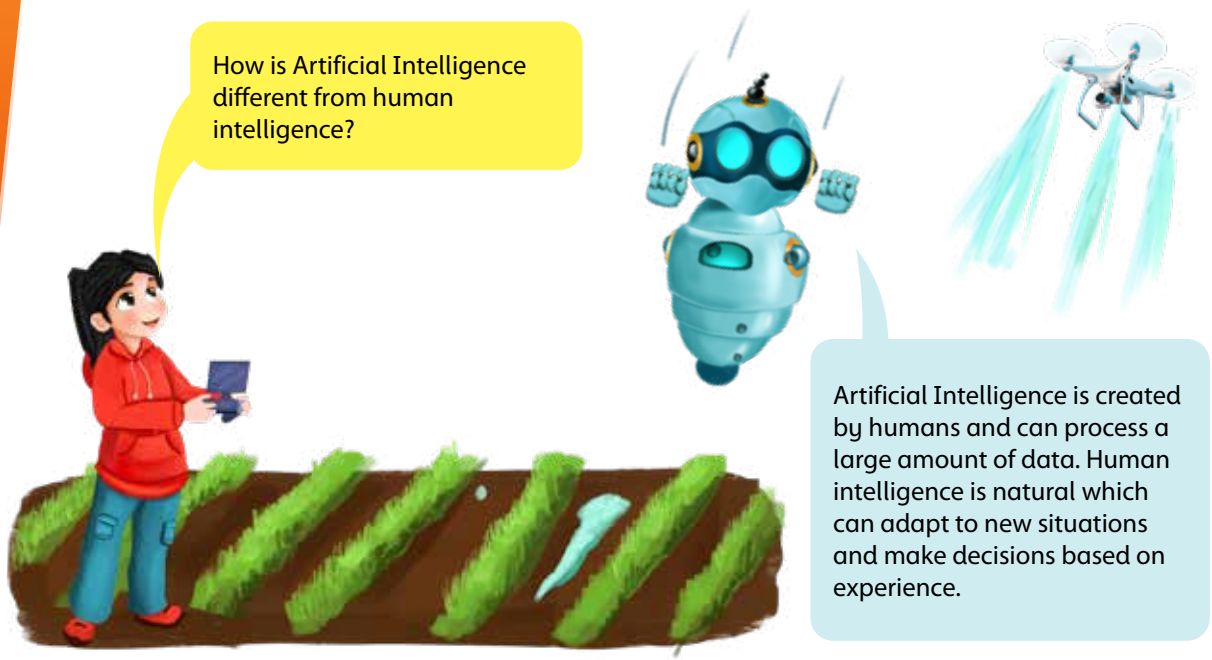
	Reasoning	Communication	Connection	ICT Activities	Additional Strategies
	• Analyse the effectiveness of different digital marketing strategies and channels. • Evaluate the impact of social media algorithms on online businesses and content creators. • Critique digital marketing campaigns and suggest improvements. • Develop a basic understanding of online business strategies and their ethical implications.	• Work in groups to develop a digital marketing plan for a hypothetical product or service.	• Present their digital marketing plans to the class and receive feedback from their peers and teacher.	• Research current digital marketing trends and technologies.	Role-playing (online business simulation), online marketing campaign planning, interactive cybersecurity workshops, digital marketing competitions.
	• Analyse the structure and design of different websites and evaluate their effectiveness in terms of user experience and accessibility. • Critique their own website creations and identify areas for improvement.	• Collaborate with peers to design and build a website for a school project or community initiative.	• Present their websites to the class and explain their design choices and coding decisions.	• Present their websites to the class and explain their design choices and coding decisions.	Flipped classroom (online HTML tutorials for homework), website design challenges, collaborative website building.

Chapter	No. of Periods	Core Competencies	Learning Objectives	Teaching Objectives	Additional Resources	
5. Data Handling with Google Sheets	Data Literacy, Problem Solving, Analytical Thinking	• Understand the Google Sheets interface and its various features, including formulas, functions, and charts. • Create and customise spreadsheets to organize and analyse data, using formulas and functions to perform calculations and automate tasks. • Use templates to streamline spreadsheet creation and explore AI features in Google Sheets, such as natural language processing and predictive modeling.	• Understand Google Sheets interface, create and customise spreadsheets, use templates, create forms, explore AI features in Google Sheets.	• Demonstrate Google Sheets interface, teach spreadsheet creation and editing, explain template customization, introduce data forms, explore AI functions.	• Google Sheets tutorials, data analysis examples, spreadsheet templates, AI feature demonstrations.	
6. Coding Animal Adaptations		• Coding Skills, Scientific Thinking, Problem Solving	• Understand animal adaptations, model adaptations in Code.org Sprite Lab, use events and code to simulate adaptations.	• Explain animal adaptations, demonstrate Sprite Lab interface, teach coding for camouflage and evolution, explain event-driven programming.	• Code.org Sprite Lab activities, animal adaptation videos, biology resources, coding challenges.	

	Reasoning	Communication	Connection	ICT Activities	Additional Strategies
	• To develop data handling skills and introduce spreadsheet applications.	• Students will present their data analysis and spreadsheet projects.	• Connect data handling to real-world data management and analysis.	• Google Sheets exercises, data visualization, form creation, AI feature exploration.	Data-driven projects (collecting and analysing data), interactive spreadsheet exercises, collaborative data analysis.
	• To integrate coding with science concepts and foster computational thinking.	• Students will present their coded animal adaptations and explain their logic.	• Connect coding to biological adaptations and natural phenomena.	• Code.org Sprite Lab coding sessions, animal adaptation simulations, event-driven programming exercises.	Game-based learning (coding animal adaptation scenarios),

CHAPTER 1

INTRODUCTION TO AI AND ITS APPLICATIONS



Learning Objectives

By the end of the chapter, students will:

- Explain how computers have evolved to create AI, and give simple examples of how AI can help solve problems.
- Identify and describe common applications of AI, such as voice assistants, search engines, and recommendations on platforms like YouTube.
- Differentiate between supervised and unsupervised machine learning, and understand the basic difference between human and machine learning.
- Follow basic instructions to train an AI bot, test its accuracy, and reflect on the training process.
- Recognise and explain basic ethical principles related to AI, such as respecting people's privacy and ensuring safety.

Lesson Plan 1

Topics: Understanding the concept of AI; Coding the backbone of AI; AI around us

Page number: 2-4

Core Competencies

- **Critical Thinking and Problem-Solving:** Analyse and evaluate information, identify patterns, and solve problems related to AI applications.
- **Digital Literacy:** Develop skills in using digital tools and platforms, understanding how AI technologies work, and navigating online resources.

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- **Ethical Reasoning:** Explore the ethical implications of AI, including privacy, bias, and the impact on society, and develop the ability to make informed decisions.
- **Collaboration and Teamwork:** Collaborate on projects and activities, sharing ideas and supporting one another's learning.

Learning Outcomes

- Understand the evolution of computers that led to the development of AI.
- Identify real-world applications of AI.
- Recognise the role of coding in creating, training, and using AI systems.
- Discuss how AI can mimic human behaviour and assist in complex problems.

Methodology

- **Introduction**

  Start with the analogy 'AI is like a trained dog' to capture students' interest. Explain that just like a dog learns commands through training, AI systems learn from data. Ask students to bring in AI-enabled devices (e.g., voice assistants, smart toys) and discuss how these devices learn and respond to commands. Highlight the similarities and differences between human learning and machine learning.
- **Guided Practice**

  Investigate how search engine algorithms and recommendation systems work. Provide scenarios such as 'How does your phone predict your next word?' to illustrate the functionality of AI in everyday life.
- **Activity**

  Have students brainstorm and discuss the different ways AI is used in their daily lives, such as in search engines, social media, and online shopping.
- **Interactive Exploration**
  - **Timeline Activity:** Divide students into teams and assign each team an era in computing history (e.g., the abacus, ENIAC, the Internet, or AI). Have them create and perform skits to represent the key developments and milestones of their assigned era.
  - **Concept Mapping:** Use a 'Learning Sorting Game' to demonstrate supervised and unsupervised learning. Provide objects for students to sort by colour (supervised learning) and then allow them to find their categories (unsupervised learning).
  - **Challenge Task:** Use code.org to train an AI to recognise fruits. Guide students through the process of feature selection, training steps, and documenting results. Discuss the significance of each step and its contribution to the AI's learning process.
  - **Dataset Exploration:** Provide image datasets (e.g., cats and dogs) or numerical patterns (e.g., sequences) for students to analyse. Have them predict outcomes and explain their reasoning, emphasising the importance of evidence-based predictions.

- **Exit Ticket**
  - **Ethical Debate**
    Conduct mock trials on AI-related ethical issues, such as those involving self-driving car accidents. Assign roles to students (e.g., judge, lawyer, witness) and have them debate the ethical implications, focusing on privacy, bias, and safety.
  - **Future Thinking**
    Use trained AI on new data and have students justify their predictions with evidence. Encourage them to write about the impact of AI on their lives and discuss the importance of responsible AI use.
  - **Wrap-Up Assessment**
    Students can now be tasked to answer questions 2c,e, and f on page 15 and can also do the Group Project activity on page 16.

Performance Indicators

- Active participation in discussions and activities.
- Ability to explain the evolution of AI and its applications.
- Successful completion of AI training tasks on code.org.
- Accurate predictions and reasoning in dataset exploration.
- Thoughtful contributions to ethical debates and written reflections.

Lesson Plan 2

Topics: Machine learning; Types of Machine Learning

Page numbers: 4-6

Core Competencies

- **Critical Thinking and Problem-Solving:** Analyse and evaluate information, identify patterns, and solve problems related to AI applications.
- **Digital Literacy:** Develop skills in using digital tools and platforms, understanding how AI technologies work, and navigating online resources.
- **Ethical Reasoning:** Explore the ethical implications of AI, including privacy, bias, and the impact on society, and develop the ability to make informed decisions.
- **Collaboration and Teamwork:** Work together on projects and activities, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Differentiate between supervised and unsupervised learning.
- Understand the difference between human and machine learning.
- Apply the concepts of supervised and unsupervised learning in practical scenarios.

Resources

- Objects for sorting (e.g., coloured blocks, shapes)
- Computers/tablets with Internet access
- Visual aids for concept mapping

Methodology

- **Introduction**

  Start with an analogy comparing supervised learning to a teacher guiding students through a lesson, while unsupervised learning is like students exploring a new topic on their own.

  Discuss examples of supervised and unsupervised learning in everyday life, such as sorting laundry by colour (supervised) versus organising a collection of items without predefined categories (unsupervised).

- **Guided Practice**

  Investigate how recommendation systems work, such as those used by streaming services to suggest movies or shows. Provide scenarios like 'How does Netflix recommend shows based on your viewing history?'

  Have students brainstorm and discuss different applications of supervised and unsupervised learning in technology, such as email spam filters (supervised) and clustering customer preferences (unsupervised).

- **Interactive Exploration**

  Use a 'Learning Sorting Game' to demonstrate supervised and unsupervised learning. Provide objects for students to sort by color (supervised learning) and then allow them to find their own categories (unsupervised learning).

  Create a visual concept map to illustrate the differences between supervised and unsupervised learning, using examples from the sorting game.

- **Challenge Task**

  Use code.org to train an AI to recognise fruits. Guide students through the process of feature selection, training steps, and documenting results. Discuss the importance of each step and how it contributes to the AI's learning process.

  Provide image datasets (e.g., cats and dogs) or numerical patterns (e.g., sequences) for students to analyse. Have them predict outcomes and explain their reasoning, emphasising the importance of evidence-based predictions.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a quiz to test students' understanding of supervised and unsupervised learning. Include questions that require them to identify examples of each type of learning. Students can now do the questions 2b and d on page 15.

  Ask students to write a brief reflection on how supervised and unsupervised learning can be applied in real-world scenarios.

Performance Indicators

- Active participation in discussions and activities.
- Ability to explain the differences between supervised and unsupervised learning.
- Successful completion of AI training tasks on code.org.
- Accurate predictions and reasoning in dataset exploration.
- Thoughtful reflections on the applications of machine learning.

Lesson Plan 3

Topics: AI in action

Page numbers: 6-9

Core Competencies

- **Critical Thinking and Problem-Solving:** Analyse and evaluate information, identify patterns, and solve problems related to AI applications.
- **Digital Literacy:** Develop skills in using digital tools and platforms, understanding how AI technologies work, and navigating online resources.
- **Ethical Reasoning:** Explore the ethical implications of AI, including privacy, bias, and the impact on society, and develop the ability to make informed decisions.
- **Collaboration and Teamwork:** Work together on projects and activities, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Understand the process of logging on to code.org and selecting courses.
- Train and test an AI bot using code.org.
- Reflect on the training process and its outcomes.

Resources

- Computers/tablets with Internet access
- Code.org accounts
- Visual aids for the training process

Methodology

- **Introduction**

  Start with an analogy comparing training an AI bot to teaching a pet new trick. Explain that just like a pet learns through repetition and rewards, AI learns from data and feedback.

  Discuss the role of coding in AI, highlighting how programmers create algorithms that enable AI to learn and make decisions.

- **Guided Practice**

  Investigate how AI is used in various applications, such as voice assistants, search engine results, and driverless vehicles. Provide scenarios like 'How does Siri understand and respond to your voice commands?'

  Have students brainstorm and discuss different applications of AI in their daily lives, such as smart home devices and online shopping recommendations.

- **Interactive Exploration**

  Guide students through the process of logging on to code.org, signing in, selecting courses, and training an AI bot. Provide step-by-step instructions and support as they complete the tutorial.

Practice lesson on AI decision-making using code.org. Have students train an AI bot to make decisions about shoe selection and reflect on the training process.

- **Challenge Task**

  Use code.org to train an AI to recognise fruits. Guide students through the process of feature selection, training steps, and documenting results. Discuss the importance of each step and how it contributes to the AI's learning process.

  To analyse have them predict outcomes and explain their reasoning, emphasising the importance of evidence-based predictions.

  Refer to the exercise Practice Time on page 9. The lessons about shoe recommendation application on code.org will help students understand how AI make decisions. Walk the students through each step in the computer lab and help them wherever needed.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a quiz to test students' understanding of the AI training process. Include questions that require them to explain the steps involved in training an AI bot. Students can now do question 2a on page 15 and do In the lab ad Application based activities on page 16.

  Ask students to write a brief reflection on their experience training an AI bot and how they can apply what they learned in other contexts.

Performance Indicators

- Active participation in discussions and activities.
- Ability to explain the AI training process and its importance.
- Successful completion of AI training tasks on code.org.
- Accurate predictions and reasoning in dataset exploration.
- Thoughtful reflections on the applications of AI.

Lesson Plan 4

Topics: Recognising and Predicting Patterns in AI

Page number: 9-13

Core Competencies

- **Critical Thinking and Problem-Solving:** Analyse and evaluate information, identify patterns, and solve problems related to AI applications.
- **Digital Literacy:** Develop skills in using digital tools and platforms, understanding how AI technologies work, and navigating online resources.
- **Ethical Reasoning:** Explore the ethical implications of AI, including privacy, bias, and the impact on society, and develop the ability to make informed decisions.
- **Collaboration and Teamwork:** Work together on projects and activities, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Recognise and predict patterns using AI.
- Understand the process of feature selection and training in AI.
- Evaluate the accuracy of AI predictions.

Resources

- Computers/tablets with Internet access
- Code.org accounts
- Visual aids for the training process
- Image datasets (e.g., shapes, cats/dogs)

Methodology

- **Introduction**

  Start with an analogy comparing pattern recognition to solving a puzzle. Explain that just like finding the right pieces to complete a puzzle, AI uses data to identify patterns and make predictions.

  Discuss examples of pattern recognition in everyday life, such as identifying shapes, predicting weather patterns, and recognising faces in photos.

- **Guided Practice**

  Investigate how AI is used to recognise and predict patterns in various applications, such as healthcare (diagnosing diseases), education (personalised learning), and transportation (traffic management). Provide scenarios like 'How does AI predict traffic congestion based on historical data?'

  Have students brainstorm and discuss different applications of pattern recognition in technology, such as facial recognition systems and predictive analytics.

- **Interactive Exploration**

  Guide students through the process of recognising shapes and predicting patterns using code.org. Provide step-by-step instructions and support as they complete the tutorial.

  Code.org lesson on recognising shapes, training with sides, and evaluating accuracy. Have students analyse datasets and make predictions based on their training.

- **Challenge Task**

  Use code.org to train an AI to recognise fruits. Guide students through the process of feature selection, training steps, and documenting results. Discuss the importance of each step and how it contributes to the AI's learning process.

  Provide image datasets (e.g., cats and dogs) or numerical patterns (e.g., sequences) for students to analyse. Have them predict outcomes and explain their reasoning, emphasising the importance of evidence-based predictions.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a quiz to test students' understanding of pattern recognition and prediction in AI. Include questions that require them to explain the steps involved in recognising and predicting patterns.

  Ask students to write a brief reflection on their experience recognising and predicting patterns using AI and how they can apply what they learned in other contexts.

Performance Indicators

- Active participation in discussions and activities.
- Ability to explain the process of recognising and predicting patterns in AI.
- Successful completion of AI training tasks on code.org.
- Accurate predictions and reasoning in dataset exploration.
- Thoughtful reflections on the applications of pattern recognition.

Lesson Plan 5

Topics: AI Code of Ethics

Page numbers: 13-14

Core Competencies

- **Critical Thinking and Problem-Solving:** Analyse and evaluate information, identify patterns, and solve problems related to AI applications.
- **Digital Literacy:** Develop skills in using digital tools and platforms, understanding how AI technologies work, and navigating online resources.
- **Ethical Reasoning:** Explore the ethical implications of AI, including privacy, bias, and the impact on society, and develop the ability to make informed decisions.
- **Collaboration and Teamwork:** Work together on projects and activities, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Understand the importance of ethical considerations in AI.
- Discuss real-world examples of ethical dilemmas in AI.
- Develop informed opinions on responsible AI use.

Resources

- Computers/tablets with Internet access
- Ethical debate scenarios
- Materials for mock trials (props, costumes)

Methodology

- **Introduction**

  Start with an analogy comparing ethical considerations in AI to the rules of a game. Explain that just like games have rules to ensure fair play, AI systems need ethical guidelines to ensure they are used responsibly.

  Discuss the importance of ethics in AI, highlighting issues such as privacy, bias, and safety. Provide real-world examples of ethical dilemmas in AI, such as self-driving car accidents and data privacy issues.

- **Guided Practice**

  Investigate how ethical considerations impact the development and use of AI in various fields, such as healthcare, law enforcement, and finance. Provide scenarios like 'What ethical issues arise when using AI for facial recognition in law enforcement?'

  Have students brainstorm and discuss different ethical dilemmas in AI, such as bias in algorithms and the use of AI in surveillance.

- **Interactive Exploration**

  Conduct mock trials on AI ethical issues. Assign roles to students (e.g., judge, lawyer, witness) and have them debate the ethical implications, focusing on privacy, bias, and safety.

  Role-play different scenarios involving ethical dilemmas in AI. Encourage students to consider multiple perspectives and develop informed opinions.

- **Challenge Task**

  Use code.org to train an AI to recognise fruits. Guide students through the process of feature selection, training steps, and documenting results. Discuss the importance of each step and how it contributes to the AI's learning process.

  Provide image datasets (e.g., cats and dogs) or numerical patterns (e.g., sequences) for students to analyse. Have them predict outcomes and explain their reasoning, emphasising the importance of evidence-based predictions.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a quiz to test students' understanding of ethical considerations in AI. Include questions that require them to explain the importance of ethics in AI and provide examples of ethical dilemmas. Students can now answer question 1 on page 14-15.

  Ask students to write a brief reflection on their experience debating ethical issues in AI and how they can apply what they learned in other contexts.

Performance Indicators

- Active participation in discussions and activities.
- Ability to explain the importance of ethical considerations in AI.
- Successful completion of AI training tasks on code.org.
- Accurate predictions and reasoning in dataset exploration.
- Thoughtful reflections on the ethical implications of AI.

IN THE LAB

Activity

Complete all the course levels of Chapter 1 > Lesson 1 Introduction to Machine Learning.

Instructions

- Ensure all computers/tablets are connected to the Internet and have access to code.org.
- Verify that each student has a code.org account and is logged in.
- Prepare visual aids and any additional resources needed for the lesson.
- Guide students through the process of navigating to Chapter 1, Lesson 1 on code.org. Show them how to access the course levels and explain the objectives of each level.
- Provide step-by-step instructions for each course level. Encourage students to ask questions and offer support as they progress through the levels. These activities are designed to reinforce the concepts of machine learning through practical application.
- Discuss the importance of feature selection and training in improving the accuracy of AI predictions. Encourage students to solve problems and make predictions based on the data provided in the course. Emphasise the importance of evidence-based reasoning.

APPLICATION BASED QUESTIONS

Activity

Imagine you are a part of the team training the AI Bot to recognise fish and trash. During the testing stage, the bot keeps making mistakes. What steps would you take to help it improve its recognition skills?

Instructions

- Ensure all computers/tablets are connected to the Internet and have access to code.org.
- Verify that each student has a code.org account and is logged in.
- Prepare visual aids and any additional resources needed for the lesson.
- Explain to students that the quality of the training data is crucial. Ensure the images of fish and trash are correctly labeled and diverse. Discuss how having a variety of examples helps the AI learn better.
- Encourage students to gather more images of fish and trash. Explain that more data can help the AI make better distinctions. Use code.org to upload and label new images.

- Guide students in identifying the features that distinguish fish from trash, such as shape, color, and texture. Use code.org to highlight these features in the training data.
- Introduce the concept of adjusting model parameters. Explain in simple terms how changing settings like the learning rate can affect the AI's performance. Use code.org to experiment with different parameters.
- Have students retrain the AI bot with the refined dataset and adjusted parameters. Use code.org to monitor the bot's performance and make incremental improvements.
- Teach students to analyse the mistakes the bot is making. Are there specific types of fish or trash it consistently misidentifies? Use this analysis to provide targeted feedback and additional training examples.
- Regularly test the bot with new data to ensure it maintains high accuracy. Use code.org to test the bot in different scenarios and discuss the results with the class.

GROUP PROJECT

Activity

Working in groups, explore how AI is used in various aspects of our daily lives. Each group can select a specific field, such as healthcare, transportation, or education, and create a presentation or report that explains how AI is applied in that area.

Instructions

- Divide students into groups, ensuring a mix of skills and interests in each group.
- Assign or let each group choose a specific field to explore (e.g., healthcare, transportation, education).
- Guide students on how to conduct research. Encourage them to use reputable sources and look for specific examples of AI applications in their chosen field.
- Provide guiding questions to help focus their research:
  a. What are the main AI technologies used in this field?
  b. How does AI improve processes or outcomes in this field?
  c. What are some real-world examples of AI applications in this field?
  d. What are the potential benefits and challenges of using AI in this field?
- Allow groups to work together to gather information, discuss findings, and develop their presentations or reports. Encourage collaboration and sharing of ideas.
- Guide students in organising their information and creating their presentations or reports. Provide tips on effective communication and visual aids.
- Ask groups to consider ethical implications and challenges associated with AI in their field. Encourage them to think critically about privacy, bias, and the societal impact of AI.

Engagement Activities

- ### Timeline of Computers

  Create a timeline showing the evolution of computers, from early mechanical devices to modern AI-powered systems. Illustrate key inventions and their impact.

- ### AI in Daily Life - Scavenger Hunt

  List different AI applications used daily (e.g., voice assistants, YouTube recommendations). Ask students to find and document examples of AI at home or in school.

- ### Human vs. Machine Learning Experiment

  Show students different sets of patterns and have them predict the next pattern. Compare their results to a simple AI model (e.g., a shape-recognising AI on code.org). Discuss differences in learning processes.

- ### Coding an AI Bot on Code.org

  Guide students to log in to code.org, choose an AI training lesson, and train an AI bot to recognise patterns (e.g., shoe selection). Have them test and refine their training.

- ### AI Ethics Debate

  Divide students into groups. Assign each group an AI ethics principle (Respect, Safety, Learning, Privacy). Have them discuss real-world scenarios where these principles apply and present their views.

- ### Application-Based Questions

  1. How does AI assist in complex problems with accuracy and efficiency? Give two examples from everyday life.
  2. Why is coding important in creating and training AI systems? How does it help AI learn and improve?
  3. What is the main difference between supervised and unsupervised machine learning? Give one example of each.
  4. Compare human learning and machine learning. What are two key differences in how they recognise patterns?
  5. You trained an AI bot to recognise shoe types. It is misidentifying boots as sneakers. What changes can you make to improve its accuracy?

Riddles

1. I learn from patterns, but I don't have a brain. I help suggest videos, yet I don't watch them. What am I?

   Answer: AI recommendation system (e.g., YouTube algorithm).

2. I can help a driver but don't have hands. I follow the rules, but I've never been to school. What am I?

   Answer: A self-driving (driverless) car.

3. I can recognise faces but don't have eyes. I can talk but don't have a mouth. Who am I?

   Answer: A built-in voice assistant with facial recognition.

4. I store knowledge, I learn from mistakes, I never sleep, yet I help millions daily. What am I?

   Answer: Artificial Intelligence (AI).

Answer for Exercise

- ### Choose the Correct option

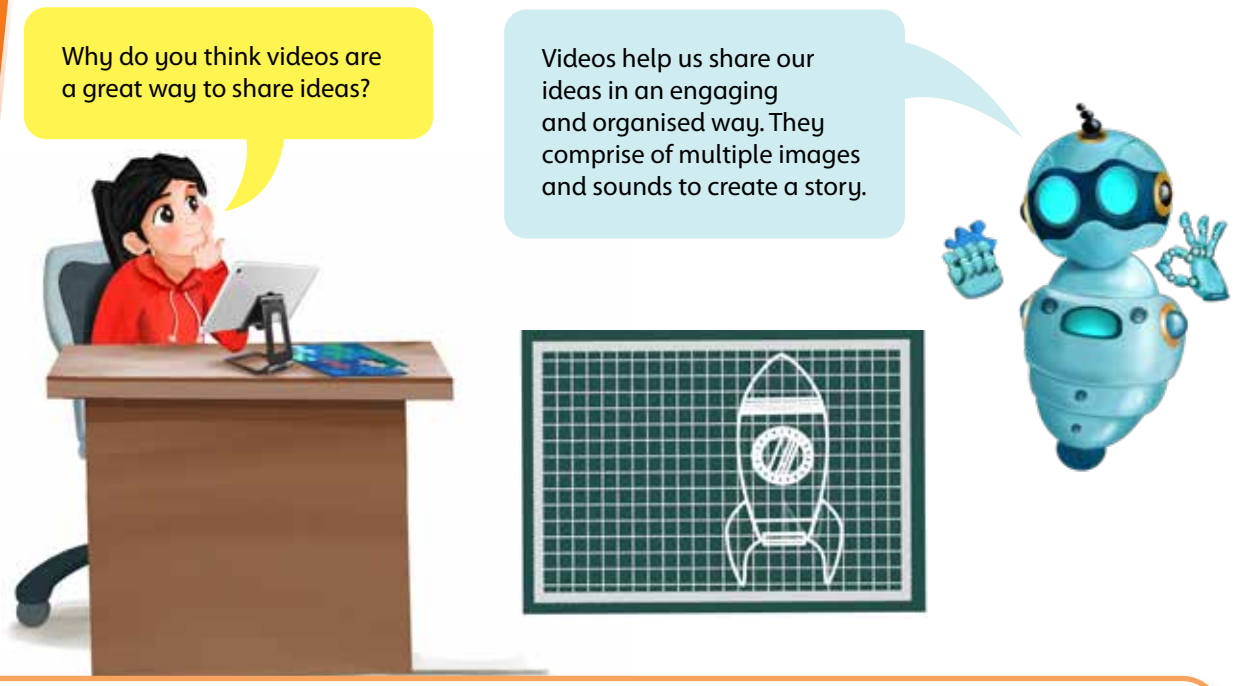
a. Supervised and Unsupervised Machine Learning
b. Assist doctors in making accurate diagnoses
c. Unsupervised Machine Learning
d. Reducing traffic jams and preventing accidents
e. Learning from them and improving
f. Keeping user information safe

- ### Answer the following questions:

a. Collect data, select features, train the model, test the model, evaluate accuracy, and refine the model.
b. Difference between Supervised and Unsupervised Learning:
   - **Supervised Learning:** AI learns from labeled data (e.g., identifying cats and dogs from labeled images).
   - **Unsupervised Learning:** AI finds patterns in data without labels (e.g., grouping similar customer preferences).
c. The answers may vary on each student's research. Here is an example: AI helps detect diseases like cancer by analysing medical images for early diagnosis.
d. Machine Learning vs. Human Learning:
   - Humans learn from experience and emotions, while machines learn from data and patterns.
   - Humans can apply knowledge creatively; AI follows set rules and training.
e. AI-powered self-driving cars reduce accidents and improve traffic flow by making real-time decisions.
f. The answers may vary on each student's research. Here is an example: Duolingo uses AI to personalise language lessons based on a student's progress.

CHAPTER
2

CREATING MEDIA



Learning Objectives

By the end of the chapter, students will:

- Explain how videos can be used to share ideas and information.
- Example activities: Brainstorming different types of videos and their purposes.
- Identify the main components of Microsoft Clipchamp interface and video editing tools.
- Use a template in Clipchamp to create a simple video, including adding transitions, fade effects, visuals, and text.
- Apply basic visual and text effects to their videos to enhance their presentation.
- Save their video projects in Clipchamp and understand basic options for sharing their creations.

Lesson Plan 1

Topics: Sharing ideas through videos; Microsoft Clipchamp

Page number: 17-19

Core Competencies

- **Digital Literacy:** Develop skills in using digital tools and platforms for creating and sharing media.
- **Creativity and Innovation:** Encourage creative expression through video production and editing.

- **Communication:** Enhance communication skills by sharing ideas and stories through videos.
- **Collaboration and Teamwork:** Work together on projects, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Understand the basics of video creation and editing using Microsoft Clipchamp.
- Identify and use various video editing tools and features.
- Create and share videos that effectively communicate ideas and stories.
- Critically analyse and provide feedback on video projects.

Resources

- Computers/tablets with Internet access
- Microsoft Clipchamp accounts
- Pre-made video templates
- Visual aids for video editing tools
- Sample videos for critique

Methodology

- **Introduction**

  Introduce the concept of sharing ideas through videos. Discuss how videos are a powerful medium for storytelling and communication.

  Use the analogy 'Creating a video is like baking a cake.' Explain that just like baking a cake involves combining ingredients and following steps, creating a video involves combining media elements and following editing steps.

  Conduct a guided tour of Microsoft Clipchamp, highlighting key features such as templates, media library, preview window, and timeline.

- **Guided Practice**

  Guide students through the process of signing in to Microsoft Clipchamp. Explain the interface, including how to import source media, use the preview window, and navigate the timeline.

  Discuss how professionals use video editing tools to create content for social media, advertisements, and educational purposes. Provide examples to illustrate the importance of video editing skills.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a brief quiz to test students' understanding of the Clipchamp interface and its features.

Performance Indicators

- Active participation in discussions and activities.
- Ability to navigate the Clipchamp interface and use basic features.

Lesson Plan 2

Topics: Content Sidebar and Video Editing Toolkit

Page number: 19

Core Competencies

- **Digital Literacy:** Develop skills in using digital tools and platforms for creating and sharing media.
- Creativity and Innovation: Encourage creative expression through video production and editing.
- **Communication:** Enhance communication skills by sharing ideas and stories through videos.
- Collaboration and Teamwork: Work together on projects, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Identify and use various video editing tools and features in Microsoft Clipchamp.
- Create and share videos that effectively communicate ideas and stories.
- Adapt pre-made templates to create personalised video projects.
- Critically analyse and provide feedback on video projects.

Resources

- Computers/tablets with Internet access
- Microsoft Clipchamp accounts
- Pre-made video templates
- Visual aids for video editing tools
- Sample videos for critique

Methodology

- **Introduction**

  Discuss the importance of video editing tools in creating engaging and professional-looking videos. Introduce the content sidebar and video editing toolkit in Clipchamp.

  Use the analogy 'Editing a video is like decorating a room.' Explain that just like decorating a room involves choosing furniture, colors, and accessories, editing a video involves selecting transitions, text, and effects to enhance the final product.

- **Guided Practice**

  Organise a scavenger hunt where students identify and describe the function of specific tools in Clipchamp, such as transitions, text editor, and effects. This will help them become familiar with the interface and its features.

  Discuss how professionals use video editing tools to create content for social media, advertisements, and educational purposes. Provide examples to illustrate the importance of video editing skills.

- **Interactive Exploration**

  Use pre-made templates to create short videos on topics like 'My Favourite Day' or 'Animal Facts.' Guide students in adapting templates by replacing media and text. Encourage them to think creatively about how they can personalise their projects.

  Introduce students to other age-appropriate online video editing platforms like WeVideo and Animoto.
- **Challenge Task**

  Encourage students to choose a different topic and create a video by adapting a template. Provide support as they replace media and text to fit their chosen topic. Discuss the importance of storytelling and how they can use video elements to enhance their narrative.
- **Wrap-Up Assessment and Exit Ticket**

  Review the videos created by students to assess their understanding of the video editing tools. Include questions that require them to identify and describe the function of specific tools. Students can answer question 2b on page 24.

  Ask students to write a brief reflection on their experience using the video editing toolkit and how it helped them create their videos. Encourage them to think about how they can apply what they learned in future projects.

Performance Indicators

- Active participation in discussions and activities.
- Ability to identify and use various video editing tools.
- Successful completion of video projects using templates.
- Thoughtful reflections on the learning experience.

Lesson plan 3

Topics: Steps to Create a Video through a Template

Page numbers: 20-22

Core Competencies

- **Digital Literacy:** Develop skills in using digital tools and platforms for creating and sharing media.
- Creativity and Innovation: Encourage creative expression through video production and editing.
- **Communication:** Enhance communication skills by sharing ideas and stories through videos.
- Collaboration and Teamwork: Work together on projects, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Understand the steps involved in creating a video using a template.
- Use transitions, fade effects, and visual filters to enhance video quality.
- Create and share videos that effectively communicate ideas and stories.
- Critically analyse and provide feedback on video projects.

Resources

- Computers/tablets with Internet access
- Microsoft Clipchamp accounts
- Pre-made video templates
- Visual aids for video editing tools
- Sample videos for critique

Methodology

- **Introduction**

  Discuss the steps involved in creating a video using a template. Highlight the importance of transitions, fade effects, and visuals in enhancing video quality.

  Use the analogy 'Editing a video is like decorating a room.' Explain that just like decorating a room involves choosing furniture, colors, and accessories, editing a video involves selecting transitions, text, and effects to enhance the final product.

- **Guided Practice**

  Guide students in experimenting with transitions, fade effects, and visual filters. Explain how these elements can improve the flow and appearance of their videos.

  Discuss how professionals use these editing techniques to create engaging content for social media, advertisements, and educational purposes. Provide examples to illustrate the importance of these skills.

- **Interactive Exploration**

  Have students create short video clips demonstrating different effects. Encourage them to explain the impact of each effect on their videos.

  Introduce students to other age-appropriate online video editing platforms like WeVideo and Animoto. Allow them to explore these platforms and compare their features with Clipchamp. Discuss the pros and cons of each platform and how they can be used for different types of projects.

- **Challenge Task**

  Challenge students to create a more complex video using multiple effects and transitions. Provide support as they experiment with different editing techniques. Discuss the importance of storytelling and how they can use video elements to enhance their narrative.

- **Wrap-Up Assessment and Exit Ticket**

  Review the video clips created by students to assess their understanding of transitions, fade effects, and visuals. Include questions that require them to explain the impact of these elements on their videos.

  Ask students to write a brief reflection on their experience experimenting with video effects and how it enhanced their projects. Encourage them to think about how they can apply what they learned in future projects.

Performance Indicators

- Active participation in discussions and activities.
- Ability to use transitions, fade effects, and visual filters effectively.
- Successful completion of video projects demonstrating various effects.
- Thoughtful reflections on the learning experience.

Lesson Plan 4

Topics: Adding Text and Saving/Exporting Options

Page numbers: 23

Core Competencies

- **Digital Literacy:** Develop skills in using digital tools and platforms for creating and sharing media.
- **Creativity and Innovation:** Encourage creative expression through video production and editing.
- **Communication:** Enhance communication skills by sharing ideas and stories through videos.
- Collaboration and Teamwork: Work together on projects, sharing ideas, and supporting each other's learning.

Learning Outcomes

- Understand the process of adding text overlays and background music to videos.
- Learn how to record and synchronise audio for voiceover narration.
- Save and export videos in different formats.
- Create and share a portfolio of video projects.
- Critically analyse and provide feedback on video projects.

Resources

- Computers/tablets with Internet access
- Microsoft Clipchamp accounts
- Visual aids for video editing tools
- Sample videos for critique

Methodology

- **Introduction**

  Discuss the importance of text and audio in videos. Introduce the process of adding text overlays and background music in Clipchamp.

  Use the analogy 'Adding text and audio to a video is like adding captions and music to a storybook.' Explain that just like captions and music enhance the storytelling experience in a storybook, text and audio enhance the storytelling experience in a video.

- **Guided Practice**

  Guide students in adding text overlays (titles, captions) and background music to their videos. Explain how to record and synchronise audio for voiceover narration.

Discuss how professionals use text and audio to create engaging content for social media, advertisements, and educational purposes. Provide examples to illustrate the importance of these skills.

- **Interactive Exploration**

  Encourage students to create a video with a voiceover narration. Provide support as they record and synchronise audio with their video clips.

  Introduce students to other age-appropriate online video editing platforms like WeVideo and Animoto. Allow them to explore these platforms and compare their features with Clipchamp. Discuss the pros and cons of each platform and how they can be used for different types of projects.

- **Challenge Task**

  Demonstrate how to save and export videos in different formats. Guide students in creating a portfolio of their video projects and sharing them with the class. Discuss the importance of presenting their work professionally.

  Watch and critique sample videos, focusing on clarity, engagement, and effectiveness. Encourage students to provide constructive feedback on each other's work.

- **Wrap-Up Assessment and Exit Ticket**

  Conduct a quiz to test students' understanding of text and audio integration, saving, and exporting options. Include questions that require them to explain the importance of these elements in video production. Students will now be able to practice the questions and activities from page 24-26.

Performance Indicators

- Active participation in discussions and activities.
- Ability to add text overlays and background music to videos.
- Successful completion of video projects with text and audio integration.
- Thoughtful reflections on the learning experience.

IN THE LAB

Activity 1

Create short documentaries on various science topics, such as the water cycle, the solar system, or plant life cycles, using Microsoft Clipchamp.

Instructions

- Guide students in selecting a science topic for their documentary. Discuss the key points they need to cover, such as the stages of the water cycle, the planets in the solar system, or the phases of plant life cycles.
- Encourage students to discuss their chosen topic in groups. Share their initial thoughts and outline the main points they want to include in their documentary.
- Help students outline the content of their documentary. Discuss the structure, including an introduction, main content, and conclusion.
- Encourage students to write a script for their documentary. The script should include clear explanations and descriptions of the scientific concepts.
- Guide students in gathering visuals for their documentary, such as images, diagrams, and video clips. Ensure they know how to import these visuals into Clipchamp.
- Show students how to record a voiceover narration to accompany their visuals. Explain how to synchronise the audio with the visuals.

Activity 2

Create a 1–2-minute video highlighting your summer experiences. Select 10-15 personal photographs from summer activities, import them into a video editor software of your choice, Clipchamp or Canva, and arrange the images in a sequential storytelling format. Add transitions between photos, include a title, and enhance the video with background music to create an engaging presentation of your summer memories

Instructions

- Guide students in selecting 10-15 personal photographs from their summer activities. Discuss the importance of choosing images that represent different aspects of their summer experiences.
- Encourage students to organise their photos in a sequential storytelling format. Discuss how to create a narrative that flows smoothly from one image to the next.
- Demonstrate how to import photos into Clipchamp. Show students how to arrange the images on the timeline in the desired sequence.
- Guide students in adding transitions between photos in Clipchamp. Explain how transitions can enhance the flow of the video and make it more engaging.

- Show students how to add a title to their video in Clipchamp. Discuss the importance of a clear and engaging title that introduces the video.
- Guide students in adding background music to their video in Clipchamp. Discuss how music can set the tone and enhance the emotional impact of the video.
- Allow students to experiment with different transitions, titles, and music in Clipchamp or Canva. Encourage them to try out various features and ask questions.

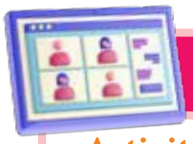
APPLICATION BASED QUESTIONS

Activity

Imagine you are tasked with creating an instructional video on using Clipchamp. The video needs to include visuals and text overlays. What steps would you take in Clipchamp to produce a clear and professional tutorial?

Instructions

- Explain the purpose of the video and the simple task they need to teach.
- Have students list the steps they will follow in Clipchamp, from importing media to adding text overlays.
- Assist students in writing a clear script that describes each step.
- Help students collect images or clips needed for the video.
- Show students how to import their visuals and voiceover into Clipchamp.
- Guide students in placing their clips on the timeline and editing them for smooth transitions.
- Demonstrate how to add titles and annotations to their video.
- Encourage students to review their video, make final adjustments, and save it.
- Show a simple example video with text overlays to make the task more concrete.
- Use sentence starters like "First, I would...", "Next, I need to...", "Then, I would add...", "Finally, I would...".
- Define "text overlay" and show examples to clarify.
- Encourage use of simpler terms and focus on the concept of the action.



GROUP PROJECT

Activity

Choose a book and create a video highlighting its key message and summary. Utilise various features of Microsoft Clipchamp to showcase the different opinions of the group about the book.

Instructions

- Guide students in selecting a book for their video project. Discuss the criteria for choosing a book, such as its relevance, themes, and impact.
- Encourage students to discuss their chosen book in groups. Share their initial thoughts and opinions about the book's key message and summary.
- Help students outline the content of their video. Discuss the structure, including an introduction, key message, summary, and different opinions.
- Encourage students to write a script for their video. The script should include clear explanations and descriptions of the book's key message and summary, as well as different opinions from the group.
- Guide students in gathering visuals for their video, such as images of the book cover, illustrations, and relevant scenes. Check if the students recall how to import these visuals into Clipchamp.
- Demonstrate how to import the gathered visuals and recorded voiceover into Clipchamp.
- Guide students in arranging their clips on the timeline. Explain how to trim and split clips to ensure smooth transitions.
- Check if students can recall how to add text overlays (titles) to their video.
- Encourage students to add visuals, such as arrows or highlights, to draw attention to important areas on the screen.

Engagement Activities

Activities for 'Creating Media'

- **Video Storyboard Planning**

  Students create a storyboard for a short video on a topic of their choice (e.g., 'My Favorite Hobby' or 'A Day in My Life'). They sketch scenes, plan text overlays, and choose transitions before using Clipchamp.

- **Exploring Clipchamp's Interface**

  Guide students to sign in to Microsoft Clipchamp and explore its interface. Assign a scavenger hunt where they find and describe tools like the content sidebar, transitions, text effects, and saving options.

- **Editing Challenge - Creating a Short Video**

  Students use a template in Clipchamp to create a 30-second video with at least one transition, fade effect, visual, and text overlay. They save and share their video with the class.

- **Text and Visual Effects Experiment**

  Students apply different fonts, colors, and animations to text in a sample video. They compare and discuss which effects make the video more engaging.

- **Peer Review and Feedback**

  Students exchange videos with a classmate and give constructive feedback on visuals, transitions, and overall presentation. They reflect on what worked well and what could be improved.

- **Application-Based Questions**

  1. Why is video editing important for sharing ideas effectively?
  2. What are the key steps in creating a video using a template in Clipchamp?
  3. How do transitions and fade effects enhance a video? Give an example.
  4. Why is it important to add text overlays in a video?
  5. How does saving options in Clipchamp help in sharing and using a video later?

- **Riddles**

  1. I help tell a story without speaking, I can be edited but never spoken. What am I?
     Answer: A video.
  2. I bring pictures to life and help ideas flow, with just a click, I make scenes go. What am I?
     Answer: A transition effect.

3. I make words appear on the screen, to explain, describe, or make things seen. What am I?
   Answer: A text overlay.
4. I store your creations, big or small, so you can watch or edit them all. What am I?
   Answer: The saving option.

Answer for Exercise

- **Choose the Correct option**

a. Property panel
b. Text tab
c. Content library tab
d. Find the right video template

- **Answer the following questions:**

a. Media files can be imported into Clipchamp by clicking on the 'Your media' tab in the content sidebar. From there, you can drag and drop files directly into the media library or click the 'Add media' button to browse and select files from your computer.

b. Clipchamp offers a variety of editing tools to enhance a video, including:
   - **Trimming and splitting:** Cut and divide video clips to remove unwanted sections.
   - **Transitions:** Add smooth transitions between clips to improve the flow of the video.
   - **Text overlays:** Add titles, captions, and text to highlight important information.
   - **Audio adjustments:** Adjust the volume, add background music, and apply audio effects.
   - **Visual effects:** Apply filters, adjust colors, and add visual effects to enhance the video's appearance.
   - **Speed control:** Adjust the playback speed of video clips for slow-motion or fast-motion effects.

c. It is possible to add text and transitions to a video in Clipchamp. To add text, go to the 'Text' tab in the content sidebar, choose a text style, and drag it onto the timeline. Customise the text by editing its properties in the property panel. To add transitions, go to the 'Transitions' tab, select a transition style, and drag it between two clips on the timeline.

d. To export a finished video from Clipchamp, follow these steps:
   - Click the 'Export' button located at the top right corner of the screen.
   - Choose the desired resolution and quality settings for your video.
   - Click the 'Export' button again to start the export process.
   - Once the export is complete, you can download the video file to your computer or share it directly to social media platforms.

e. To add and customise text overlays in a video project using Microsoft Clipchamp, follow these steps:
   - Go to the 'Text' tab in the content sidebar.
   - Choose a text style from the available options.
   - Drag the selected text style onto the timeline where you want the text to appear.
   - Click on the text clip in the timeline to open the property panel.
   - Customise the text by editing its content, font, size, color, and other properties in the property panel.
   - Adjust the duration and position of the text clip on the timeline to ensure it appears at the right moment in the video.

CHAPTER 3

HOW ARE PRODUCTS SOLD? MARKETING; DIGITAL MARKETING

Lesson Objectives

By the end of the chapter, students will:

- Compare traditional sales and marketing with digital marketing and explain the importance of the internet for business.
- Outline the key steps in developing an online business strategy, including goal setting, market identification, trend research, branding, and customer engagement.
- Identify and describe various digital marketing channels, including search engines (SEO and SEM), websites, social media, and email, and explain how social media interactions and algorithms build community and promote businesses.
- Describe customer journey touchpoints (awareness, consideration, purchase, post-purchase), define unique selling points and digital messages, and identify common digital threats.

Lesson plan 1

Topics: How are products sold? Marketing; Digital Marketing

Page number: 26-27

Core Competencies

- **Critical Thinking & Problem Solving:** Students will explore how marketing decisions affect people's choices and analyse the difference between honest and manipulative advertising.
- **Communication & Collaboration:** Through group work and creative tasks, students will share and build ideas about how to market a product responsibly.
- **Digital Literacy:** Students will be introduced to basic digital marketing techniques and how digital platforms are used to promote products.
- **Ethical and Responsible Decision-Making:** Students will reflect on fairness, honesty, and the social responsibility that comes with influencing others through advertisements.

Learning Outcomes

Students will be able to:

- Describe the steps involved in marketing a product.
- Explain the difference between traditional and digital marketing.
- Recognise how marketing influences choices and behaviours.
- Demonstrate awareness of ethical marketing practices.

Resources

- Textbook (pp. 26–27)
- Chart paper, whiteboard, and markers
- Real and mock advertisements (magazine clippings, online ad screenshots, posters)
- Optional: Short explainer video on digital marketing (1–2 mins)
- Exit slips or index cards

Methodology

- **Topical Background**

  Before class, teachers may review the evolution from traditional to digital marketing. Basic concepts to understand:

  a. Traditional marketing includes TV, newspapers, flyers, posters, word-of-mouth.

  b. Digital marketing includes online ads, social media posts, email newsletters, search engine results.

  c. Modern marketing is targeted—based on what people like or search online.

  d. Ethical marketing respects consumers and avoids manipulation.

- **Introduction**

  Begin with a relatable hook: ask students, 'Have you ever seen an ad that made you really want something—even if you didn't need it?' Use an analogy: marketing is like telling a story that makes people care about something they may not have noticed before. Show two contrasting ads—one from a newspaper (or a poster), and one from YouTube or a game app. Ask:

- Where did you see this?
- What did the ad want you to do?
- Was it fun, persuasive, annoying, or helpful?

  Lead into the idea that marketing isn't just about selling—it's about understanding people. Students can read the topics from pages 26-27.
- **Guided Practice**

  Using the textbook and a whiteboard, guide students through the 4 P's of Marketing—Product, Price, Place, Promotion. Use an example they know: selling lemonade at school. Walk through the P's:
  - **Product:** What kind of lemonade? Flavoured or plain?
  - **Price:** How much will it cost?
  - **Place:** Where will you sell it—playground or school gate?
  - **Promotion:** How will you let people know? Posters? Morning announcements?

  Now relate this to **digital marketing:**
  - What if you made a video about your lemonade stand and shared it on a class blog or school newsletter?
  - What if a game app showed ads for your lemonade?

  Introduce the idea that digital marketing helps people reach more people, faster, but also comes with the responsibility of being honest and respectful
- **Interactive Group Activity**

  Break the class into groups. Assign each group a product (e.g., reusable water bottle, healthy snack box, pencil case). Their task:
  1. Come up with a simple product idea.
  2. Design a traditional marketing strategy (poster, slogan, jingle).
  3. Create a digital marketing idea (short script for a video, social media post idea, or ad banner).

  Encourage creativity and value-based thinking:
- How will your ad help people, not just sell something?
- Will it be fair? Will it give the full truth?

  Let each group present or display their ideas briefly. Reinforce ethical thinking during their presentations.
- **Challenge Task**

  Individually, students complete the following:
  - Invent a brand-new snack or toy.
  - Write one sentence for a traditional ad and one for a digital ad.
  - Write one way they will make sure their ad is respectful and honest.

  This encourages individual reflection and builds on group learning.
- **Wrap-up and Exit Ticket**

  Ask reflective questions:
- Why do companies market products in different ways?

- How can ads affect our decisions—even if we don't realise it?
- Why is it important to be truthful in marketing?

On an exit slip or index card, students write one thing they learned and one thing they're still curious about. Students can now answer question 2a on page 36.

Performance Indicators

Students can:

- explain marketing strategies in their own words.
- apply the 4 P's and identify digital marketing platforms.
- demonstrate ethical awareness in ad design and reflection.
- participate actively and creatively in collaborative work.

Lesson Plan 2

Topic: Use of the Internet for business; Online business strategy

Page number: 27-28

Core Competencies

- **Critical Thinking:** Students will learn to analyse information, identify patterns, and make informed decisions about online business strategies.
- **Digital Literacy:** Students will develop skills to effectively use digital tools and resources, understanding how the Internet can be leveraged for business purposes.
- **Communication:** Students will practice articulating their ideas clearly and effectively, both in written and verbal forms, particularly in the context of presenting business strategies.
- **Creativity:** Students will be encouraged to think outside the box, developing innovative ideas for online business strategies and branding.

Learning Outcomes

Students will be able to:

- Understand the basic concepts of online business strategies.
- Identify goals for an online business.
- Recognise the importance of market research and trend analysis.
- Develop a simple online business strategy.
- Understand the basics of branding and customer engagement.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online tools

Methodology

- **Background Information**

  Understanding how to use the Internet for business is crucial in today's digital age. Online business strategies involve setting clear goals, identifying the target market, researching current trends, developing a comprehensive strategy, and engaging with customers through effective branding. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about how businesses operate online.

- **Introduction**

  Begin by discussing how the Internet has transformed business operations. Use engaging analogies, such as comparing traditional brick-and-mortar stores to online marketplaces like Amazon. Show a short video clip highlighting successful online businesses and their strategies. Explain the importance of having a strategy for online business success, using simple examples like setting goals for a lemonade stand.

- **Guided Practice**

  Introduce the concept of setting goals for an online business. Discuss different types of goals (e.g., increasing sales, building brand awareness). Provide a worksheet with examples of business goals and have students identify potential goals for a hypothetical online business.

  Walk through the process of setting SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound) with the class.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to research current market trends using the Internet. Provide specific websites and tools for research. Have each group present their findings to the class, focusing on how these trends could impact online business. Encourage students to use visual aids like charts or graphs. Facilitate a class discussion on the importance of being updated with market trends and how businesses adapt to changes.

- **Challenge Task**

  Ask students to develop a basic online business strategy for a hypothetical product or service. This should include identifying the target market, researching trends, and outlining a branding and customer engagement plan. Provide a template for the business strategy and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to brainstorm unique branding ideas and customer engagement tactics, such as social media campaigns or loyalty programs.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about online business strategies. Collect exit tickets and address any remaining questions in the next class. Students can now answer question 2c on page 36.

Performance Indicators

Students can:

- articulate the importance of having goals for an online business.
- identify and analyse market trends.

- develop a basic online business strategy.
- explain the role of branding and customer engagement in online business.

Lesson Plan 3

Topics: Digital marketing channels

Page: 29-30

Core Competencies

- **Critical Thinking:** Students will analyse various digital marketing channels and evaluate their effectiveness.
- **Digital Literacy:** Students will learn to navigate and utilise different digital platforms for marketing purposes.
- **Communication:** Students will develop skills to create and share marketing messages across various channels.
- **Creativity:** Students will be encouraged to design innovative marketing strategies and content.

Learning Outcomes

Students will be able to:

- Understand the basic concepts of digital marketing channels.
- Differentiate between SEO (Search Engine Optimisation) and SEM (Search Engine Marketing).
- Recognise the role of websites, social media, and email in digital marketing.
- Develop a simple digital marketing plan using multiple channel.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online tools

Methodology

- **Background Information for Teachers**

  Digital marketing channels are essential tools for businesses to reach and engage with their customers. SEO and SEM help businesses improve their visibility on search engines, while websites serve as the online presence of a business. Social media platforms allow businesses to connect with their audience, and email marketing helps maintain customer relationships. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about how businesses use digital marketing.

- **Introduction**

  Start with a discussion on how businesses use the Internet to reach customers. Use engaging analogies, such as comparing digital marketing to spreading the word about a school event. Show a short video clip that explains digital marketing channels in a fun and engaging way. Explain the importance of digital marketing and how it helps businesses grow.

- **Guided Practice**

  Introduce the concepts of SEO and SEM. Use simple examples to explain how search engines work and how businesses can improve online visibility. Provide a worksheet with examples of SEO and SEM strategies. Have students identify which strategies belong to SEO and which to SEM. Walk through the process of optimising a website for search engines with the class, using a hypothetical business.

- **Interactive Exploration**

  Divide students into small groups and assign each group a digital marketing channel to explore (e.g., websites, social media, email). Have each group research their assigned channel and create a short presentation on how it can be used for marketing. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the strengths and weaknesses of each channel and how they can be used together for a comprehensive marketing strategy.

- **Challenge Task**

  Ask students to develop a basic digital marketing plan for a hypothetical product or service. This should include SEO, SEM, websites, social media, and email strategies. Provide a template for the marketing plan and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to brainstorm unique marketing ideas and content, such as social media posts, email newsletters, and website designs.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about digital marketing channels. Collect exit tickets and address any remaining questions in the next class. Students can now answer question 2d on page 36 and do activities 1-4 of Application-based questions on page 37.

Performance Indicators

Students can:

- articulate the importance of digital marketing channels.
- differentiate between SEO and SEM.
- develop a basic digital marketing plan.
- explain the role of websites, social media, and email in digital marketing.

Lesson 4

Topic: Social Media Interactions; Touchpoints; Unique selling points

Page: 31-33

Core Competencies

- **Critical Thinking:** Students will analyse how social media algorithms influence business promotion and community building.
- **Digital Literacy:** Students will learn to navigate and utilise various digital marketing tools and platforms.
- **Communication:** Students will develop skills to create and share engaging digital messages across different touchpoints.

- **Creativity:** Students will be encouraged to design unique selling points and innovative content for digital marketing.

Learning Outcomes

Students will be able to:

- Understand how social media interactions can build community and promote business.
- Recognise the role of algorithms in social media marketing.
- Identify different touchpoints in the customer journey.
- Develop strategies for awareness, consideration, purchase, and post-purchase stages.
- Create unique selling points and digital messages.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online tools

Methodology

- **Background Information for Teachers**

  Social media interactions are crucial for businesses to build a community and promote their products or services. Algorithms help businesses reach their target audience more effectively. Understanding touchpoints in the customer journey—awareness, consideration, purchase, and post-purchase—allows businesses to create tailored strategies for each stage. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about how businesses use social media and other digital marketing tools.

- **Introduction**

  Start with a discussion on how businesses use social media to connect with their audience. Use engaging analogies, such as comparing social media interactions to making friends at school. Show a short video clip that explains social media algorithms and how they help businesses reach more people. Explain the importance of building a community and promoting business through social media.

- **Guided Practice**

  Introduce the concept of touchpoints in the customer journey. Discuss the different stages: awareness, consideration, purchase, and post-purchase. Provide a worksheet with examples of touchpoints and have students identify which stage each touchpoint belongs to. Walk through the process of creating a social media post for each stage, using a hypothetical business.

- **Interactive Exploration**

  Divide students into small groups and assign each group a touchpoint to explore (e.g., social media, SEO, PPC advertising, content marketing). Have each group research their assigned touchpoint and create a short presentation on how it can be used to build community and promote business. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the strengths and weaknesses of each touchpoint and how they can be used together for a comprehensive marketing strategy.

- **Challenge Task**

  Ask students to develop a basic digital marketing plan for a hypothetical product or service, focusing on social media interactions and touchpoints. This should include strategies for awareness, consideration, purchase, and post-purchase stages. Provide a template for the marketing plan and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to brainstorm unique selling points and digital messages, such as catchy slogans, engaging social media posts, and personalised email campaigns.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about social media interactions and touchpoints. Collect exit tickets and address any remaining questions in the next class. Students can now answer questions 2b,e, and f on page 36 and perform practice activity 5 of the Application-based question and group Project activity on page 37.

Performance Indicators

Students can:

- articulate the importance of social media interactions in building community and promoting business.
- identify and analyse different touchpoints in the customer journey.
- develop a basic digital marketing plan focusing on social media interactions.
- create unique selling points and digital messages.

Lesson Plan 5

Topic Digital Threats

Page 33-34

Core Competencies

- **Critical Thinking:** Students will learn to identify and evaluate potential digital threats.
- **Digital Literacy:** Students will develop skills to navigate the Internet safely and recognise harmful content.
- **Communication:** Students will practice articulating their understanding of digital threats and how to avoid them.
- **Problem-Solving:** Students will be encouraged to think of solutions and preventive measures against digital threats.

Learning Outcomes

Students will be able to:

- Understand the different types of digital threats.
- Recognise the risks associated with email attachments, fake websites, software downloads, removable media, outdated software, and malicious ads.
- Develop strategies to protect against digital threats.
- Learn safe practices for using digital devices and the Internet.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online tools

Methodology

- **Background Information for Teachers**

  Digital threats are a significant concern in today's connected world. Email attachments, fake websites, software downloads, removable media, outdated software, and malicious ads can threaten users. Understanding these threats and learning how to protect against them is crucial for safe Internet use. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about how to stay safe online.

- **Introduction**

  Begin by discussing the importance of Internet safety. Use engaging analogies, such as comparing digital threats to real-world dangers like crossing the street without looking. Then, show a short video clip that explains different types of digital threats in a fun and engaging way. Explain the importance of being aware of digital threats and how to protect oneself online.

- **Guided Practice**

  Introduce the concept of email attachments and the risks they can pose. Discuss how to identify suspicious attachments and what to do if one is received. Provide a worksheet with examples of safe and unsafe email attachments. Have students identify which attachments are safe and which are not. Walk through the process of checking an email attachment for safety with the class, using a hypothetical scenario.

- **Interactive Exploration**

  Divide students into small groups and assign each group a digital threat to explore (e.g., fake websites, software downloads, removable media, outdated software, malicious ads). Have each group research their assigned threat and create a short presentation on how to recognise and avoid it. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of staying vigilant and how to implement safe practices.

- **Challenge Task**

  Ask students to develop a safety plan for using digital devices and the Internet. This should include strategies for avoiding email attachments, fake websites, unsafe software downloads, risky removable media, outdated software, and malicious ads. Provide a template for the safety plan and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to brainstorm unique safety tips and preventive measures, such as creating strong passwords and regularly updating software.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about digital threats. Collect exit tickets and address any remaining questions in the next class. Students can now answer question 1 on page 35-36.

Performance Indicators

Students can:

- articulate the importance of Internet safety.
- identify and evaluate different types of digital threats.
- develop a safety plan for using digital devices and the Internet.
- explain safe practices for avoiding digital threats.

APPLICATION BASED QUESTIONS

Activity 1

Imagine you are in charge of promoting a school fun fair online. What digital tools would you use to let everyone know about exciting games and activities?

Instructions

- Discuss the basics of digital marketing and how it helps in reaching a wider audience.
- Explain the use of the Internet for business and the role of online strategies.
- Guide students through the steps of developing an online strategy :
  - ✓ **Goals:** Define clear goals for the fun fair promotion (e.g., increasing attendance, engaging the community).
  - ✓ **Identify Market:** Identify the target audience (e.g., students, parents, local community).
  - ✓ **Develop Strategy:** Develop a strategy that includes branding and customer engagement.
- Have students create a worksheet to outline their strategy.
- Introduce key digital marketing channels:
  - ✓ **Social Media:** Explain how social media platforms can be used to engage the community and promote the event.
  - ✓ **Email:** Discuss the use of email marketing to inform and remind people about the fun fair.
- Have students choose which channels they will use for their campaign.
- Explain how social media interactions can build a community and promote the event.
- Encourage students to create social media posts and plan interactions to engage their audience.

- Discuss the concept of touchpoints and their importance in digital marketing:
  - ✓ **Awareness:** Use social media and email to create awareness.
  - ✓ **Engagement:** Provide information and engage potential attendees.
  - ✓ **Follow-Up:** Follow up with attendees to maintain engagement.
- Have students plan touchpoints for their campaign.
- Explain the importance of unique selling points (USPs) and how to createcompelling digital messages.
- Have students identify the USPs of the fun fair and draft digital messages.
- Have students create their digital marketing campaign using the tools and strategies discussed.
- Encourage them to share their campaign with the class and explain their choices.

Activity 2

Your class is organising a virtual talent show, and you need to spread the word to students and parents. What digital marketing ideas can you come up with to ensure everyone knows about the event?

Instructions

- Discuss the basics of digital marketing and how it helps in reaching a wider audience.
- Explain the use of the Internet for business and the role of online strategies.
- Guide students through the steps of developing an online strategy:
  - ✓ **Goals:** Define clear goals for the talent show promotion (e.g., increasing participation, engaging the community).
  - ✓ **Identify Market:** Identify the target audience (e.g., students, parents, local community).
  - ✓ **Develop Strategy:** Develop a strategy that includes branding and customer engagement.
- Have students create a worksheet to outline their strategy.
- Introduce key digital marketing channels:
  - ✓ **Social Media:** Explain how social media platforms can be used to engage the community and promote the event.
  - ✓ **Email:** Discuss the use of email marketing to inform and remind people about the talent show.
- Have students choose which channels they will use for their campaign.
- Explain how social media interactions can build a community and promote the event.
- Encourage students to create social media posts and plan interactions to engage their audience.
- Discuss the concept of touchpoints and their importance in digital marketing:
  - ✓ **Awareness:** Use social media and email to create awareness.

- ✓ **Engagement:** Provide information and engage potential participants and attendees.
- ✓ **Follow-Up:** Follow up with participants and attendees to maintain engagement.

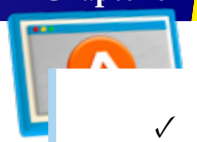
- Have students plan touchpoints for their campaign.
- Explain the importance of unique selling points (USPs) and how to create compelling digital messages.
- Have students identify the USPs of the talent show and draft digital messages.

Activity 3

You are starting a club for students who love reading adventure books. How could you use the Internet to find new members and share your favorite book recommendations?

Instructions

- Start with a brainstorming session where students discuss their favourite adventure books and why they love them.
- Encourage students to think about what makes a book exciting and how they can share this excitement with others.
- Guide students to create an online presence for their reading club:
  - ✓ **Social Media Profiles:** Set up profiles on popular social media platforms (e.g., Instagram, Facebook) to connect with other book lovers.
  - ✓ **Blog or Website:** Create a simple blog or website where they can post book reviews, recommendations, and club updates.
- Encourage students to create engaging content to attract new members:
  - ✓ **Book Reviews:** Write short reviews of their favourite adventure books and post them online.
  - ✓ **Book Trailers:** Create video trailers for books using simple video editing tools.
  - ✓ **Interactive Posts:** Design quizzes, polls, and challenges related to adventure books to engage their audience.
- Introduce students to online forums and groups where book lovers gather:
  - ✓ **Book Discussion Forums:** Join forums like Goodreads to discuss adventure books and invite members to join the club.
  - ✓ **Social Media Groups:** Participate in relevant social media groups and share club information.
- Teach students how to use email to reach out to potential members:
  - ✓ **Newsletter:** Create a monthly newsletter with book recommendations, club activities, and upcoming events.
  - ✓ **Invitation Emails:** Write personalized emails inviting friends and family to join the club.
- Discuss the importance of collaborating with local libraries and schools:
  - ✓ **Library Partnerships:** Partner with local libraries to host virtual book readings and discussions.



- ✓ **School Announcements:** Use school newsletters and announcements to promote the club.

- Guide students on how to share their book recommendations effectively:
  - ✓ **Social Media Posts:** Share book recommendations with engaging visuals and captions.
  - ✓ **Blog Posts:** Write detailed blog posts about their favourite books and why others should read them.
  - ✓ **Video Reviews:** Record video reviews and share them on social media and the club's website.
- Discuss online safety and etiquette:
  - ✓ **Privacy:** Teach students to protect their personal information online.
  - ✓ **Respectful Communication:** Encourage respectful and positive interactions with others.

Activity 4

How can you create an exciting digital message to tell students about the club for reading adventure books?

Instructions

- Use a headline that grabs attention and sparks curiosity. For example:
  - ✓ **'Join the Adventure:** Discover Amazing Books with Our Reading Club!'
  - ✓ '**Dive into Exciting Adventures:** Join Our Book Club Today!'
- Briefly explain what the club is about and why it's exciting. Highlight the fun aspects of reading adventure books.
- Tell students what they can gain from joining the club. Focus on the fun and engaging activities.
- Use colourful and exciting images or graphics related to adventure books. Visuals can make your message more appealing.
- Encourage students to join the club and participate in the activities. Make it easy for them to sign up.
- Include a few book recommendations to give students a taste of what they can expect.
- Make your message interactive by adding quizzes, polls, or challenges related to adventure books.
- Here is a sample digital message:

Join the Adventure: Discover Amazing Books with Our Reading Club!

Our club is all about exploring thrilling adventures through books! Whether you love tales of daring heroes, mysterious journeys, or magical worlds, we've got something for you!

Why Join?

- Share your favourite books
- Participate in fun discussions

- Participate in fun discussions
- Create your own book trailers
- Make new friends who love adventure stories

Ready to start your adventure? Click here to join our club and dive into the world of amazing books!

Book Recommendations:

- Harry Potter and the Sorcerer's Stone
- Percy Jackson and the Olympians
- The Chronicles of Narnia

Interactive Fun:

- Take our fun quiz to find out which adventure book character you are!
- Vote for your favourite book in our poll!

Activity 5

You want to help your friend who makes delicious virtual cookies get more customers. What online platforms and strategies would you suggest to make more people aware of these yummy treats?

Instructions

- Start with a brainstorming session where students discuss their favourite types of cookies and why they love them.
- Encourage students to think about what makes cookies appealing and how they can share this excitement with others.
- Guide students to create an online presence for the virtual cookies:
  - ✓ **Social Media Profiles:** Set up profiles on popular social media platforms (e.g., Instagram, Facebook) to connect with potential customers.
  - ✓ **Website:** Create a simple website using platforms like Wix or Shopify to showcase the cookies, provide detailed descriptions, and allow customers to place orders online.
- Encourage students to create engaging content to attract new customers:
  - ✓ **Photos and Videos:** Share high-quality photos and videos of the cookies, the baking process, and happy customers enjoying the treats.
  - ✓ **Interactive Posts:** Design quizzes, polls, and challenges related to cookies to engage their audience.
- Introduce students to online marketplaces where they can list the cookies.
- Teach students how to use email to reach out to potential customers:
  - ✓ **Newsletter:** Create a monthly newsletter with updates, new flavours, special offers, and customer testimonials.

- ✓ **Invitation Emails:** Write personalised emails inviting friends and family to try the cookies.

- Discuss the importance of collaborations and influencers in digital marketing. Talk to students about partnering with food bloggers and influencers to review the cookies and share them with their followers.
- Explain how promotions and discounts can attract new customers:
  - ✓ **Special Offers:** Run promotions like "Buy One, Get One Free" or discounts for first-time customers.
  - ✓ **Contests and Giveaways:** Host contests and giveaways on social media to increase engagement and attract new followers.
- Discuss the importance of customer engagement and how to maintain it:
  - ✓ **Reviews and Testimonials:** Encourage satisfied customers to leave reviews and testimonials on your website and social media pages.
  - ✓ **Loyalty Programs:** Create a loyalty program to reward repeat customers with discounts or free cookies.
- Have students share their digital marketing campaigns with the class and explain their choices.
- Facilitate a discussion on what they learned about digital marketing and how they can apply these strategies to other projects.

GROUP PROJECT

Activity

Design a digital marketing campaign for a fictional online business that offers virtual art and craft classes. Consider the target audience, unique selling points, and the use of various digital marketing channels. Each group member can contribute ideas for social media posts, email promotions, and website content. Present your campaign plan to the class, explaining how it will work.

Instructions

- Divide students into small groups.
- Each group will brainstorm ideas for their fictional online business, focusing on the types of art and craft classes they will offer.
- Encourage students to think about what makes their classes unique and appealing.
- Guide each group to identify their target audience. Consider factors such as age, interests, and needs.
- Have students create a profile of their ideal customer (e.g., children who love crafting, parents looking for creative activities for their kids).
- Each group will identify the unique selling points (USPs) of their virtual art and craft classes. What makes their classes special?

- Examples of USPS could include personalised instruction, interactive sessions, or exclusive materials.
- Introduce various digital marketing channels and discuss their benefits:
  - ✓ **Social Media**: Platforms like Instagram, Facebook, and TikTok for engaging visuals and videos.
  - ✓ **Email:** Newsletters and promotional emails to keep customers informed.
  - ✓ **Website:** A user-friendly website to showcase classes and allow easy sign-ups.
- Each group will choose the channels they will use for their campaign.
- Each group member will contribute ideas for social media posts:
  - ✓ **Photos and Videos:** Share images and videos of art and craft projects, class highlights, and student creations.
  - ✓ **Interactive Posts:** Design quizzes, polls, and challenges related to art and craft to engage the audience.
- Groups will create a content calendar for their social media posts.
- Each group member will contribute ideas for email promotions:
  - ✓ **Newsletter:** Create a monthly newsletter with updates, new
- classes, special offers, and student testimonials.
  - ✓ **Invitation Emails:** Write personalised emails inviting potential
- customers to join the classes.
- Each group member will contribute ideas for email promotions:
  - ✓ **Newsletter:** Create a monthly newsletter with updates, new classes, special offers, and student testimonials.
  - ✓ **Invitation Emails:** Write personalised emails inviting potential customers to join the classes.
- Groups will draft sample emails and plan their email campaign.
- Each group member will contribute ideas for website content:
  - ✓ **Class Descriptions:** Write detailed descriptions of the art and craft classes offered.
  - ✓ **Instructor Bios:** Introduce the instructors and their expertise.
  - ✓ **Blog Posts:** Create blog posts about art and craft tips, project ideas, and success stories.
- Groups will design a layout for their website and plan the content.
- Each group will prepare to present their digital marketing campaign to the class.
- Groups will explain their target audience, USPs, chosen digital marketing channels, and sample content.
- Have each group present their digital marketing campaign to the class.
- Facilitate a discussion on the different strategies used and what they learnedabout digital marketing.

Engagement Activities

- **'Build a Sales Journey' Role-Play**

  In small groups, assign each student a role (Customer, Sales Rep, Marketing Manager). Walk through the steps from 'awareness' to 'purchase,' using simple props (product cards, money tokens). See how marketing messages feed into sales conversations.

- **Digital vs. Traditional Poster Challenge**

  Split the class in two: one group designs a traditional marketing poster (flyer), the other a digital ad mock-up (e.g. Instagram post). Compare reach, cost, and creativity. Spot the differences in channels, costs, and audience targeting.

- **Marketing Jigsaw**

  Prepare puzzle pieces labeled with steps (research → strategy → execution → analysis). Teams race to assemble the 'process puzzle' in the right order. Internalise the four key phases of any marketing plan.

- **'Your Own Mini-Startup Simulation**

  Give each pair a random product (e.g., eco-friendly water bottle). Define 1) goal (awareness vs. sales), 2) target market, 3) three trend insights (use tablets to look up Google Trends), 4) one branding idea, and 5) engagement tactic. Practice all five strategy steps end-to-end.

- **Market Detective**

  Provide printouts of social-media screenshots, customer reviews, and trend graphs. Students identify which market segment each item belongs to and suggest one strategic response. Learn to interpret real-world data.

- **Branding Collage**

  Magazines, colored paper, markers. Create a visual collage that represents a company's personality (logo ideas, hashtag, slogan). Understand how branding and customer engagement go hand-in-hand.

- **Channel Scavenger Hunt**

  In a computer lab or with tablets, give each student a checklist: find one example of SEO-optimised article, one SEM ad, one engaging website homepage, one social-media campaign, and one marketing email. They screenshot or bookmark each example. Recognise real-world uses of each channel.

- **Algorithm Detective**

  Show a simplified flowchart of how an algorithm chooses posts. Give students different post examples (images, text, video) and have them predict which gets shown first, and why. Learn how content type and engagement influence reach.

- **Customer Journey Mapping**

  Flip-chart paper with three columns: Awareness → Consideration → Purchase → Post-Purchase. Teams pick a product and brainstorm one 'touchpoint' per stage (e.g., Instagram story ad, review article, checkout upselling, thank-you email). See how multiple digital messages guide a buyer.

- **USP & Message Sprint**

  Provide 3 common products (e.g., water bottles, sneakers, backpack). Each student writes a 1-sentence USP and a two-line digital message (ad copy) highlighting that USP. Share and vote on the most compelling. Practice crafting clear, unique digital messages.

- **Phishing Quiz Show**

  Project 5–6 screenshots of emails/websites—some real, some fake. In teams, buzz in to identify the threat (malicious ad, fake website, unsafe download). Build a quick 'threat radar.'

Answer for Exercise

- **Choose the correct option.**

  a. Promoting and selling products using the Internet
  b. It involves online promotion and selling
  c. Showcasing business in search results
  d. Search Engine Optimisation
  e. To customise products for different age groups
  f. What makes a business special and different
  g. They create a digital community

- **Answer the following questions.**

  a. Digital marketing is when a company uses the Internet—like websites, social media, or emails—to tell people about its products and help them buy online.

  b. Knowing their USP helps businesses show customers what makes them special. For example, if one bakery sells the fluffiest cupcakes, that is their USP—they can tell people, 'Buy from us because our cupcakes are fluffier than anyone else's!'

  c. Benefits of selling products online:
     - Reach more people: Anyone with the Internet can see the products.
     - Open all the time: Customers can shop day or night.
     - Lower costs: No big rent for a store, so prices can be smaller.
     - Easy to compare: Shoppers can look at different items quickly.

  d. They can use SEO (Search Engine Optimisation) so their website shows up near the top when someone types words like 'best sneakers' into Google or Bing. This helps more people find them.

  e. Role of social media interactions to promote online businesses:
     - Build community: Fans and customers can like, comment, and share.
     - Free word-of-mouth: When someone shares a post, their friends see it too.
     - Instant feedback: Businesses learn what people like or want more of.

  f. If they know who will buy their product—like students who love video games or parents looking for healthy snacks—they can make messages and products that fit exactly what those people want. This means happier customers and better sales!

CHAPTER
4

BUILDING A WEBSITE

Objectives

By the end of the chapter, students will:

- Describe the basic process of web development and explain the role of HTML.
- Identify and use fundamental HTML elements and tags (including containerelements) to structure a basic HTML document.
- Create HTML documents using a text editor (Notepad) and demonstrate how toview them in a web browser.
- Use Google Sites templates to create a website, customise the content, anddemonstrate how to preview and publish it.

Lesson Plan 1

Topic: HTML coding; HTML elements and tags; HTML Rules

Page: 38-40

Core Competencies

- **Critical Thinking:** Students will analyse the structure and components of web development.
- **Digital Literacy:** Students will learn the basics of HTML coding and understand how websites are created.
- **Communication:** Students will practice articulating their understanding of HTML elements and tags.
- **Creativity:** Students will be encouraged to design simple web pages using HTML.

Learning Outcomes

Students will be able to:

- Understand the basic concepts of web development.
- Learn the fundamentals of HTML coding.
- Identify and use HTML elements and tags.
- Understand container elements and HTML rules.
- Create a simple web page using HTML.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online coding tools

Methodology

- **Background Information**

  Web development is a fundamental skill in today's digital age. HTML coding is the backbone of web development, allowing developers to create structured and visually appealing web pages. Understanding HTML elements and tags, container elements, and HTML rules is crucial for creating functional and well - organised websites. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about how websites are developed.

- **Introduction**

  Begin with a discussion on how websites are developed. Use engaging analogies, such as comparing web development to building a house where HTML is the foundation. Show a short video clip that explains the basics of web development and HTML coding in a fun and engaging way. Explain the importance of HTML in creating web pages and how it serves as the building blocks of the Internet.

- **Guided Practice**

  Introduce the concept of HTML coding. Explain what HTML stands for (HyperText Markup Language) and its role in web development. Provide a worksheet with examples of HTML elements and tags. Have students identify and match elements with their corresponding tags. Walk through the process of writing basic HTML code with the class, using a simple example like creating a webpage with a heading and a paragraph.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to explore different HTML elements and tags (e.g., headings, paragraphs, links, images).Have each group research their assigned elements and create a short presentation on how they are used in web development. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of container elements and HTML rules, such as nesting tags correctly and using proper syntax.

- **Challenge Task**

  Ask students to create a simple web page using HTML. This should include a heading, paragraph, link, and image. Provide a template for the web page and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to design their web page layout and content, such as choosing colors, fonts, and images.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about HTML coding and web development. Collect exit tickets and address any remaining questions in the next class. Students can now answer 2a-c on page 54.

Performance Indicators

Students can:

- articulate the importance of HTML in web development.
- identify and use HTML elements and tags.
- create a simple web page using HTML.
- explain container elements and HTML rules.

Lesson Plan 2

Topic: Structure of an HTML document

Pag: 40-41

Core Competencies

- **Critical Thinking:** Students will analyse the structure and components of an HTML document.
- **Digital Literacy:** Students will learn the basics of HTML coding and understand how web pages are structured.
- **Communication:** Students will practice articulating their understanding of HTMl elements and document structure.
- **Creativity:** Students will be encouraged to design simple web pages using HTML.

Learning Outcomes

Students will be able to:

- Understand the basic structure of an HTML document.
- Learn the purpose and use of the <!DOCTYPE html> element.
- Identify and use the <html>, <title>, <p>, <hr>, and heading elements.
- Create a simple web page using these HTML elements.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to educational websites and online coding tools

Methodology

- **Background Information for Teachers**

  The structure of an HTML document is fundamental to web development. The <DOCTYPE html> element defines the document type, while the <html> element encloses all the content of the web page. The <title> element specifies the title of the web page, which appears in the browser tab. Paragraphs are created using the <p> element, horizontal rules with the <hr> element, and headings with <h1> to <h6> elements. Understanding these elements and their roles is crucial for creating structured and functional web pages. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about web development.

- **Introduction**

  Begin with a discussion on the structure of web pages. Use engaging analogies, such as comparing the structure of an HTML document to the blueprint of a building. Show a short video clip that explains the basic structure of an HTML document in a fun and engaging way. Explain the importance of HTML elements in creating structured web pages.

- **Guided Practice**

  Introduce the <DOCTYPE html> element. Explain its role in defining the document type and ensuring the web page is interpreted correctly by browsers. Provide a worksheet with examples of HTML document structures. Have students identify the <DOCTYPE html> element and its placement in the document. Walk through the process of writing basic HTML code with the class, starting with the <DOCTYPE html> element.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to explore different HTML elements <html> <title> <p> <hr>, headings). Have each group research their assigned elements and create a short presentation on how they are used in web development. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of each element and how they contribute to the structure of an HTML document.

- **Challenge Task**

  Ask students to create a simple web page using the HTML elements discussed. This should include the <DOCTYPE html> <html> <title> <p> <hr> and heading elements. Provide a template for the web page and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to design their web page layout and content, such as choosing colors, fonts, and images.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about the structure of an HTML document. Collect exit tickets and address any remaining questions in the next class. Students can now answer question 2don page 54.

Performance Indicators

Students can:

- articulate the importance of the <!DOCTYPE html> element.
- identify and use the <html> <title> <p> <hr> and heading elements.
- create a simple web page using these HTML elements.
- explain the structure of an HTML document.

Lesson Plan 3

Topic: Creating HTML docs in Notepad; Viewing HTML docs in Browser

Page: 42-45

Core Competencies

- **Critical Thinking:** Students will learn to follow steps and troubleshoot issues in HTML document creation.
- **Digital Literacy:** Students will develop skills to create and view HTML documents using basic tools.
- **Communication:** Students will practice articulating their understanding of HTML document creation and viewing.
- **Creativity:** Students will be encouraged to design simple web pages using HTML.

Learning Outcomes

Students will be able to:

- Understand the steps for creating HTML documents in Notepad.
- Learn how to view HTML documents in a web browser.
- Develop skills to troubleshoot and refine HTML code.
- Create and view a simple web page using HTML.

Resources

- Computers or tablets with Internet access
- Projector and screen

- Whiteboard and markers
- Printed handouts with key points
- Access to Notepad or any text editor
- Web browsers (e.g., Chrome, Firefox, Edge)

Methodology

- **Background Information for Teachers**

  Creating HTML documents in Notepad is a fundamental skill for web development. Notepad serves as a basic text editor where students can write HTML code. Viewing HTML documents in a web browser allows students to see the results of their code and troubleshoot any issues. Understanding these steps is crucial for developing functional and visually appealing web pages. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about web development.

- **Introduction**

  Begin with a discussion on the tools needed for web development. Use engaging analogies, such as comparing Notepad to a blank canvas for artists. Show a short video clip that explains the basics of creating and viewing HTML documents. Explain the importance of using text editors like Notepad for writing HTML code and web browsers for viewing the results.

- **Guided Practice**

  Introduce the steps for creating HTML documents in Notepad:

  - Open Notepad (or any text editor).
  - Type the basic HTML structure: html <DOCTYPE html> <html> <head> <title> My First Web Page <title> <head> <body>¨K8K ¨K9K <body> </html>
  - Save the file with a .html extension (e.g., mywebpage.html).

  Provide a worksheet with these steps and have students follow along to create their own HTML document. Walk through the process of saving the file and ensuring it has the correct extension.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to add different elements to their HTML document (e.g., images, links, lists). Have each group research how to add their assigned elements and create a short presentation on their findings. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of viewing HTML documents in a web browser and how it helps in troubleshooting and refining code.

- **Challenge Task**

  Ask students to create a more detailed web page using HTML, incorporating the elements they researched. This should include headings, paragraphs, images, links, and lists. Provide a template for the web page and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to design their web page layout and content, such as choosing colors, fonts, and images.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about creating and viewing HTML documents. Collect exit tickets and address any remaining questions in the next class. Students can now answer question 2e-f on page 54- 55, and do activities 1-2 from In the lab section and the Group Project on page 55.

Performance Indicators

Students can:

- articulate the steps for creating HTML documents in Notepad.
- view HTML documents in a web browser.
- troubleshoot and refine HTML code.
- create and view a simple web page using HTML.

Lesson Plan 4

Topic: Website Development Tools; Google Sites templates; interface

Page: 46-48

Core Competencies

- **Critical Thinking:** Students will analyse the features and benefits of various website development tools.
- **Digital Literacy:** Students will learn to use website development tools and understand their interfaces.
- **Communication:** Students will practice articulating their understanding of website development tools and interfaces.
- **Creativity:** Students will be encouraged to design simple websites using pre- designed templates and drag-and-drop interfaces.

Learning Outcomes

- Understand the basic concepts of website development tools.
- Learn to use pre-designed templates and drag-and-drop interfaces.
- Integrate Google services into a website.
- Navigate and use the interface of website development tools.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to website development tools (e.g., Wix, Weebly, Google Sites)

Methodology

- **Background Information**

  Website development tools are essential for creating functional and visually appealing websites. Pre-designed templates and drag-and-drop interfaces simplify the process, making it accessible for beginners. Integration of Google services enhances the functionality of websites. Understanding the interface of website development tools, including the dashboard, editor toolbar, sidebar, canvas, pages tab, themes tab, preview button, and publish button, is crucial for effective website creation.

This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about website development.

- **Introduction**

  Begin with a discussion on the importance of website development tools. Use engaging analogies, such as comparing pre-designed templates to building blocks and drag-and-drop interfaces to arranging furniture in a room. Show a short video clip that explains the basics of website development tools and their interfaces. Explain the benefits of using website development tools, such as ease of use and integration of Google services.

- **Guided Practice**

  Introduce pre-designed templates and drag-and-drop interfaces. Explain how these tools simplify the process of creating websites. Provide a worksheet with examples of pre-designed templates and drag-and-drop elements. Have students identify and match elements with their corresponding functions.Walk through the process of selecting a template and using the drag-and-drop interface to customise a website.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to exploredifferent features of website development tools (e.g., integration of Google services, dashboard, editor toolbar, sidebar, canvas, pages tab, themes tab, preview button, publish button). Have each group research their assigned feature and create a short presentation on how it is used in website development. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of each feature and how they contribute to the overall functionality of website development tools.

- **Challenge Task**

  Ask students to create a simple website using a website development tool. This should include selecting a template, using the drag-and-drop interface, and integrating Google services. Provide a template for the website and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to design their website layout and content, such as choosing themes, adding pages, and customising elements.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about website development tools and interfaces. Collect exit tickets and address any remaining questions in the next class. Students can now answer 2g on page 55.

Performance Indicators

Students can:

- articulate the importance of website development tools.
- use pre-designed templates and drag-and-drop interfaces.
- integrate Google services into a website.
- navigate and use the interface of website development tools.

Lesson Plan 5

Topic: Edit a template on Google Sites, Preview and publish website

Page: 49-53

Core Competencies

- **Critical Thinking:** Students will learn to follow steps and troubleshoot issues in editing Google Sites templates.
- **Digital Literacy:** Students will develop skills to edit and customise Google Sites templates.
- **Communication:** Students will practice articulating their understanding of website customisation.
- **Creativity:** Students will be encouraged to design and personalise their websites using Google Sites.

Learning Outcomes

- Understand the steps for editing a template on Google Sites.
- Learn how to update location and add contact information.
- Preview and publish a website using Google Sites.
- Develop skills to troubleshoot and refine website content.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to Google Sites

Methodology

- **Background Information**

  Editing templates on Google Sites is a fundamental skill for website customisation. Updating location and adding contact information are essential for making websites informative and user-friendly. Previewing and publishing websites allow students to see the results of their edits and make necessary adjustments before going live. Understanding these steps is crucial for developing functional and visually appealing websites. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about website customisation.

- **Introduction**

  Begin with a discussion on the importance of customising websites. Use engaging analogies, such as comparing website customisation to decorating a room. Show a short video clip that explains the basics of editing templates on Google Sites. Explain the benefits of using Google Sites for website creation and customisation.

- **Guided Practice**

  Introduce the steps for editing a template on Google Sites:

  - **Update Location:** Open Google Site and navigate to the section where you want to update the location. Click on the text box and enter the new location information.
  - **Add Contact Information:** Find the section for contact information. Click on the text box and enter the necessary details, such as phone number, email address, and physical address.
  - **Preview Website:** Click the 'Preview' button to see how the website looks with the updated information. Make any necessary adjustments.
  - **Publish Website:** Once satisfied with the changes, click the 'Publish' button. Choose a web address for your site and click 'Publish' again to make it live.

  Provide a worksheet with these steps and have students follow along to edit their own Google Sites template. Walk through the process of updating location and adding contact information with the class, using a simple example.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to explore different customisation options on Google Sites (e.g., changing themes, adding images, embedding videos). Have each group research their assigned customisation option and create a short presentation on their findings. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of previewing and publishing websites, and how these steps help in refining and finalising content.

- **Challenge Task**

  Ask students to customise a Google Sites template with updated location and contact information. This should include previewing and publishing the website. Provide a template for the website and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to personalise their website layout and content, such as choosing themes, adding pages, and customising elements.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question, they still have about editing templates on Google Sites. Collect exit tickets and address any remaining questions in the next class. Students can answer Question 1 on page 54, and practice activities 3-4 of In the lab on page 55.

Performance Indicators

Students can:

- articulate the steps for editing a template on Google Sites.
- update location and add contact information.
- preview and publish a website using Google Sites.
- troubleshoot and refine website content.

IN THE LAB

Activity 1

Farhan has to create a simple web page on the topic 'Our National Bird'. Set an image of the bird as the background. Help him create the web page and set suitable properties. Then view the page in a web browser.

Instructions

- Explain the structure of an HTML document, including the following
- elements:
- <DOCTYPE html> Defines the document type.
- <html> The root element of the HTML document.
- <head> Contains meta-information about the document.
- <title> Sets the title of the web page.
- <body> Contains the content of the web page.
- Guide students to open Notepad or any text editor.
- Have them type the basic structure of an HTML document:

```
1. <DOCTYPE html>
2. <html>
3. <head>
4. <title> Our National Bird <title>
5. </head>
6. <body>
7. <h1> Our National Bird </h1>
8. <p>The national bird of our country is the [Bird Name]. </p>
9. </body>
10. </html>
```

- Explain how to set an image as the background using CSS within the HTML document.
- Guide students to add the following code within the <head> section:

```
1. <style>
2. body {
• background-image: url(<path/to/bird-image.jpg>)
• background-size: cover;
3. }
4. </style>
```

- Help students add more content and set suitable properties:
- **Paragraphs:** Add more information about the national bird.

- **Headings:** Use different heading levels to organize the content.
- **Horizontal Rule:** Add a horizontal rule to separate sections.

```
<body>
<h1>Our National Bird</h1>
<p>The national bird of our country is the [Bird Name].</p>
<hr>
<h2>About the Bird</h2>
<p>[Information about the bird]</p>
</body>
```

- Guide students to save the HTML document with a .html extension.
- Have them open the saved file in a web browser to view the web page.

Activity 2

Rabia has learnt to create web pages in HTML. She has now been assigned to create a web page on 'School Sports Activities'. Set the background colour as pink, and use the activities that your school offers to create the text.

Instructions

- Explain the structure of an HTML document, including the following elements:
  - ✓ <!DOCTYPE html>: Defines the document type.
  - ✓ <html>: The root element of the HTML document.
  - ✓ <head>: Contains meta-information about the document.
  - ✓ <title>: Sets the title of the web page.
  - ✓ <body>: Contains the content of the web page.
- Guide students to open Notepad or any text editor.
- Have them type the basic structure of an HTML document:

```
<!DOCTYPE html>
<html>
<head>
  <title>School Sports Activities</title>
  <style>
    body {
      background-color: pink;
    }
  </style>
</head>
<body>
  <h1>School Sports Activities</h1>
  <p>Welcome to our school's sports activities page! Here are some of the exciting sports we offer:</p>
</body>
</html
```

- Help students add more content about the sports activities offered by their school:
  - ✓ Paragraphs: Add descriptions of each sport.
  - ✓ Headings: Use different heading levels to organize the content.
  - ✓ Lists: Create a list of sports activities.

```
</ul>
  <h2>Individual Sports</h2>
  <ul>
    <li>Track and Field</li>
    <li>Swimming</li>
    <li>Tennis</li>
  </ul>
  <h2>Other Activities</h2>
  <ul>
    <li>Yoga</li>
    <li>Dance</li>
    <li>Martial Arts</li>
  </ul>
</body>
```

- Guide students to save the HTML document with a .html extension.
- Have them open the saved file in a web browser to view the web page.

Activity 3

Faiza has to create a web page on the topic 'Historical Places that I Like'. Explain how to create a website using templates in Google sites. Which template would best fit in for this website.

Instructions

- Guide students to open Google Sites by going to sites.google.com.
- Have them sign in with their Google account.
- Explain how to choose a template from the Google Sites template gallery:
- Click on 'Template gallery' at the top of the page.
- Browse through the available templates and select one that fits the theme of historical places.
- For this activity, a template designed for showcasing historical sites or travel would be ideal
- Guide students through the process of customising the chosen template:
- Update Location: Add the location of each historical place.
- Add Images: Insert images of the historical places.
- Add Text: Write descriptions and interesting facts about each place.
- Set Background Color: Customise the background color to match the theme (e.g., a neutral or historical color palette).

- Show students how to edit the content on the template:
- Headings: Use headings to organize the content (e.g., 'Introduction', 'Historical Places', 'Interesting Facts').
- Paragraphs: Add detailed paragraphs about each historical place.
- Lists: Create lists to highlight key points or features of each place.
- Guide students to preview the website to see how it looks:
- Click on the 'Preview' button to view the website on different devices.
- Show them how to publish the website:
- Click on the 'Publish' button.
- Choose a web address and make the website live.
- Have students share their web pages with the class and explain the steps they took.
- Facilitate a discussion on what they learned about using templates in Google Sites and website development.

Activity 4

Which is your favourite outdoor game? Using Google Sites, create a web page on your favourite sports activity. You can use a blank template for this website.

Instructions

- Have students think about and choose their favorite outdoor game (e.g., soccer, basketball, cricket, tennis).
- Encourage them to gather images and information related to the game.
- Guide students to open Google Sites by going to sites.google.com.
- Have them sign in with their Google account.
- Show students how to create a new site using a blank template:
- Click on the 'Blank' template to start a new site.
- Guide students through the process of customising their web page:
  - ✓ Title: Add a title for the web page (e.g., 'My Favorite Outdoor Game: Soccer').
  - ✓ Background: Set a background color or image that represents the game.
  - ✓ Sections: Add sections to organize the content (e.g., Introduction, Rules, Equipment, Famous Players).
- Help students add content to their web page:
  - ✓ Text: Write descriptions and interesting facts about the game.
  - ✓ Images: Insert images related to the game (e.g., players, equipment, game scenes).
  - ✓ Videos: Embed videos that demonstrate how the game is played.
  - ✓ Lists: Create lists to highlight key points (e.g., rules, equipment needed).

- Show students how to edit and format the content:
  - ✓ Headings: Use headings to organize the content (e.g., 'Introduction', 'Rules').
  - ✓ **Paragraphs: Add detailed paragraphs about the game.**
  - ✓ **Bullet Points: Use bullet points to list rules or equipment.**
- Guide students to preview the website to see how it looks:
- Click on the 'Preview' button to view the website on different devices.
- Show them how to publish the website:
- Click on the 'Publish' button.
- Choose a web address and make the website live.
- Have students share their web pages with the class and explain the steps they took.
- Facilitate a discussion on what they learned about using Google Sites and website development.

GROUP PROJECT

Activity

Based on what you have learned so far about HTML, create two web pages about a topic of your choice, e.g. an endangered animal, a family pet, a classic car or a special celebration outfit. When creating your web pages think about your audience. Are you creating them for younger people? What difference will it make?

Instructions

- Have students choose a topic for their web pages. Examples include:
  - ✓ An endangered animal
  - ✓ A family pet
  - ✓ A classic car
  - ✓ A special celebration outfit
- Discuss how the audience influences the design and content of a web page.
- Ask students to decide who their audience will be (e.g., younger people, adults, enthusiasts).
- Have students create a brief profile of their audience, considering factors like age, interests, and needs.
- Guide students to open Notepad or any text editor.
- Have them type the basic structure of an HTML document:

```
<!DOCTYPE html>
<html>
<head>
  <title>[Topic] - Page 1</title>
  <style>
    body {
      background-color: lightblue;
      font-family: Arial, sans-serif;
    }
  </style>
</head>
<body>
  <h1>[Topic]</h1>
  <p>Welcome to the first page about [topic]. Here you will find interesting information about [topic].</p>
  <img src='path/to/image.jpg' alt='[Topic Image]' width='300'>
</body>
</html>
```

- Help students add more content and customise the web page:
  - ✓ Paragraphs: Add detailed information about the topic.
  - ✓ Headings: Use different heading levels to organize the content.
  - ✓ Lists: Create lists to highlight key points or features.
  - ✓ Images: Insert relevant images and set suitable properties.

```
body>
  <h1>[Topic]</h1>
  <p>Welcome to the first page about [topic]. Here you will find interesting information about [topic].</p>
  <img src='path/to/image.jpg' alt='[Topic Image]' width='300'>
  <h2>About [Topic]</h2>
  <p>[Detailed information about the topic]</p>
  <h2>Key Features</h2>
  <ul>
    <li>Feature 1</li>
 <li>Feature 2</li>
    <li>Feature 3</li>
  </ul>
</body>
```

- Guide students to create a second web page with a similar structure but different content:

```
<!DOCTYPE html>
<html>
<head>
  <title>[Topic] - Page 2</title>
  <style>
body {
        background-color: lightgreen;
        font-family: Arial, sans-serif;
    }
  </style>
</head>
<body>
  <h1>[Topic]</h1>
  <p>Welcome to the second page about [topic]. Here you will find more interesting information about [topic].</p>
  <img src='path/to/another-image.jpg' alt='[Topic Image]' width='300'>
</body>
</html>
```

- Help students add more content and customise the second web page:
  - ✓ Paragraphs: Add additional information or stories related to the topic.
  - ✓ Headings: Use different heading levels to organize the content.
  - ✓ Lists: Create lists to highlight key points or features.
  - ✓ Images: Insert relevant images and set suitable properties.

```
<body>
  <h1>[Topic]</h1>
  <p>Welcome to the second page about [topic]. Here you will find more interesting information about [topic].</p>
  <img src='path/to/another-image.jpg' alt='[Topic Image]' width='300'>
  <h2>More About [Topic]</h2>
  <p>[Additional information or stories about the topic]</p>
  <h2>Interesting Facts</h2>
  <ul>
```

```
    <li>Fact 1</li>
    <li>Fact 2</li>
<li>Fact 3</li>
  </ul>
</body>
```

- Guide students to save both HTML documents with .html extensions.
- Have them open the saved files in a web browser to view the web pages.

Engagement Activities

- ### How the Web Is Built Storyboard

  In small groups, students draw a comic-style storyboard that shows how a webpage travels from their computer, zooms across the Internet, and finally appears in a friend's browser. Using paper, markers, and sticky notes, they illustrate each step—writing code, sending it to a server, and then viewing it in a browser—so they can see the whole process as a fun picture story.

- ### HTML Coding Tag Treasure Hunt

  The teacher hides index cards around the room, each card showing a different HTML tag like <p>, <h1>, or
. Students receive a simple printed HTML page with blank spots where the tags belong. As they find each card, they place it in the correct blank on their page, learning which tags fit where as they race to complete their HTML file.

- ### Container House Model

  With a big shoebox labeled <html>, a medium box labeled <body>, and smaller boxes labeled or <p>, students build a 'container house' by nesting the boxes inside one another. This hands-on model helps them understand how container elements wrap around content and other tags, making the abstract idea of HTML structure into something they can touch and rearrange.

- ### HTML Rules & Structure Relay

  Four stations are set up around the classroom, each with a different HTML challenge: writing <!DOCTYPE html>, adding the <html>, <head>, and <body> tags, inserting a <title> and a heading, and finally putting in a paragraph with a horizontal rule. Teams of students race from one station to the next, tagging a teammate when their part is correct, so everyone practices the correct order and rules of a valid HTML document.

- ### Notepad Ninja Coding

  Each student opens Notepad (or TextEdit) on a computer and types a simple HTML page that shows their name and favorite animal inside a <p> tag. They learn how to save the file with a .html extension (for example, mypage.html) and discover how easy it is to turn plain text into a web page with just a few keystrokes.

- ### Browser Detective Scavenger Hunt

  After saving their HTML files, students open them in a web browser like Chrome or Firefox. They play detective by spotting their heading and paragraph on the screen, then either take a quick screenshot or sketch what they see. This activity shows them how the code they wrote becomes a live webpage.

- ### Tool Show-and-Tell

  The class is divided into small groups, and each group is given a short slide or printout about a different website-building tool (Notepad, CodePen, Visual Studio Code, or Google Sites). Group members read aloud three cool things about their tool—like live previews or color-coding—and then explain to the class why someone might choose that editor when making a website.

- **Google Sites Template Remix Workshop**

  Using a shared class Google Site template, students practice editing every step: they update the 'Location' section with their classroom address, add a teacher's name and email under 'Contact,' click the Preview button to switch between desktop, tablet, and mobile views, and finally click Publish to make their mini-site live. This hands-on workshop walks them through the entire Google Sites interface in one smooth flow.

- **Choose the correct option.**

  a. all of these
  b. <body>
  c.
  d. .html
  e. Microsoft Word
  f. The Preview button

- **Answer the following questions.**

  a. Types of HTML editors and give one example of each type.

  - **Text editors** let you write code by hand.
    - Example: Notepad (Windows) or TextEdit (Mac)
  - **Code editors** add helpful tools like color-highlighting and file browsers.
    - Example: Visual Studio Code
  - **Online editors** run in your web browser and show live previews.
    - Example: CodePen

  b. HTML elements are the building blocks of a web page. Each element starts with an opening tag (like) and usually ends with a closing tag (like). Between those tags you put text or other elements. For example:

  Hello, world!

  Here, and together make a paragraph element.

  c. Difference between container and empty elements.

  - **Container elements** have both an opening tag and a closing tag—and can wrap around text or other elements.
    - Example: … , …
  - **Empty elements** stand alone and do not wrap around content. They never have a closing tag.
    - Example:
 (line break), <img src='photo.jpg'> (image)

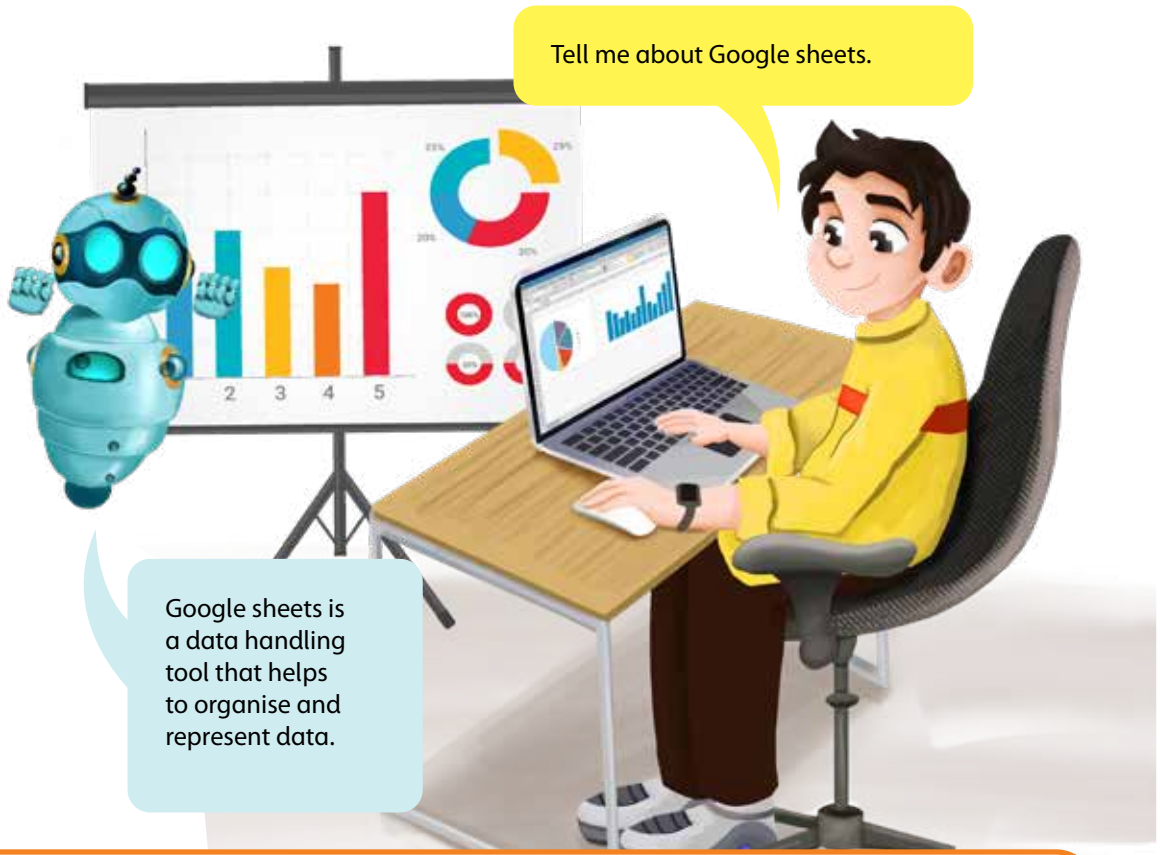
d. Background properties in HTML. (You use these CSS properties inside an HTML page to set backgrounds.)
   1. **background-colour** — sets a solid colour behind the content.
   2. **background-image** — places an image behind the content.
   3. **background-repeat** — controls whether the image repeats (tiles) or not.
   4. **background-position** — moves the background image to a specific spot (e.g., centre).
   5. **background-size** — resizes the background image (e.g., 'cover' or specific width/height).
   6. **background-attachment** — fixes the image in place or scrolls with the page.

e. The answers will vary. Here is an example using a fictional school site. You can inspect your own school's pages in a similar way (right-click → Inspect → look under 'Styles' for 'background-…').

Page	background-color	background-image	background-repeat	background-position
Home	#E0F7FA (light cyan)	none	—	—
About Us	none	url('school-building.jpg')	no-repeat	center top
Contact	#FFFFFF (white)	url('map-background.png')	repeat	left bottom

CHAPTER 5

DATA HANDLING WITH GOOGLE SHEETS



Objectives

By the end of the chapter, students will:

- Describe how data is used in daily life.
- Navigate the Google Sheets interface and create new workbooks.
- Customise templates in Google Sheets and demonstrate how to save and share them.
- Create forms in Google Sheets and explore how AI can be used within the application.

Lesson Plan 1

Topic: Google Sheets Interface

Page: 57-59

Core Competencies

- **Critical Thinking:** Students will analyse how data is used daily and the importance of organising data.
- **Digital Literacy:** Students will learn to use Google Sheets and understand its interface.

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- **Communication:** Students will practice articulating their understanding of data organisation and Google Sheets.
- **Creativity:** Students will be encouraged to design and organise data using Google Sheets.

Learning Outcomes

- Understand the role of data in daily life.
- Learn the basic uses of Google Sheets.
- Navigate and use Google Sheets interface.
- Organise and analyse data using Google Sheets.

Resources

- Computers or tablets with Internet access
- Projector and screen
- Whiteboard and markers
- Printed handouts with key points
- Access to Google Sheets

Methodology

- **Background Information**

  Data plays a crucial role in our daily lives, helping us make informed decisions and stay organised. Google Sheets is a powerful tool for organising and analysing data. Understanding the interface of Google Sheets, including the menu bar, file, edit, view, insert options, toolbar, formula bar, and sheet tab, is essential for effective data management. This lesson aims to introduce these concepts in a simplified manner, encouraging students to think critically and creatively about data use and organisation.

- **Introduction**

  Begin by discussing how data is used in daily life. Use engaging analogies, such as comparing data to ingredients in a recipe that helps create a meal. Show a short video clip that explains the importance of data and how it is used in various aspects of life, such as budgeting, planning events, and tracking fitness goals. Explain the role of Google Sheets in organising and analysing data.

- **Guided Practice**

  Introduce the basic uses of Google Sheets, such as creating lists, tracking expenses, and analysing data. Provide a worksheet with examples of data that can be organised in Google Sheets. Have students identify different types of data and how they can be organised. Walk through creating a simple spreadsheet with the class, using a hypothetical example like tracking daily chores or a class project.

- **Interactive Exploration**

  Divide students into small groups and assign each group a task to explore different features of the Google Sheets interface (e.g., menu bar, file, edit, view, insert, toolbar, formula bar, sheet tab). Have each group research their assigned feature and create a short presentation on how it is used in Google Sheets. Encourage the use of visual aids and interactive elements. Facilitate a class discussion on the importance of each feature and how they contribute to the overall functionality of Google Sheets.

- **Challenge Task**

  Ask students to create a spreadsheet using Google Sheets to organise data related to a real-life scenario, such as planning a class event or tracking a simple budget. Provide a template for the spreadsheet and guide students through each section, offering examples and prompting critical thinking. Encourage creativity by allowing students to customise their spreadsheet layout and content, such as choosing colours, fonts, and adding charts.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key points covered in the lesson. Use a quick quiz or interactive game to reinforce learning. Have students complete an exit ticket where they write down one thing they learned and one question they still have about using Google Sheets. Collect exit tickets and address any remaining questions in the next class.

Performance Indicators

Students can:

- articulate the role of data in daily life.
- identify and use the basic features of Google Sheets.
- navigate and use the Google Sheets interface.
- organise and analyse data using Google Sheets.

Lesson Plan 2

Topic: Opening a New Workbook; Choosing a Template

Page number 60-63

Core competencies

- **Digital Literacy:** Students will develop the ability to use Microsoft Excel, a fundamental tool for organising and analysing data. This competency includes understanding the interface, basic functions, and practical applications of Excel.
- **Critical Thinking:** Students will enhance their problem-solving skills by exploring and customising templates. They will learn to think critically about how to organise information effectively and make decisions based on their needs.
- **Collaboration:** By sharing documents and working on tasks together, students will practice teamwork and communication. This competency emphasises the importance of working collaboratively to achieve common goals.

Learning Outcomes

By the end of this lesson, students will be able to:

- Open a new, blank workbook in a spreadsheet program.
- Identify and select a template for a specific purpose.
- Navigate and understand the basic components of a sample template (e.g., a 'To Do List').
- Rename a saved spreadsheet document.
- Demonstrate understanding of different methods for sharing a spreadsheet.
- Connect on-screen actions with visual and textual explanations from a textbook.

Resources

- Computers or tablets with access to a spreadsheet program (e.g., Google Sheets, Microsoft Excel, LibreOffice Calc).
- Projector or interactive whiteboard (optional but recommended).
- Internet access (for exploring online templates and sharing methods).
- Sample 'To Do List' template (available within the chosen spreadsheet program).

Methodology

- **Teacher Background**

  Briefly explain to the students that spreadsheets have evolved from paper-based ledgers used for accounting and record-keeping. Highlight their versatility in managing various types of information, from simple lists to complex data analysis. You might use a brief analogy: 'Think of a spreadsheet like a super-organised notebook with special powers to sort, calculate, and share information easily.'

- **Introduction**

  Begin by tapping into students' existing organisational skills. Ask them: How do you keep track of your homework or chores? Do you use a notebook, a list on your phone, or something else? (Allow students to share their methods.) and, What are some advantages and disadvantages of the ways you currently organise things? (Guide the discussion towards the benefits of structure, clarity, and easy access.) Introduce the concept of a digital spreadsheet as a powerful tool for organisation, going beyond simple lists.

- **Engaging Analogy**

  Use the analogy of organising a classroom library. Ask: 'Imagine we have lots of books. How could we organise them so we can easily find what we need? We could list them, maybe by author or genre. A spreadsheet is like a digital way to create and manage such a list, but it can do much more!'

- **Guided Practice**

  Clearly demonstrate the steps to open the spreadsheet program and create a new blank workbook on the projector. Use clear, concise language and highlight the key icons or menu options. As you demonstrate, verbalise your actions: 'First, I'm clicking on the program icon... Now, I'm looking for the 'File' menu... and then I'll select 'New' or a blank document option.' Have students follow along on their own devices. Direct them to the textbook pages 60-63 in their textbook. Ask them to find the screenshots that show the steps you are demonstrating on the screen. Encourage them to read the accompanying text to reinforce their understanding of each action.

- **Choosing a Template**

  Explain that templates are pre-designed spreadsheets for specific purposes, saving time and effort. Use an analogy: 'Think of templates like pre-made forms for different jobs. Instead of creating a form for a permission slip from scratch, you can use a template that already has the important sections.' Guide students on how to access the template library within the program. Show them different categories of templates (e.g., lists, calendars, budgets). Refer students to the screenshots on page 61 that illustrate the template selection screen. Discuss how the categories shown in the textbook relate to what they see on their computers. Direct students to locate and open a 'To Do

List' template. Ask them to compare the 'To Do List' template on their screen with any related screenshots or descriptions on page 62. Explore the range of templates available in your program and how they might be visually represented in the textbook. Be prepared to bridge any minor differences between the textbook visuals and the actual software interface.

- **Interactive Exploration**

  Once everyone has the 'To Do List' open, lead a discussion using questions to guide their understanding:

  - 'What different columns or sections do you see in this template? Look at the labels shown in the screenshot on page 62. Are they the same as what you see? What does the text next to the screenshot explain about these labels?' (Encourage them to identify 'Task,' 'Due Date,' 'Status,' etc. and link them to the textbook explanation.)
  - 'What do you think each of these columns is for? Does the text on page 62 give you any clues about how to use these columns?' (Prompt them to explain the purpose of each heading, referencing the textbook.)
  - 'How could you use this 'To Do List' to organise your homework for the week? Can you find any examples in the textbook on page 63 that show how lists are used?' (Encourage them to think of practical applications, drawing inspiration from the book.)
  - 'Do you see any pre-filled examples? Why do you think they are there? Does the textbook mention anything about the purpose of examples in templates?' (Help them understand that examples provide guidance, potentially referencing related text in the book.)

  Divide students into small groups. Assign each group a different simple template (e.g., a weekly schedule, a simple budget). Ask them to explore their assigned template and use the information and screenshots on pages 61-63 of the textbook to answer questions like:

  - What is the main purpose of this template?
  - What are the key parts or columns?
  - How could someone use this template in their daily?
  - Have them share their findings with the class, referencing specific textbook parts.

  Briefly show students how they might change the labels of the columns or add new columns to the 'To Do List' if they wanted to track additional information (e.g., priority level). If the textbook provides any basic information or screenshots related to customisation (even in a later chapter, if relevant and you want to preview), you can briefly point to it as a future possibility. Emphasise that templates are a starting point and can be adapted.

- **Challenge Task**

  Instruct students to personalise their 'To Do List' by adding at least three of their own tasks, including a due date (even a hypothetical one) and an initial status (e.g., 'To Do'). Guide students through the process of saving their work and renaming the file. Refer them to any tips or examples about file naming conventions mentioned in the text on pages 60-63 (or elsewhere in the book if applicable). Ask: 'Why is it a good idea to give your files names that tell you what's inside? Does the textbook offer any advice on choosing good filenames?' (Lead them to understand the importance of organisation and easy retrieval, potentially drawing from textbook examples.)

- **Wrap-Up Assessment and Exit Ticket**

  Ask students:

  - 'What is one new thing you learned about spreadsheets today? Did the textbook help you understand this better? How?'
  - 'Why might using a template be helpful? What did the textbook say about the benefits of templates?'
  - 'What is one important thing to remember when saving your work? Did the textbook provide any important reminders about saving?'

  Provide students with a short prompt to answer on a piece of paper or digitally:

  - 'Describe in one or two sentences the steps you would take to open a new 'Grocery List' template and save it with the name 'Weekend Groceries'. According to the textbook, what is one reason why it's important to name your file clearly?'
  - 'Can you think of one other way you might share a spreadsheet with someone? Does the textbook mention any methods for sharing files?'

  Students can answer questions 2a and 2d on page 68 and also do activity 1 of Application-based questions.

Performance Indicators

Students can:

- open a new, blank workbook using the program interface.
- navigate the template library and select a template relevant to a given task (e.g., a list).
- identify and articulate the purpose of key components within a sample template like the 'To Do List.'
- rename and save their spreadsheet document using a descriptive filename.
- identify and briefly describe at least one method for sharing a spreadsheet digitally (e.g., saving and sending as an attachment).

Lesson Plan 3

Topic Formatting a document in Google Sheets

Page numbers 63-64

Core Competencies

- **Digital Literacy:** Students will develop the ability to use Google Sheets, focusing on text formatting options. This competency includes understanding the interface, basic functions, and practical applications of Google Sheets.
- **Critical Thinking:** Through exploring and customising text formatting, students will enhance their problem-solving skills. They will learn to think critically about how to present information effectively.
- **Collaboration:** By sharing documents and working on tasks together, students will practice teamwork and communication. This competency emphasises the importance of working collaboratively to achieve common goals.

Learning Outcomes

Students will be able to:

- format text in Google Sheets.
- use various text formatting options.
- understand the practical uses of text formatting for organising and presenting data.
- Resources
- Computers with Internet access.
- Projector for demonstration.
- Handouts with step-by-step instructions.
- Textbook (pages 63-64) for reference.

Methodology

- **Background Information**

  Before teaching this lesson, familiarise yourself with Google Sheets and its text formatting options. Review pages 63-64 of the textbook for screenshots and explanations that illustrate these features. Practice using formatting tools like bold, italics, underline, font size, colour, text alignment, wrapping text, and merging cells. Understanding these basics will help you guide students effectively and link practical applications with theoretical concepts.

- **Introduction**

  Begin with a discussion on the importance of digital literacy and how tools like Google Sheets can help in organising and presenting information. Use an analogy like decorating a cake to explain how formatting enhances the presentation. Demonstrate opening Google Sheets and navigating the interface. Show how text formatting can be used to make data more readable and visually appealing. Refer students to pages 63-64 in their textbook for screenshots and text that illustrate the formatting options they will be learning.

- **Guided Practice**

  Open Google Sheets and guide students through the process of formatting text. Explain each step clearly, ensuring students understand the purpose of each action. Show students how to use various text formatting options such as bold, italics, underline, font size, and colour. Explain the features and how they can be customised. Allow students to follow along on their computers. Provide assistance as needed, ensuring everyone is able to format text using different options.

- **Interactive Exploration**

  Encourage students to explore the formatting options on their own. Ask them to format a sample dataset, changing font styles, sizes, and colors. Use an analogy like choosing outfits to explain customisation. Divide students into small groups and assign each group a dataset to format. This promotes collaboration and allows students to see different ways to use text formatting.

- **Challenge Task**

  Show students how to use more advanced formatting options such as text alignment, wrapping text, and merging cells. Explain the importance of these features for organising data. Demonstrate how to share the formatted document with a classmate or teacher. Discuss the benefits of sharing documents, such as receiving feedback and collaborating on projects.

- **Wrap-Up Assessment and Exit Ticket**

  Summarise the steps covered in the lesson. Ask students to share what they learned and any challenges they faced. Provide a short quiz or exit ticket with questions about the formatting options they learned. This helps assess their understanding and retention of the material. Collect feedback from students on what they found easy or challenging. Use this information to adjust future lessons. Students can now answer question 2b on page 68 and do the Group Project Activity on page 69.

Performance Indicators

Students can:

- navigate and use Google Sheets.
- apply various text formatting options.
- share the document correctly.

Lesson Plan 4

Topic Google Form in Google Sheets; Using AI in Google sheets

Page numbers 64-67

Core Competencies

- **Digital Literacy:** Students will develop the ability to use Google Sheets and Google Forms, focusing on creating forms and understanding AI features. This competency includes understanding the interface, basic functions, and practical applications.
- **Critical Thinking:** Students will enhance their problem-solving skills by exploring and customising forms and AI features. They will also learn to think critically about how to collect and analyse data effectively.
- **Collaboration:** Students will practice teamwork and communication by sharing forms and working on tasks together. This competency emphasises the importance of working collaboratively to achieve common goals.

Learning Outcomes

- Students will be able to create a Google Form using Google Sheets.
- Students will learn to use AI features in Google Sheets.
- Students will understand the practical uses of forms and AI for organising and analysing data.

Resources

- Computers with Internet access.
- Projector for demonstration.
- Handouts with step-by-step instructions.
- Textbook (pages 63-64) for reference.

Methodology

- **Background Information for Teachers**

  Before teaching this lesson, familiarise yourself with Google Sheets and Google Forms. Review the steps for creating a form and explore AI features in Google Sheets. Understanding these basics will help you guide students effectively and link practical applications with theoretical concepts.

- **Introduction**

  Begin with a discussion on the importance of digital literacy and how tools like Google Sheets and Google Forms can help in organising and collecting information. Use an analogy like surveying to explain the concept of forms. Demonstrate how to open Google Sheets and navigate the interface. Show how forms can be created and used for various tasks, such as collecting feedback or conducting polls. Introduce the concept of AI in Google Sheets, explaining how it can help analyse data and make predictions.

- **Guided Practice**

  Open Google Sheets and guide students through creating a Google Form. Explain each step clearly, ensuring students understand the purpose of each action. Show students how to create a new form, add questions, and customise the form. Explain the features and how they can be used to collect data. Allow students to follow along on their computers. Assist as needed, ensuring everyone can create a form and add questions.

- **Interactive Exploration**

  Encourage students to explore the form creation options on their own. Ask them to create a form for a class survey, adding different types of questions and customising the appearance. Use an analogy like designing a questionnaire to explain customisation. Divide students into small groups and assign each group a task to create a form for a specific purpose, such as a feedback form for a school event. This promotes collaboration and allows students to see different ways to use forms.

- **Introducing AI in Google Sheets**

  Demonstrate AI features in Google Sheets, such as data analysis and predictive text. Explain how AI can help organise and interpret data. Use examples that students can relate to, such as predicting the outcome of a class poll or analysing survey results. Explain how AI can make these tasks easier and more accurate. Allow students to explore AI features in Google Sheets. Guide on how to use these features to analyse data from their forms.

- **Challenge Task**

  Show students how to use more advanced form features, such as branching logic and response validation. Explain the importance of these features for collecting accurate data. Demonstrate how to share the form with classmates or teachers. Discuss the benefits of sharing forms, such as receiving feedback and collaborating on projects.

- **Wrap-Up Assessment and Exit Ticket**

  Summarise the steps covered in the lesson. Ask students to share what they learned and any challenges they faced. Provide a short quiz or exit ticket with questions about their learned steps they learned. This helps assess their understanding and retention of the material. Collect feedback from students on what they found easy or challenging. Use this information to adjust future lessons. Students can now answer questions 1, 2c, and do question 2 from application-based questions, and in the lab activity on pages 67-68.

Performance Indicators

Students can:

- navigate and use google sheets and google forms.
- create and customise a form.
- understand and apply AI features in google sheets.

APPLICATION BASED QUESTIONS

Activity 1

Imagine you're planning a class party. How would you use a Google Sheets template to track who is bringing what snacks?

Instructions

- Guide students to open Google Sheets by going to sheets.google.com.
- Have them sign in with their Google account.
- Walk through the Google Sheets interface, pointing out key features such as the toolbar, menu options, and spreadsheet grid.
- Show students how to open a new workbook:
- Click on the 'Blank' option to create a new spreadsheet. Explain that starting with a blank workbook allows them to customise it from scratch.
- Explain the benefits of using templates to save time and ensure consistency.
- Guide students to open a template:
- Click on 'Template gallery' at the top of the page. Highlight that this option provides pre-designed templates for various purposes.
- Select a suitable template for tracking party snacks (e.g., 'Event Planning' or 'Party Planner'). Emphasize that these templates are designed to help organize event details efficiently.
- Help students customise the template to fit their class party needs:
- Title: Change the title to 'Class Party Snack Tracker'.
- Columns: Modify the columns to include 'Name', 'Snack', 'Quantity', and 'Comments'. Explain that these columns will help keep track of who is bringing what.
- Rows: Add rows for each student to fill in their information.
- Show students how to format cells, change colors, and add borders to make the sheet visually appealing. Highlight the 'Format' menu and 'Borders' option.
- Guide students to save their customised template:
- Click on 'File' > 'Save as' to save the document. Explain that saving ensures their work is not lost.
- Show students how to share the sheet with their classmates:
- Click on the 'Share' button in the top right corner. Highlight that sharing allows collaboration.
- Enter the email addresses of their classmates and set the appropriate permissions (e.g., 'Can edit' or 'Can view'). Emphasize the importance of choosing the right permissions for collaboration.
- Introduce the concept of using forms to collect data:

- Show students how to create a Google Form linked to their sheet to collect snack information.
- Guide them through creating a form with fields for 'Name', 'Snack', 'Quantity', and 'Comments'.
- Demonstrate how responses from the form automatically populate the Google Sheet. Highlight the 'Responses' tab in Google Forms.
- Explain how AI features in Google Sheets can help analyse data:
- Show students how to use the 'Explore' feature to get insights and suggestions based on their data. Highlight that this feature can provide quick analysis and visualisations.
- Demonstrate how to use functions like 'SUM' and 'AVERAGE' to calculate totals and averages. Explain that these functions help summarize data efficiently.

Activity 2

You're the captain of your school's cricket team. Can you create a form to schedule practice times that integrates with Google Sheets calendar?

Instructions

- Discuss how scheduling helps in organizing practice sessions, ensuring everyone knows when and where to be.
- Explain how Google Forms and Google Sheets can be used together to streamline this process.
- Guide students to open Google Forms by going to forms.google.com.
- Have them sign in with their Google account.
- Click on the 'Blank' option to create a new form. Explain that starting with a blank form allows them to customise it for their needs.
- Help students design the form to collect practice scheduling information:
- Title: Set the title to 'Cricket Practice Schedule'.
- Questions: Add questions to collect necessary information:
- Name: Use the 'Short answer' question type.
- Preferred Practice Days: Use the 'Checkboxes' question type to allow multiple selections (e.g., Monday, Wednesday, Friday).
- Preferred Practice Times: Use the 'Checkboxes' question type to allow multiple selections (e.g., 3:00 PM - 4:00 PM, 4:00 PM - 5:00 PM).
- Additional Comments: Use the 'Paragraph' question type for any additional information.
- Show students how to customise the form to make it visually appealing:
- Theme: Click on the 'Palette' icon to choose a theme color or background image.
- Settings: Click on the 'Settings' icon to adjust form settings (e.g., collect email addresses, limit to one response per person).
- Guide students to link the form to a Google Sheet:

- Click on the 'Responses' tab in Google Forms.
- Click on the Google Sheets icon to create a new spreadsheet for the responses. Explain that this will automatically collect and organize the responses in a spreadsheet.
- Show students how to view and organize the responses in Google Sheets:
- Open the linked Google Sheet to see the collected responses.
- Highlight the 'Responses' tab and explain how each response is recorded in a new row.
- Demonstrate how to sort and filter the data to find specific information (e.g., sorting by preferred practice days).
- Explain how to integrate the practice schedule with Google Calendar:
- Show students how to create a new calendar in Google Calendar for the cricket practice schedule.
- Demonstrate how to manually add practice sessions based on the collected data.
- Highlight the 'Add event' button and explain how to set the date, time, and location for each practice session.
- Explain how AI features in Google Sheets can help analyse data:
- Show students how to use the 'Explore' feature to get insights and suggestions based on their data.
- Demonstrate how to use functions like 'COUNTIF' to count the number of responses for each practice day and time.

IN THE LAB

Activity

The school library is getting new books! Design a form to allow students to vote on them favourite genres and link the results to a Google Sheet.

Instructions

- Begin with a brief discussion on how data is used in daily life, such as in surveys, voting, and decision-making processes.
- Highlight the importance of collecting and analysing data to make informed decisions.
- Ask students to open Google Sheets on their devices.
- Guide them to explore the interface, identifying key features like the toolbar, menu options, and spreadsheet cells.
- Encourage students to click on different menu options (File, Edit, View, Insert, Format, Data, Tools, Add-ons, Help) and explore their functions.
- Prompt students to ask questions and share their observations.

- Instruct students to click on 'Blank' under the 'Start a new spreadsheet' section to open a new workbook.
- Ensure they understand how to name their workbook by clicking on the 'Untitled spreadsheet' text at the top and typing a new name.
- Show them how to save their workbook by clicking on 'File' and selecting 'Save.'
- Demonstrate how to access templates by clicking on 'Template Gallery' at the top of the Google Sheets homepage.
- Discuss different types of templates available (e.g., Budget, Calendar, Attendance, To-Do List) and their uses.
- Ask students to select the 'Survey' template, explaining that it will help them create a structured voting form.
- Guide students to customise the selected 'Survey' template to fit the voting form for favourite book genres.
- Instruct them to replace the existing questions with genre options (e.g., Fiction, Mystery, Science Fiction, Fantasy, Non-Fiction).
- Show them how to add new questions by clicking on the '+' icon in the form editor.
- Encourage them to format cells, change colors, and add images by using the toolbar options (e.g., 'Format' for text styles, 'Insert' for images).
- Saving and Sharing the Customised Template (5 minutes):
- Instruct students on how to save their customised template by clicking on 'File' and selecting 'Save.'
- Show them how to share the template by clicking on the 'Share' button at the top right, entering email addresses, and setting permissions (e.g., 'Viewer,' 'Commenter,' 'Editor').
- Explain how to create a form directly from Google Sheets by clicking on 'Tools' and selecting 'Create a form.'
- Guide students through the process of designing the form, adding questions, and setting up response options.
- Ensure they understand how to link the form responses to their Google Sheet by selecting the appropriate sheet in the form settings.
- Demonstrate how to link the form responses to their Google Sheet by clicking on 'Responses' in the form editor and selecting 'Link to Sheets.'
- Ensure students understand how to view and analyse the collected data by clicking on the linked sheet.
- Introduce students to AI features in Google Sheets, such as 'Explore' for data insights and automated suggestions.
- Show them how to access 'Explore' by clicking on the star icon at the bottom right of the Google Sheets interface.
- Explain how 'Explore' can help them analyse the voting results by providing insights and suggesting ways to visualise the data.
- Demonstrate how to use 'Explore' to create charts and graphs from the collected data. For example, students can type questions like 'What are the most popular genres?' into the 'Explore' bar to get instant visualisations.
- Encourage students to experiment with different types of charts (e.g., bar charts, pie charts) to find the best way to represent their data.

GROUP PROJECT

Activity

Use the 'Schedule' template in Google Sheets to plan sports and extracurricular activities throughout the week in your school. Start by listing all the activities available and the preferred times for each. Then, allocate slots for each activity on the Google Sheets template, ensuring to balance physically demanding sports with more relaxed clubs or study periods. Remember to leave some free slots for unexpected changes or downtime! A sample schedule for Monday is given below.

Monday:

8:00 - 8:30 am: Math

8:30 - 9:00 am: Science

9:00 - 9:30 am: Break/Cool Down

9:30 - 10:30 am: Coding

10:30 - 11:00 am: English Study

11:00 - 11:30 am: Gardening

11:30 - 12:00 pm: Lunch Break

12:00 - 12:30 pm: Creative Writing

12:30 - 1:00 pm: Painting

1:00 - 1:30 pm: Break/Cool Down

1:30 - 2:00 pm: Cricket/basketball/football

2:00 - 3:30 pm: Watching a sports documentary

3:30-4:30: Discussion about the documentary in small groups

4:30-6:30: free time for students to relax

Instructions

- Start with a discussion on the importance of planning and time management in daily life.
- Explain how balancing different types of activities (physical, creative, academic) can help maintain a healthy and productive routine.
- Ask students to open Google Sheets and navigate to the 'Template Gallery.'
- Instruct them to select the 'Schedule' template.
- Encourage students to explore the template, identifying key features like time slots, days of the week, and activity sections.
- Have students brainstorm and list all the sports and extracurricular activities available at school.
- Discuss the preferred times for each activity, considering factors like energy levels, weather, and availability of resources.
- Encourage students to share their ideas and preferences.

- Guide students to allocate slots for each activity on the Google Sheets template.
- Ensure they balance physically demanding sports with more relaxed clubs or study periods.
- Remind them to leave some free slots for unexpected changes or downtime.
- Provide the sample schedule for Monday as a reference.
- Ask students to input the sample schedule into their Google Sheets template.
- Encourage them to customise the schedule based on their preferences and school activities.
- Divide students into small groups and have them collaborate on planning the rest of the week's schedule.
- Encourage them to discuss and negotiate the best times for each activity.
- Monitor the groups and provide guidance as needed.
- Introduce students to conditional formatting in Google Sheets.
- Show them how to use colors to highlight different types of activities (e.g., green for sports, blue for academic, yellow for creative).
- Encourage them to apply conditional formatting to their schedules for better visualization.
- Discuss the importance of breaks and downtime for maintaining focus and energy.
- Ensure students include sufficient breaks and downtime in their schedules.
- Encourage them to think about activities they can do during breaks (e.g., reading, relaxing, socializing).

Engagement Activities

- ### Data Use in Daily Life: Survey and Analysis

  Divide students into small groups and have each group create a survey using Google Forms. Collect responses from classmates and use Google Sheets to analyse the data, creating charts to visualise the most popular snacks. This activity helps students understand how data is collected and used to make decisions.

- ### Google Sheets Interface Scavenger Hunt.

  Create a scavenger hunt list with tasks like finding the toolbar, menu options, and specific functions (e.g., 'Find where you can insert a chart'). Students work in pairs to complete the scavenger hunt. Afterward, discuss findings and share tips on navigating the interface. This activity familiarizes students with the Google Sheets interface in a fun and interactive way.

- ### Step-by-Step Workbook Creation.

  Provide a printed or digital step-by-step guide on how to open a new workbook in Google Sheets. Students follow the guide to create their own workbook, naming and saving it with a creative title. This ensures students can independently open and save a new workbook.

- ### Using Templates: Creative Project Planning

  Introduce students to the template gallery in Google Sheets. Have them select a template (e.g., Event Planning) and customise it for a class event (e.g., a party or field trip). Students add details like date, time, activities, and budget, then share the customised template with classmates and the teacher. This activity teaches students how to use and customise templates for practical purposes.

- ### Create a Feedback Form for a Class Project.

  Guide students to create a feedback form using Google Sheets. Collect responses from classmates after a class project or presentation, link the form responses to a Google Sheet, and analyse the feedback. Discuss how the feedback can be used to improve future projects. This helps students understand how forms can be used to collect and analyse data.

- ### AI Data Insights Challenge.

  Introduce students to the 'Explore' feature in Google Sheets. Provide a dataset (e.g., class attendance or grades) and ask students to use the 'Explore' feature to generate insights. Challenge them to create charts and graphs based on the insights, then present findings to the class and discuss how AI can help in data analysis. This activity teaches students how to use AI features in Google Sheets to analyse and visualise data.

- ### Riddles

  1. I help you make decisions, big and small. I can be numbers, words, or pictures on a wall. What am I?

     Answer: Data

2. I'm a grid of rows and columns, where you can type and calculate. I help you organise data, and I'm really great! What am I?

   Answer: A spreadsheet

3. To start fresh and new, you click on me. I'm a blank canvas for your data spree. What am I?

   Answer: A new workbook

4. I'm a pre-made design to help you plan. From budgets to schedules, I'm your helping hand. What am I?

   Answer: A template

5. You can change my colors, fonts, and more. Make me unique, like never before. What am I?

   Answer: Customising a template

6. I collect answers from near and far. Linked to a sheet, I show how many there are. What am I?

   Answer: A form

7. I give you insights with just a click. Charts and graphs, I generate quick. What am I?

   Answer: The 'Explore' feature (AI in Google Sheets)

Answer for Exercise

- **Choose the correct option:**

  a. Both a and b
  b. Ctrl + I
  c. Either a or b
  d. Check the box in the task row
  e. Tools > Create a Form
  f. Form responses tab

- **Answer the following questions:**

  a. Steps to create a custom template in Google Sheets:
     - Open Google Sheets and create a new spreadsheet.
     - Design your template by adding headers, formatting cells, and including any necessary formulas.
     - Once your template is ready, click on 'File' and select 'Save as template.'
     - Name your template and save it in your Google Drive.
     - To reuse the template, go to the 'Template Gallery' and select your saved template.

  b. Steps to format text within a cell in Google Sheets:
     - Click on the cell you want to format.
     - To change the font style, click on the 'Font' drop-down menu in the toolbar and select your desired font.

- To change the font size, click on the 'Font size' drop-down menu in the toolbar and choose the size you want.
- You can also use the 'Bold,' 'Italic,' and 'Underline' buttons in the toolbar to further format your text.

c. Steps to customise a Google Form and distribute it via email:

- Open Google Forms and create a new form.
- Add questions, images, and videos to customise your form.
- Click on the 'Send' button at the top right of the form.
- In the 'Send form' window, click on the email icon.
- Enter the email addresses of the recipients.
- Add a subject and message if desired.
- Click 'Send' to distribute the form via email.

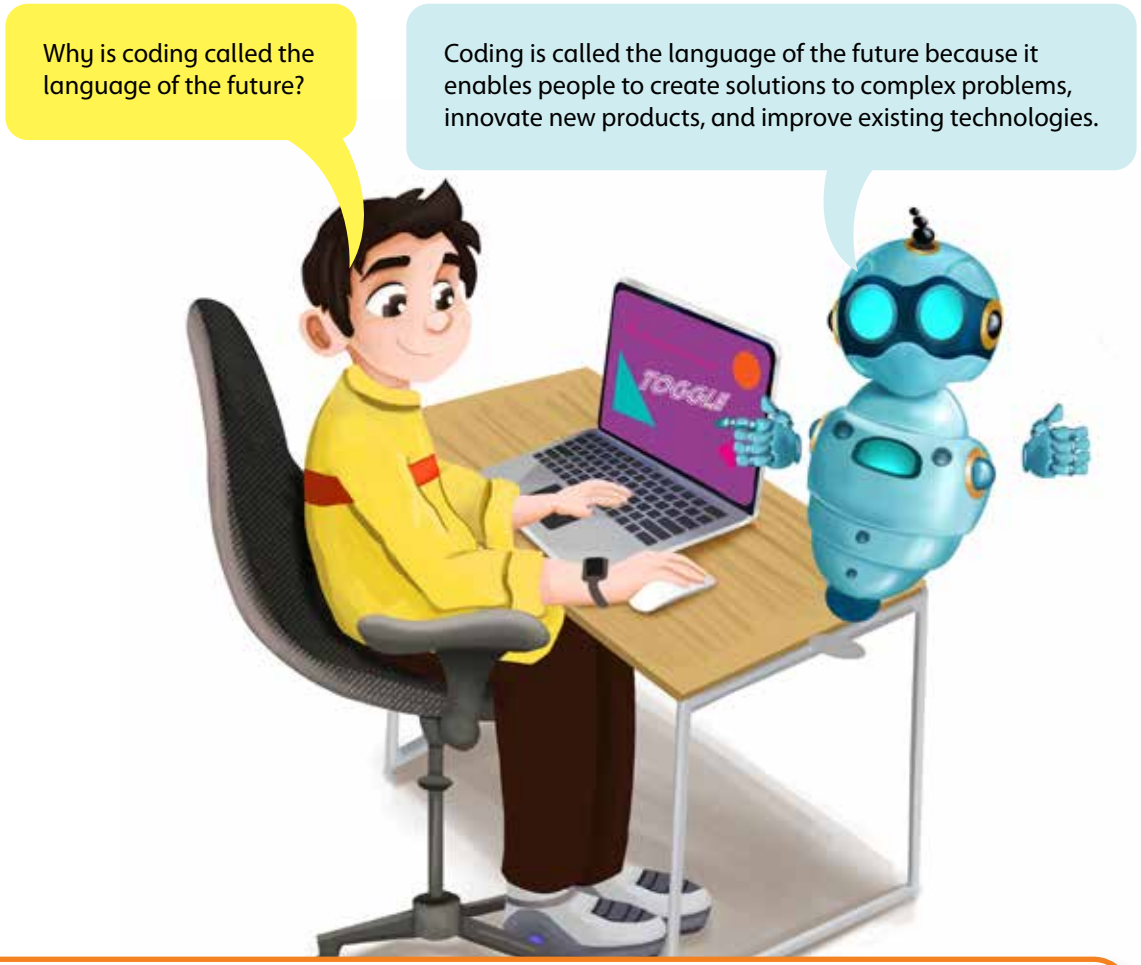
d. Steps for renaming a Google Sheet:

- Open the Google Sheet you want to rename.
- Click on the current name of the sheet at the top left.
- Type the new name for the sheet.
- Press 'Enter' to save the new name.

Importance: Renaming is important for file management because it helps you organize and identify your files easily. Clear and descriptive names make it simpler to find and manage your documents, especially when you have many files in your Google Drive.

CHAPTER
6

CODING ANIMAL ADAPTATIONS



Objectives

By the end of the chapter, students will:

- Define 'adaptation' and give examples.
- Use Code.org's Sprite Lab to model animal adaptations.
- Use events in Code.org to simulate how adaptations are triggered.
- Explain how specific animal adaptations aid survival.

Lesson Plan 1

Topics: Understanding Animal Adaptations; Sprite Lab Interface

Page numbers: 70-72

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse different animal adaptations and understand their significance in survival.

- **Creativity and Innovation:** Students will imagine how animals might adapt to various environments.
- **Digital Literacy:** Students will be introduced to the basics of coding and the Sprite Lab interface.
- **Collaboration and Communication:** Students will discuss their ideas and learn from each other.

Learning Outcomes

Students will be able to:

- Understand the concept of animal adaptations
- Identify different types of animal adaptations
- Learn basic coding concepts and the Sprite Lab interface

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures of animals and their adaptations)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Begin by discussing animal adaptations. Explain how animals adapt to their environments to survive. Use engaging analogies, such as comparing animal adaptations to superheroes' powers that help them overcome challenges. Show pictures of various animals and discuss their unique adaptations (e.g., camouflage, mimicry, hibernation). Use interactive activities like a 'Guess the Adaptation' game, where students guess the adaptation based on clues.

- **Guided Practice**

  Introduce Sprite Lab on Code.org. Explain the interface: instructions, workspace, blocks panel, play area, and run button. Use a projector or screen sharing to walk students through each component. Demonstrate how to create a simple sprite and move it using basic coding blocks. Provide a step-by-step tutorial, allowing students to follow along on their devices. Discuss how coding can be used to model animal adaptations. Show examples of sprites that change colour, move in specific patterns, or react to their environment.

- **Interactive Exploration**

  Allow students to explore Sprite Lab and experiment with creating sprites and coding their movements. Encourage them to try different coding blocks and see the effects. Organise a 'Coding Challenge' where students model an animal adaptation using sprites (e.g., a chameleon changing colour). Provide prompts and support as needed, fostering a collaborative environment where students can share ideas and solutions.

- **Challenge Task**

  Assign a task where students must create a sprite that demonstrates a specific animal adaptation (e.g., a bird flying south for the winter). Encourage them to think creatively and use multiple coding blocks to achieve their goal. Provide guidance and support as needed, encouraging students to think creatively and solve problems. Use peer review sessions where students present their projects and receive feedback from classmates.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key concepts learned during the lesson. Summarise the importance of animal adaptations and how coding can be used to model these adaptations.

Performance Indicators

Students can:

- explain what animal adaptations are and give examples.
- navigate the Sprite Lab interface and use basic coding blocks.
- model an animal adaptation using sprites and coding.
- demonstrate creativity and problem-solving skills in their coding projects.

Lesson Plan 2

Topics: Creating Simple Adaptations; Events in Sprite Lab

Page numbers: 73-75

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse how coding can represent animal adaptations like camouflage and evolution.
- **Creativity and Innovation:** Students will design and code sprites to demonstrate colour adaptation and movement.
- **Digital Literacy:** Students will learn to use coding blocks to set backgrounds, change sprite locations, and run code.
- **Collaboration and Communication:** Students will share their coding projects and provide feedback to peers.

Learning Outcomes

Students will be able to:

- Understand how coding can model animal adaptations
- Create sprites that demonstrate camouflage and evolution
- Use coding blocks to set backgrounds, change sprite locations, and run code
- Model animal adaptations through events in Sprite Lab

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures of animals and their adaptations)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Begin with a discussion on animal adaptations, focusing on camouflage and evolution. Explain how these adaptations help animals survive in their environments. Show pictures of animals that

use camouflage and discuss how they blend into their surroundings. Use analogies like 'hide and seek' to make the concept relatable.

- **Guided Practice**

  Introduce Sprite Lab on Code.org. Explain the interface, including the instructions, workspace, blocks panel, play area, and run button. Use a projector or screen sharing to walk students through each component. Demonstrate how to create a sprite and set its colour to match the background, simulating camouflage. Provide a step-by-step tutorial, allowing students to follow along on their devices. Show how to change the sprite's location using coding blocks. Explain how this can represent an animal moving to a new environment as part of its evolution.

- **Interactive Exploration**

  Allow students to explore Sprite Lab and experiment with creating sprites that demonstrate camouflage. Encourage them to try different colours and backgrounds to see the effects. Organise a 'Coding Challenge' where students model an animal adaptation using sprites and events (e.g., a chameleon changing colour when it moves to a new location). Provide prompts and support as needed, fostering a collaborative environment where students can share ideas and solutions.

- **Challenge Task**

  Assign a task where students create a sprite demonstrating a specific animal adaptation (e.g., a bird changing colour as it flies south for the winter). Encourage them to think creatively and use multiple coding blocks to achieve their goal. Provide guidance and support as needed, encouraging students to think creatively and solve problems. Use peer review sessions where students present their projects and receive feedback from classmates.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key concepts learned during the lesson. Summarise the importance of animal adaptations and how coding can be used to model these adaptations.

Performance Indicators

Students can:

- explain how coding can model animal adaptations like camouflage and evolution.
- navigate the Sprite Lab interface and use coding blocks to set backgrounds, change sprite locations, and run code.
- model animal adaptations through events in Sprite Lab.
- demonstrate creativity and problem-solving skills in their coding projects.

Lesson Plan 3

Topics: Modelling Giraffe Adaptation

Page numbers 75-76

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse how coding can represent the giraffe's long neck adaptation.
- **Creativity and Innovation:** Students will design and code sprites to demonstrate the giraffe's long neck adaptation.

- **Digital Literacy:** Students will learn to use coding blocks to create and animate sprites.
- **Collaboration and Communication:** Students will share their coding projects and provide feedback to peers.

Learning Outcomes

- Understand the giraffe's long neck adaptation
- Create sprites that demonstrate the giraffe's long neck adaptation
- Use coding blocks to animate sprites
- Model animal adaptations through events in Sprite Lab

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures of giraffes and their adaptations)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Start with a discussion about the giraffe's long neck adaptation. Explain how this adaptation allows giraffes to reach high foliage for food, engage in dominance displays, and serve as a lookout against predators. Show pictures of giraffes and talk about their unique adaptations. Use engaging analogies, such as comparing the giraffe's long neck to a tall ladder that helps them access food.

- **Guided Practice**

  1. **Logging In:** Guide students to log in to Code.org and navigate to Sprite Lab. Ensure all students have access and are ready to start.
  2. **Understanding the Adaptation:** Discuss the giraffe's long neck in detail. Explain how it serves multiple purposes, including feeding, dominance displays, and lookout functions[1].
  3. **Creating the Sprite:** Demonstrate how to create a sprite representing a giraffe. Use coding blocks to set the sprite's appearance, focusing on the long neck.
  4. **Animating the Sprite:** Show how to use coding blocks to animate the sprite. For example, make the giraffe move to different locations to simulate reaching for food or looking out for predators.
  5. **Running the Code:** Explain how to run the code and observe the sprite's actions. Encourage students to experiment with different coding blocks to enhance their animations.

Interactive Exploration

Allow students to explore Sprite Lab and experiment with creating and animating their giraffe sprites. Encourage them to try different coding blocks to see the effects. Organise a 'Coding Challenge' where students model the giraffe's long neck adaptation using sprites and events. Provide prompts and support as needed, fostering a collaborative environment where students can share ideas and solutions.

Challenge Task

Assign a task where students must create a sprite that showcases the giraffe's long neck adaptation. Encourage them to think creatively and utilise multiple coding blocks to achieve their goal. Provide guidance and support as needed, motivating students to think creatively and solve problems. Incorporate peer review sessions in which students present their projects and receive feedback from classmates.

Wrap-Up Assessment and Exit Ticket

Review the key concepts learned during the lesson. Summarise the importance of the giraffe's long neck adaptation and how coding can be used to model this adaptation. Students can now answer question 2c on page 81.

Performance Indicators

Students can:

- explain how coding can model the giraffe's long neck adaptation.
- navigate the Sprite Lab interface and use coding blocks to create and animate sprites.
- model the giraffe's long neck adaptation through events in Sprite Lab.
- demonstrate creativity and problem-solving skills in their coding projects.

Lesson 4

Topic: Modelling Animal Behaviours

Page numbers 76-77

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse how coding can represent whale migration behaviour.
- **Creativity and Innovation:** Students will design and code sprites to demonstrate whale migration.
- **Digital Literacy:** Students will learn to use coding blocks to create and animate sprites.
- **Collaboration and Communication:** Students will share their coding projects and provide feedback to peers.

Learning Outcomes

- Understand whale migration behaviour
- Create sprites that demonstrate whale migration
- Use coding blocks to animate sprites
- Model animal behaviour through events in Sprite Lab

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures of whales and their migration routes)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Start with a discussion about whale migration. Describe how whales travel to northern waters for feeding and breeding. Use engaging analogies, like comparing whale migration to a lengthy journey or road trip. Display images of whales and their migration routes. Address the challenges whales face during migration, such as locating food and avoiding predators.

- **Guided Practice**

  1. **Logging In:** Guide students to log in to Code.org and navigate to Sprite Lab. Ensure all students have access and are ready to start.
  2. **Understanding the Behaviour:** Discuss whale migration in detail. Explain how whales travel long distances to reach their feeding and breeding grounds.
  3. **Creating the Sprite:** Demonstrate how to create a sprite that represents a whale. Use coding blocks to set the sprite's appearance and movement.
  4. **Animating the Sprite:** Show how to use coding blocks to animate the sprite. For example, make the whale move north to simulate migration.
  5. **Running the Code:** Explain how to run the code and observe the sprite's actions. Encourage students to experiment with different coding blocks to enhance their animations.

- **Interactive Exploration**

  Encourage students to explore Sprite Lab and experiment with creating and animating their whale sprites. Inspire them to try various coding blocks and observe the effects. Organise a 'Coding Challenge' where students model whale migration using sprites and events. Offer prompts and support as needed, fostering a collaborative environment for students to share ideas and solutions.

- **Challenge Task**

  Assign students the task of creating a sprite that demonstrates whale migration. Encourage them to think creatively and utilise multiple coding blocks to achieve their goal. Provide guidance and support as needed, fostering problem-solving skills. Organise peer review sessions where students present their projects and receive feedback from classmates.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key concepts learned during the lesson. Summarise the importance of whale migration and how coding can be used to model this behaviour.

Performance Indicators

Students can:

- explain how coding can model whale migration behaviour.
- navigate the Sprite Lab interface and use coding blocks to create and animate sprites.
- model whale migration through events in Sprite Lab.
- demonstrate creativity and problem-solving skills in their coding projects.

Lesson 5

Topic: Types of Behaviours: Bird Dominance

Page numbers: 77-78

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse how coding can represent bird dominance behavior through dance.
- **Creativity and Innovation:** Students will design and code sprites to demonstrate bird dancing behaviors.
- **Digital Literacy:** Students will learn to use coding blocks to create and animate sprites.
- **Collaboration and Communication:** Students will share their coding projects and provide feedback to peers.

Learning Outcomes

- Understand bird dominance behaviour through dance
- Create sprites that demonstrate bird dancing behaviours
- Use coding blocks to animate sprites
- Model animal behaviour through events in Sprite Lab

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures and videos of birds dancing)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Begin with a discussion on bird dominance behavior, emphasising how birds use dance to establish dominance and attract mates. Explain the significance of these behaviours within the animal kingdom. Show pictures and videos of birds performing dominance dances. Use engaging analogies, such as comparing bird dances to human dance competitions.

- **Guided Practice**

  1. **Logging In:** Guide students to log in to Code.org and navigate to Sprite Lab. Ensure all students have access and are ready to start.
  2. **Understanding the Behavior:** Discuss bird dominance through dance in detail. Explain how birds use elaborate dances to communicate and establish hierarchy.
  3. **Creating the Sprite:** Demonstrate how to create a sprite that represents a dancing bird. Use coding blocks to set the sprite's appearance and movement.
  4. **Animating the Sprite:** Show how to use coding blocks to animate the sprite. For example, make the bird perform dance moves to simulate dominance behaviour.
  5. **Running the Code:** Explain how to run the code and observe the sprite's actions. Encourage students to experiment with different coding blocks to enhance their animations.

- **Interactive Exploration**

  Allow students to explore Sprite Lab and experiment with creating and animating their bird sprites. Encourage them to try various dance moves and observe the effects. Organise a 'Dance

Challenge' where students model bird dominance through dance using sprites and events. Provide prompts and support as needed, fostering a collaborative environment in which students can share ideas and solutions.

- **Challenge Task**

  Assign a task where students must create a sprite that demonstrates bird dominance through dance. Encourage them to think creatively and use multiple coding blocks to accomplish their goal. Provide guidance and support as needed, promoting problem-solving and creativity. Include peer review sessions where students present their projects and receive feedback from classmates.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key concepts learned during the lesson. Summarise the importance of bird dominance through dance and how coding can be used to model this behaviour. Students can now answer question 2d and practice activities from In the Lab and Application-based questions on pages 81 and 82.

Performance Indicators

Students can:

- explain how coding can model bird dominance through dance.
- navigate the Sprite Lab interface and use coding blocks to create and animate sprites.
- model bird dominance through dance using events in Sprite Lab.
- demonstrate creativity and problem-solving skills in their coding projects.

Lesson 6

Topic: Types of Behaviours: Speed Variations

Page numbers: 79

Core Competencies

- **Critical Thinking and Problem-Solving:** Students will analyse how coding can represent speed variations in animals like cheetahs and turtles.
- **Creativity and Innovation:** Students will design and code sprites to demonstrate speed variations.
- **Digital Literacy:** Students will learn to use coding blocks to set and change sprite velocities.
- **Collaboration and Communication:** Students will share their coding projects and provide feedback to peers.

Learning Outcomes

Students will be able to:

- Understand speed variations in animals
- Create sprites that demonstrate speed variations
- Use coding blocks to set and change sprite velocities
- Model animal behaviour through events in Sprite Lab

Resources

- Computers or tablets with Internet access
- Access to Code.org Sprite Lab
- Visual aids (pictures of cheetahs and turtles)
- Worksheets for guided practice and assessment

Methodology

- **Introduction**

  Start by discussing speed variations in animals, focusing on the cheetah and the turtle. Explain how cheetahs are renowned for their incredible speed, while turtles are recognised for their slow and steady pace. Display images of cheetahs and turtles. Use engaging analogies, such as comparing the cheetah to a race car and the turtle to a slow-moving tractor. Read page 79 and look at the screenshot before demonstrating or having the students practice the activity themselves.

- **Guided Practice**

  1. Logging In: Guide students to log in to Code.org and navigate to Sprite Lab. Ensure all students have access and are ready to start.
  2. Understanding Speed Variation: Discuss the speed differences between cheetahs and turtles. Explain how these differences help them survive in their environments.
  3. Creating the Sprites: Demonstrate how to create sprites that represent a cheetah and a turtle. Use coding blocks to set the appearance of each sprite.
  4. Setting Velocities: Show how to use coding blocks to set the velocities of the sprites. For example, set a high velocity for the cheetah and a low velocity for the turtle.
  5. Animating the Sprites: Demonstrate how to animate the sprites to move at different speeds. Use the counter pattern to change the sprite's velocity during the program.
  6. Running the Code: Explain how to run the code and observe the sprite's actions. Encourage students to experiment with different velocities to see the effects.

- **Interactive Exploration**

  Allow students to explore Sprite Lab and experiment with creating and animating their cheetah and turtle sprites. Encourage them to try different velocities and see the effects. Organise a 'Speed Challenge' where students model speed variations using sprites and events. Provide prompts and support as needed, fostering a collaborative environment where students can share ideas and solutions.

- **Challenge Task**

  Assign a task where students must create sprites that demonstrate speed variations between a cheetah and a turtle. Encourage them to think creatively and use multiple coding blocks to achieve their goal. Provide guidance and support as needed, encouraging students to think creatively and solve problems. Use peer review sessions where students present their projects and receive feedback from classmates.

- **Wrap-Up Assessment and Exit Ticket**

  Review the key concepts learned during the lesson. Summarise the importance of animal speed variations and how coding can be used to model these behaviours. Students can now do the Group Project activity on page 82.

Performance Indicators

Students can:

- explain how coding can model speed variations in animals like cheetahs and turtles.
- navigate the Sprite Lab interface and use coding blocks to set and change sprite velocities.
- model speed variations through events in Sprite Lab.
- demonstrate creativity and problem-solving skills in their coding projects.

IN THE LAB

Activity 1

Model the adaptation of Bird and Elements by coding adaptation in Modules 4 and 5 of Lesson 1.

Instructions

- Have students log in to their code.org accounts.
- Navigate to Sprite Lab and open Module 5 of Lesson 1.
- Guide students to create new sprites representing different environmental elements (e.g., trees, water, rocks).
- Name the sprites appropriately (e.g., 'Tree', 'Water').
- Students should design the background to include the environmental elements they created.
- Arrange the elements to create a realistic habitat for the bird.
- Use the coding blocks to program interactions between the bird and the environmental elements. For example:
  - ✓ **Tree Interaction:** Program the bird to perch on a tree when it encounters one.
  - ✓ **Water Interaction:** Program the bird to drink or bathe when it reaches water.
- Introduce variables to track important data in the simulation. For example:
  - ✓ **Energy Level:** Create a variable to track the bird's energy level and update it based on interactions (e.g., foraging increases energy).
  - ✓ **Health Status:** Create a variable to track the bird's health and modify it based on environmental conditions.
- Have students run their simulations to test the interactions between the bird and the environmental elements.
- Encourage them to debug any issues and refine their code.
- Students should present their simulations to the class, explaining their coding choices and how they modelled the bird's adaptations.
- Facilitate a discussion on the ecological significance of adaptations and how coding can represent real-world phenomena.

Activity 2

Fireflies have a special chemical inside their bodies that creates a glow. Create a model of the glowing fireflies at night. Access Module 9 of Lesson 1.

Instructions

- Have students log in to their code.org accounts.
- Navigate to Sprite Lab and open Module 9 of Lesson 1.

- In Sprite Lab, guide students in creating a new sprite and selecting an image representing a firefly.
- Name the sprite appropriately (e.g., 'Firefly').
- Students should design the background to represent a nighttime environment, such as a dark forest or meadow.
- Add elements to the background that enhance the nighttime setting (e.g., stars, moon).
- Use the coding blocks to program the firefly sprite to glow. This can be done by changing the sprite's brightness or colour.
- Introduce a loop to make the firefly's glow pulse, simulating the natural blinking effect.
- Encourage students to add interactive elements, such as other fireflies or obstacles, to make the simulation more engaging.
- Use conditional statements to handle interactions (e.g., if two fireflies meet, they glow brighter).
- Introduce variables to track essential data in the simulation. For example:
  - ✓ **Glow Intensity:** Create a variable to control the intensity of the firefly's glow and update it based on interactions.
  - ✓ **Time of Day:** Create a variable to simulate the transition from night to day and adjust the firefly's behaviour accordingly.
- Have students run their simulations to test the firefly's glowing behaviour.
- Encourage them to debug any issues and refine their code.
- Students should present their simulations to the class, explaining their coding choices and how they modelled the firefly's glow.
- Facilitate a discussion on the biological significance of firefly bioluminescence and how coding can represent real-world phenomena.

Activity 3

Complete Module 4 of Lesson 2.

Instructions

- Have students log in to their code.org accounts.
- Navigate to Sprite Lab and open Module 4 of Lesson 2.
- Guide students to create a new sprite and select an appropriate image for their project.
- Name the sprite to reflect its role in the simulation (e.g., 'Character').
- Students should design the background to represent the environment where the sprite will interact.
- Add elements to the background that the sprite can interact with (e.g., objects, obstacles).
- Use the coding blocks to program the sprite's basic movements. For example:
  - ✓ **Move Up:** Program the sprite to move up when the up arrow key is pressed.

- ✓ **Move Down:** Program the sprite to move down when the down arrow key is pressed.
- ✓ **Move Left:** Program the sprite to move left when the left arrow key is pressed.
- ✓ **Move Right:** Program the sprite to move right when the right arrow key is pressed.

- Encourage students to add interactive elements, such as other sprites or objects, to make the simulation more engaging.
- Use conditional statements to handle interactions (e.g., if the sprite touches an object, it performs a specific action).
- Introduce variables to track important data in the simulation. For example:
  - ✓ **Score:** Create a variable to keep track of the score and update it based on interactions.
  - ✓ **Health:** Create a variable to track the sprite's health and modify it based on interactions.
- Have students run their simulations to test the sprite's movements and interactions.
- Encourage them to debug any issues and refine their code.
- Students should present their simulations to the class, explaining their coding choices and how they implemented the sprite's behaviors.
- Facilitate a discussion on the importance of variables and how they can be used to manage data in simulations.

Activity 4

The birds can exhibit more than one behaviour at a time. Open module 6 of lesson 2 to model this behaviour in Sprite Lab.

Instructions

- Have students log in to their code.org accounts.
- Navigate to Sprite Lab and open Module 6 of Lesson 2.
- In Sprite Lab, guide students to create a new sprite and select an image that represents a bird.
- Name the sprite appropriately (e.g., 'Bird').
- Students should design the background to represent the bird's environment, such as a forest or garden.
- Add elements to the background that the bird can interact with (e.g., trees, flowers).
- Use the coding blocks to program the bird sprite to exhibit multiple behaviours simultaneously. For example:
  - ✓ **Flying:** Program the bird to move around the screen.
  - ✓ **Singing:** Add a sound effect that plays periodically.
  - ✓ **Eating:** Create an interaction where the bird eats when it encounters food.
- Introduce conditional statements to manage the bird's behaviours based on its environment. For example:

✓ If the bird is near a tree, it can perch and sing.

✓ If the bird encounters food, it can stop flying and eat.

- Encourage students to add interactive elements, such as other animals or obstacles, to make the simulation more engaging.
- Use conditional statements to handle interactions (e.g., if the bird encounters a predator, it flies away quickly).
- Have students run their simulations to test the bird's multiple behaviors.
- Encourage them to debug any issues and refine their code.
- Students should present their simulations to the class, explaining their coding choices and how they modeled the bird's behaviors.
- Facilitate a discussion on the ecological significance of bird behaviors and how coding can represent real-world phenomena.
- Observe students' ability to independently use Sprite Lab and apply their understanding of bird behaviors.
- Evaluate their simulations based on creativity, accuracy, and the ability to form links between concepts.

APPLICATION BASED QUESTIONS

Activity 1

Octopuses change colour to be camouflaged in their environment. Open Module 10 of Lesson 1 and model the Octopus simulation in Sprite Lab.

Instructions

- Have students log in to their code.org accounts.
- Navigate to Sprite Lab and open Module 10 of Lesson 1.
- In Sprite Lab, guide students to create a new sprite and select an image that represents an octopus.
- Name the sprite appropriately (e.g., 'Octopus').
- Students should design the background to represent the octopus's environment, such as a coral reef or ocean floor.
- Add elements to the background that the octopus can use for camouflage (e.g., rocks, plants).
- Use the coding blocks to program the octopus sprite to change colour based on its surroundings.
- Introduce conditional statements to detect the background elements and change the octopus's colour accordingly.

- Encourage students to add interactive elements like predators or prey to make the simulation more engaging.
- Use conditional statements to handle interactions (e.g., if a predator is near, the octopus changes colour to blend in).
- Have students run their simulations to test the octopus's colour-changing behaviour.
- Encourage them to debug any issues and refine their code.
- Observe students' ability to independently use Sprite Lab and apply their understanding of octopus's camouflage. Evaluate their simulations based on creativity, accuracy, and the ability to form links between concepts.

Activity 2

Monarch butterflies travel around 3000 miles to the forest of central Mexico in order to survive in winter. In the summer, they migrate back to the north. Open module 9 of lesson 2 and model this behaviour in Sprite Lab.

Instructions

- Briefly remind students about monarch butterflies' migration journey, emphasising their 3000-mile travel to central Mexico for winter survival and their return to the north in summer.
- Have students log in to code.org and navigate to Sprite Lab. Direct them to open Module 9 of Lesson 2.
- In Sprite Lab, guide students to create a new sprite and select an image that represents a monarch butterfly.
- Name the sprite appropriately (e.g., 'Butterfly').
- Students should design the background to represent the starting point in the north.
- Add elements to the background that signify the northern environment (e.g., trees, flowers).
- Use the coding blocks to program the butterfly sprite to move south. This can be done by setting the sprite's movement direction and distance.
- Ensure the movement covers the 3000-mile journey to central Mexico.
- Create a second background for the winter environment in central Mexico.
- Program the sprite to change the background when it reaches the destination.
- Program the butterfly sprite to move back north after a set period, representing the summer migration.
- Encourage students to add interactive elements, such as obstacles or checkpoints, to make the simulation more engaging.
- Use conditional statements to handle interactions (e.g., if the butterfly encounters an obstacle, it changes direction).
- Have students run their simulations to test the migration path and seasonal changes.

- Encourage them to debug any issues and refine their code.
- Observe students' ability to independently use Sprite Lab and apply their understanding of monarch butterfly migration. Evaluate their simulations based on creativity, accuracy, and the ability to form links between concepts.

Activity 3

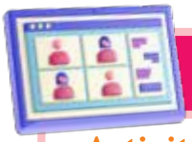
In module 10 of lesson 2, code the model of the school of fish so that they swim together.

Instructions

- Begin by asking students if they've ever seen a large group of fish swimming together.
- Show a short video or pictures of a school of fish.
- Discuss:
    i. What did you notice about how the fish were moving?
    ii. Why do you think they swim together like that?
- Introduce 'adaptation' as a special feature or behaviour that helps animals survive.
- Explain that schooling is a behavioural adaptation.
- Briefly demonstrate the steps on code.org:
    1. Create a sprite.
    2. Use motion blocks to make a sprite move.
    3. Use a loop to repeat an action.
- Guide students to the relevant Code.org activity (Lesson 2, Module 10, or a similar activity focused on creating moving sprites).
- Allow students to begin exploring the coding environment and experimenting with creating and moving fish sprites.
- Challenge them to:
    1. Use a loop to create multiple fish sprites.
    2. Use motion blocks to make the fish swim.
    3. Program the fish to move in a coordinated way (e.g., all moving in the same direction, or using a 'follow' behaviour if available).
    4. Include code to keep the fish from swimming off the screen (e.g., 'bounce off edges').
- Circulate and provide support, guiding students with questions rather than giving direct answers. Encourage them to collaborate and help each other.
- Bring the class back together for a final discussion.
- Facilitate a discussion to connect the coding activity to the science concepts:
    1. How does your code show the benefits of schooling (e.g., increased safety from predators, easier to find food)?
    2. What parts of your code represent the key aspects of this adaptation (e.g., the loop represents many fish, the coordinated movement represents the group behaviour)?

3. How is coding helpful for modelling or simulating natural phenomena?

- Optional extension activities:
  1. Students can add other elements to their simulation, such as predators or food sources.
  2. Students can research other examples of schooling/shoaling behavior in different animals.
  3. Students can write a short paragraph explaining how their code represents the adaptation of schooling.



GROUP PROJECT

Activity

Complete all the modules in Lesson 3: Code Your Own Adaptation.

Instructions

1. **Introduction to Adaptation**
   - Review the concept of animal adaptations (e.g., camouflage, migration, hibernation).
   - Discuss how these adaptations can be represented in coding projects.
   - Show examples of adaptations in coding projects using visuals and videos.
   - Explain the task: Students will create their own adaptation of a given project.
   - Provide links to relevant Code.org resources and examples.
   - Students may struggle to understand how animal adaptations translate to coding adaptations.
   - Students might find it challenging to come up with unique adaptation ideas.
2. **Coding the Adaptation**
   - Review basic coding concepts relevant to the adaptation project.
   - Demonstrate a simple adaptation project.
   - Explain the coding task: Students will code their adaptation using Code.org.
   - Provide links to coding tutorials and resources.
   - Students may encounter syntax errors in their code.
   - Students might struggle with the logic of their code, making it difficult for the adaptation to work as intended.
3. **Testing and Debugging**
   - Review the importance of testing and debugging in coding.
   - Show examples of common coding errors and how to fix them.
   - Explain the testing and debugging task: Students will test their adaptations and debug any issues.
   - Provide links to debugging tutorials and resources.
   - Students may struggle to identify where the errors are in their code.
   - Students might find it challenging to fix the errors once identified.
   - Encourage students to share their reflections.

Engagement Activities

- ### What is Meant by Adaptation: Interactive Discussion

  Start with an interactive discussion about what adaptation means. Use pictures and videos of different animals to illustrate how they have adapted to their environments. Encourage students to share their thoughts and examples they know. This will help them understand the concept of adaptation and its importance in the survival of species.

- ### Examples of Animal Adaptations: Research and Presentation

  Divide students into small groups and assign each group an animal to research. They should find out how their assigned animal has adapted to its environment. Each group will then create a short presentation, including pictures and facts, to share with the class. This activity will help students learn about various animal adaptations and improve their research and presentation skills.

- ### Modelling Animal Adaptations in Sprite Lab: Hands-On Coding

  Introduce students to Sprite Lab on code.org. Show them how to create a simple project that models an animal adaptation, such as a chameleon changing color. Provide step-by-step instructions and let students experiment with coding their own adaptations. This hands-on activity will help students understand how coding can be used to model real-world phenomena.

- ### Sprite Lab Interface: Exploration and Practice

  Guide students through the Sprite Lab interface, explaining the different tools and features available. Allow them time to explore and practice using these tools by creating simple sprites and animations. Encourage them to ask questions and share their discoveries. This will help them become comfortable with the interface and prepare them for more complex projects.

- ### Creating Simple Adaptations: Camouflage and Evolution

  Have students create a project in Sprite Lab that demonstrates camouflage and evolution. They can design a background and a sprite that changes color to blend in with the environment. Discuss how this adaptation helps animals survive. Students can then run their code and observe the results. This activity will reinforce their understanding of camouflage and evolution through practical application.

- ### Events in Code.org for Animal Adaptation Courses: Interactive Coding

  Teach students about events in programming and how they can be used to model animal behaviors. In Sprite Lab, have them create a project where an event (such as clicking a sprite) triggers an adaptation (like a bird performing a dance). This will help students understand the concept of events and how they can be used to create interactive animations.

- ### Examples of Animal Adaptations: Coding Challenges

  Provide students with specific examples of animal adaptations, such as the neck growth of a giraffe, migration of whales, bird dominance/dance, and speed variation for a rabbit and turtle. Challenge them to model these adaptations in Sprite Lab. They can work individually or in pairs to code their projects and then share their work with the class. This will encourage creativity and problem-solving skills.

- **Riddles**

a. I help animals survive in their habitat. I can be a change in color, shape, or behavior. What am I?

Answer: Adaptation

b. I have a long neck to reach high leaves. I live in Africa and am very tall. Who am I?

Answer: Giraffe

c. In Sprite Lab, I can change my color to blend in with my surroundings. What am I?

Answer: Chameleon

d. I change my color to hide from predators. I can be green in the grass and brown on the ground. What am I?

Answer: Camouflage

e. In coding, I happen when you click or press a key. I make things move or change. What am I?

Answer: Event

Answer for Exercise

- **Choose the correct option:**

a. Survival feature

b. Sprite Lab

c. Action in response to a task

d. Coding simulations

- **Answer the following questions:**

a. Computer science and coding can be used to create simulations that show how animals adapt to their environments. For example, you can code a simulation where a polar bear's fur changes color to blend in with the snow, helping it survive in the Arctic.

b. Events in programming are actions that happen in response to something else, like clicking a button or moving a character. In Sprite Lab, events can be used to model animal adaptations by triggering changes in the animal's behavior or appearance when certain conditions are met, like changing color when the environment changes.

c. A real-life example of an animal adaptation is a chameleon changing its color to blend in with its surroundings. In Sprite Lab, you could model this by coding a chameleon sprite that changes color when it moves to different backgrounds, showing how it adapts to avoid predators.

d. Behaviors are important for animal survival because they help animals find food, avoid predators, and reproduce. In Sprite Lab, these behaviors can be modeled by coding actions like hunting for food, hiding from predators, or finding a mate, showing how these behaviors help the animal survive in its environment.