

**New National Curriculum of Pakistan 2026
(NNCP)**

INFORMATION & COMMUNICATION TECHNOLOGY

Grades I - V



GOVERNMENT OF PAKISTAN
NATIONAL CURRICULUM COUNCIL WING
MINISTRY OF FEDERAL EDUCATION & PROFESSIONAL TRAINING

DRAFT

List of Content

CHAPTER 1.....	2
INTRODUCTION AND CURRICULUM FRAMEWORK	2
1.1 PURPOSE OF THE CURRICULUM.....	2
1.2 OBJECTIVES	2
1.3 GUIDING FRAMEWORK	3
1.4 KEY PRINCIPLES	3
1.5 CROSS-CUTTING THEMES.....	3
1.6 COMPARATIVE ANALYSIS OF INTERNATIONAL TRENDS	4
1.7 KEY CURRICULUM SHIFT.....	6
1.7.1 GRADE-WISE SLOS COMPARISON NCP-2024 & NNCP-2026	7
1.7.2 GRADE-WISE NUMBER OF SLOS.....	7
1.7.3 GRADE-WISE COGNITIVE WEIGHTAGE	8
CHAPTER 2	9
STRANDS, STANDARDS AND BENCHMARKS.....	9
CHAPTER 3	11
STUDENT LEARNING OUTCOMES.....	11
3.1 GRADE-WISE CONTENT:	11
3.2 STUDENT LEARNING OUTCOMES	12
3.3 KEY SUGGESTED ACTIVITIES:	16
CHAPTER 4: PEDAGOGY	26
4.1 APPROACHES TO TEACHING AND LEARNING	26
4.2 SUGGESTED METHODOLOGIES	27
4.3 DEVELOPMENTAL CONSIDERATIONS	29
4.4 IMPLICATIONS FOR TEACHER PROFESSIONAL DEVELOPMENT	31
CHAPTER 5: ASSESSMENT	34
5.1 INTRODUCTION - PURPOSE OF ASSESSMENT	34
5.2 PRINCIPLES OF ASSESSMENT	34
5.3 TYPES OF ASSESSMENT.....	36
5.4 ASSESSMENT METHODS.....	37
5.5 ASSESSING DIFFERENT TYPES OF LEARNING	37
5.6 DEVELOPMENTAL CONSIDERATIONS	39
5.7 ASSESSMENT OF COMPETENCIES AND CROSS-CUTTING THEMES	39
5.8 IMPLICATIONS FOR TEACHER PROFESSIONAL DEVELOPMENT	40
CHAPTER 6	45
TEACHING AND LEARNING MATERIAL.....	45
6.1 INTRODUCTION: ROLE OF TEACHING AND LEARNING MATERIALS	45
6.2 TYPES OF LEARNING MATERIALS	45
6.3 CONTENT ORGANIZATION AND LEARNING EXPERIENCES.....	45
6.4 ALIGNMENT WITH PEDAGOGICAL APPROACHES	47
6.5 VISUAL DESIGN	48
6.6 INCLUSION AND REPRESENTATION	48

6.7	ASSESSMENT OPPORTUNITIES WITHIN LEARNING MATERIALS	48
6.8	GRADE-WISE GUIDELINES:.....	48

DRAFT

List of Tables

Table 1: Cross-Cutting Themes	3
Table 2: Comparative Analysis of International Trends	4
Table 3: Key Curriculum Shift	6
Table 4: Grade-wise SLOs Comparison NCP 2024 & NNCP 2026	7
Table 5: Grade-wise Number of SLOs	7
Table 6: Grade-wise Cognitive Weightage	8
Table 7: Six Progressive Strands from Grade I-V	9
Table 8: Grade-wise Content	11
Table 9: Grade-wise SLOs for Grades I-V	12
Table 10: Key Suggested Learning Activities across Grade I-V	16
Table 11: Alignment with Standards, Benchmarks and SLOs	34
Table 12: Key Principles of Assessment in ICT	35
Table 13: Assessment Methods	37
Table 14: Evidence Sought / Suitable Techniques / ICT Examples	38
Table 15: Skill-Based Outcomes	38
Table 16: Implications for Teacher Professional Development	40
Table 17: Grade 1 / Assessment Matrix	41
Table 18: Grade 2 / Assessment Matrix	41
Table 19: Grade 3 / Assessment Matrix	42
Table 20: Grade 4 / Assessment Matrix	42
Table 21: Grade 5 / Assessment Matrix	43

Chapter 1

Introduction and Curriculum Framework

1.1 Purpose of the Curriculum

The curriculum aims to equip Grades I–V learners with essential digital literacy and foundational knowledge of Computing. It develops computational thinking, creativity, problem-solving and responsible digital citizenship through age-appropriate and engaging learning experiences. Learners will ethically and safely use digital technologies with confidence and effectiveness while exploring the basic concepts of intelligent systems. By the end of primary education, they will be prepared to apply their knowledge to simple real-world problems and pursue lifelong learning in a rapidly evolving digital world.

1.2 Objectives

Expected learner outcomes by the end of Grade V:

- **Digital Foundations:** Build foundational digital literacy and confidence with devices and technologies.
- **Emerging Technologies:** Introduce age-appropriate concepts of AI, IoT, cloud computing, etc. through exploration, stories, demonstrations and hands-on activities.
- **Computational Thinking:** Develop logical reasoning, algorithms, block-based programming and problem-solving.
- **Data Literacy:** Collect, organize, represent, interpret and communicate information using simple data.
- **Collaboration & Creativity:** Design, create, experiment, communicate ideas and work effectively in teams.
- **Safety, Ethics & Citizenship:** Use digital technologies and AI safely, responsibly, ethically and respectfully.
- **Future Readiness:** Apply learning to simple real-world problems and establish a foundation for lifelong learning.

1.3 Guiding Framework

- **Learner-Centered and Inquiry-Based Learning:** Encourage learners to explore, question, investigate and develop understanding through active participation.
- **Progressive and Experiential Skill Development:** Build ICT knowledge and practical skills gradually through age-appropriate, hands-on learning experiences.
- **Create, Apply and Solve:** Enable learners to apply knowledge, create digital products, develop solutions and solve simple real-world problems.
- **Computational and Digital Thinking:** Develop logical reasoning, sequencing, problem-solving, algorithms, programming, data literacy and digital awareness.
- **Safe, Creative and Responsible Technology Use:** Promote creativity, collaboration, digital safety, ethical technology use and responsible digital citizenship.

1.4 Key Principles

- **Progressive Skill Development:** Build ICT skills gradually from basic device use in Grades I–II to independent and purposeful application by Grade V.
- **Learning by Doing:** Emphasize practical, hands-on activities and real-world tasks rather than memorization.
- **Age-Appropriate Progression:** Introduce concepts and technologies according to students' developmental level, with increasing complexity across grades.
- **Computational Thinking:** Develop logical thinking, sequencing, problem-solving, algorithms and programming through age-appropriate activities.
- **Digital and Data Literacy:** Develop skills to create, organize, interpret and communicate digital information and data.
- **Safe and Responsible Use:** Integrate digital safety, privacy, ethics and responsible technology use throughout the curriculum.
- **Creativity and Collaboration:** Encourage students to create digital products, explore ideas, communicate and work collaboratively.
- **Real-World Application:** Connect ICT learning with everyday situations and meaningful problems to prepare students for future learning and technology use.

1.5 Cross-Cutting Themes

Table 1: Cross-Cutting Themes

Theme	Strand & Targeted SLO	How Theme is Applied
Values & Ethics	Strand F: Safe, respectful, and ethical use of digital content.	Embeds principles of intellectual honesty, fair sharing, and mutual respect directly into routine hardware usage and online content creation.
Citizenship & Global Citizenship	Strand B / E: Web search, communication, and VR experiences.	Expands horizons beyond local boundaries by leveraging connectivity tools to understand, respect, and communicate with diverse global communities.

Environmental Sustainability & Climate Change	Strand A / C: Tech in daily life; organizing data and charts.	Connects daily digital device usage with physical resource conservation, carbon footprint reduction, and systematic environmental monitoring.
Health, Wellbeing & Safety	Strand A / F: Safe practices, privacy, and account security.	Fosters ergonomic physical habits, healthy screen time limits, and proactive threat detection to safeguard bodily health and digital identities.
Peace & Social Harmony	Strand B / F: Messaging etiquette and recognizing cyberbullying.	Promotes empathy, constructive peer critique, and restorative communication patterns across collaborative digital platforms and virtual spaces.
Digital Literacy	Strand A / B: File management and word-processing tools.	Transforms passive digital consumption into intentional technical competence, structured data organization, and purposeful document formatting.
Financial & Economic Literacy	Strand C / D: Data sorting, logic, and spreadsheet formulas.	Teaches economic fundamentals—such as needs versus wants, commercial intent, and budgeting—through computational structures and quantitative calculations.
21st Century Skills	Strand D: Algorithmic sequencing, loops, and events.	Cultivates collaborative problem-solving, iterative critical thinking, and expressive technical agency through cooperative programming tasks.
Life Skills	Strand A / D: Troubleshooting and code debugging techniques.	Instills independent problem-solving, cognitive resilience, and diagnostic patience by discouraging immediate surrender when encountering technical errors.
Inclusion, Equity & Gender Sensitivity	Strand B / E: Digital creation, AI tools, and accessibility.	Dismantles gender-coded STEM stereotypes and builds sensitivity toward accessible system design for individuals with diverse physical and cognitive needs.
Cultural Heritage & Identity	Strand B / E: Multimedia presentations and virtual exploration.	Employs digital production and spatial media tools to document, preserve, and celebrate regional traditions, folklore, and local historical landmarks.

1.6 Comparative Analysis of International Trends

Table 2: Comparative Analysis of International Trends

Country / Curriculum	Subject Existence / Status	Main Focus Areas	Approach / Integration	Key Curriculum Characteristic
Singapore	ICT does not stand alone as a separate subject at grades I–V	Digital literacy, coding, computational thinking, digital skills	Integrated across different subjects; Code for Fun at upper-primary level	Technology is used as a tool for learning and developing computational thinking
Australia	Digital Technologies is a separate learning area/subject	Digital systems, digital citizenship, computational thinking, coding, data	Systematic teaching within Digital Technologies	Strong emphasis on computational thinking, digital systems and creating digital solutions

Country / Curriculum	Subject Existence / Status	Main Focus Areas	Approach / Integration	Key Curriculum Characteristic
Canada	Varies by province; digital/ICT learning is generally embedded within curriculum	Digital literacy, coding/logic, problem-solving, digital citizenship, computational thinking, data representation	Often integrated across subjects, with technology/computing components depending on province	Focus on digital competency, problem-solving and responsible technology use
Finland	No separate ICT subject	ICT competence, digital literacy, computational thinking, information management	Integrated across subjects, including Mathematics and Crafts	ICT is one of the seven transversal competencies
India	Computer Science/ICT is generally offered as a separate subject	Device handling, productivity software, digital safety, basic coding, digital literacy	Primarily subject-based, with ICT supporting other subjects	Strong foundation in computer operation, productivity tools and safe technology use
Bangladesh	ICT is not consistently established as a standalone subject at primary level	Basic digital literacy, productivity, logical thinking, collaboration, introductory coding	Integrated approach	Focus on foundational digital skills, collaboration and problem-solving
China	ICT and Computer Science are taught as dedicated subjects/learning areas	Productivity, digital foundations, problem-solving, digital safety, advanced creation, robotics	Structured subject-based approach	Progresses from digital foundations toward programming, creation and robotics
South Korea	Separate subject/learning area related to Digital Literacy/Information	Information processing, digital literacy, computational thinking, block-based programming	Systematic teaching of digital and computing competencies	Strong focus on information processing, programming and digital competency
USA	Computer Science is a mandated subject	Hardware & Digital Skills Computational Thinking & Programming Data Literacy AI & Robotics Digital Safety & Citizenship		Builds foundational skills: Algorithms & Programming, Data & Analysis, Computing Systems, Networks & Internet, Impact of Computing
United Kingdom (UK)	Computing is a statutory subject	Computer science, computational thinking, programming, information technology, digital literacy	Dedicated Computing subject with links to other curriculum areas	Three broad strands: Computer Science, Information

Country / Curriculum	Subject Existence / Status	Main Focus Areas	Approach / Integration	Key Curriculum Characteristic
				Technology and Digital Literacy
Cambridge system	Computing and Digital Literacy are treated as distinct areas	Computational thinking, programming, data management, networks, digital literacy, computer systems	Structured subject-based learning with practical application	Balances computing concepts with digital literacy and responsible technology use

1.6.1 Rationale

The revised curriculum is structured across six progressive strands from grade I–V, expanding the four existing themes through the addition of Data Literacy. The strands are developed progressively across levels, ensuring continuity in learning and addressing emerging technological needs. The structure moves from foundational digital skills in grade-I toward independent application, problem-solving, creativity, and responsible use of technology by grade-V.

- **Comprehensive Data Awareness & Progressive Literacy:** Develop data literacy progressively from basic sorting and patterns to organizing, interpreting, and presenting data.
- **Ethical Grounding, Digital Safety & Balanced Cognitive Load:** Integrate age-appropriate digital safety, ethics, privacy, and responsible technology use while maintaining a balanced learning load.
- **Age-Appropriate Emerging Technologies & Programming:** Introduce relevant technologies such as AI, IoT, Cloud Computing, and VR/AR, while removing complex topics such as Blockchain and text-based programming such as Python from Grades I–V, with programming focused on age-appropriate visual and block-based tools.
- **Interdisciplinary Cross-Cutting Synthesis:** Connect ICT learning with real-world areas such as environmental sustainability, financial literacy, inclusion, global citizenship, and cultural awareness.

1.7 Key Curriculum Shift

Table 3: Key Curriculum Shift

Previous Curriculum Domains	Revised Curriculum Strands
ICT Fundamentals	ICT Fundamentals
Digital Skills	Digital Skills
--	Data Literacy (New)
Problem Solving & Programming Fundamentals	Problem Solving & Programming Fundamentals
AI / IoT / Blockchain	Emerging Technologies
Impacts of Computing	Digital Safety

1.7.1 Grade-wise SLOs Comparison NCP-2024 & NNCP-2026

Table 4: Grade-wise SLOs Comparison NCP 2024 & NNCP 2026

Strand	NCP – 2024 SLOs		NNCP – 2026 SLOs				
	Grade I - III	Grade IV - V	Grade I	Grade II	Grade III	Grade IV	Grade V
Strand A: ICT Fundamentals	02	02	02	04	02	02	01
Strand B: Digital Skills	04	06	01	01	03	02	03
Strand C: Data Literacy	—	—	-	03	02	03	03
Strand D: Computational Thinking & Programming	05	03	02	01	02	02	03
Strand E: Emerging Technologies	03	04	-	—	02	02	02
Strand F: Digital Safety	02	04	01	02	01	02	02
Total SLOs	16	21	06	11	12	13	14
	37		56				

1.7.2 Grade-wise Number of SLOs

Table 5: Grade-wise Number of SLOs

Strand	Grade-I		Grade-II		Grade-III		Grade-IV		Grade-V	
	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes
Strand A: ICT Fundamentals	2	15	4	10	2	7	2	7	1	5
Strand B: Digital Skills	1	20	1	15	3	12	2	7	3	10
Strand C: Data Literacy	---	---	3	10	2	10	3	10	3	10
Strand D: Computational Thinking and Programming	2	15	1	12	2	15	2	20	3	20

Strand	Grade-I		Grade-II		Grade-III		Grade-IV		Grade-V	
	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes	No of SLOs	No of classes
Strand E: Emerging Technologies	---	---	---	---	2	6	2	6	2	5
Strand F: Digital Safety	1	4	2	7	1	4	2	4	2	4
No. of SLOs per Grade	6	54	11	54	12	54	13	54	14	54

1.7.3 Grade-wise Cognitive Weightage

Table 6: Grade-wise Cognitive Weightage

Cognitive Level	Grade - I	Grade – II	Grade – III	Grade – IV	Grade - V	Total
Remember	02	02	01	02	-	07
Understand	02	01	03	03	04	13
Apply	02	07	06	07	06	28
Analyze	-	-	-	01	01	02
Evaluate	-	-	-	-	-	-
Create	-	01	02	-	03	06

Chapter 2

Strands, Standards and Benchmarks

The curriculum is organized into six progressive strands from Grades I–V. Each strand is developed through standards and benchmarks that progressively build learners’ knowledge, skills, creativity, problem-solving abilities, and responsible use of technology

Table 7: Six Progressive Strands from Grade I-V

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Strand 1: ICT Fundamentals	<u>Standard-I:</u> Understand foundational concepts of technology, including common digital devices and applications, communication tools and simple troubleshooting techniques.				
	<u>Benchmark-I:</u> Students will identify common digital devices, understand their basic functions and use them appropriately.		<u>Benchmark-II:</u> Students will use storage and communication devices, troubleshoot common technology issues and explore how intelligent technologies help solve everyday problems.		
Strand 2: Digital Skills	<u>Standard-II:</u> Develop digital skills by using appropriate tools to create, manage, communicate and present information effectively and responsibly.				
	<u>Benchmark-I:</u> Students will use educational games and drawing tools to develop basic digital skills and create simple artwork.		<u>Benchmark-II:</u> Students will develop digital fluency by creating and managing documents, conducting purposeful online searches and using email tools for effective digital communication.		<u>Benchmark-III:</u> Students will use presentation tools to create and communicate ideas through engaging multimedia presentations
Strand 3: Data Literacy	<u>Standard-III:</u> Develop data literacy by collecting, organizing, analyzing and interpreting information, using appropriate tools to identify patterns, draw conclusions and communicate findings.				
	<u>Benchmark-I:</u> Students will recognize and collect simple data, organize objects into categories, identify patterns and represent information using pictures, symbols, tally marks and simple tables.			<u>Benchmark-II:</u> Students will organize and analyze data using spreadsheets, apply basic functions, draw conclusions and communicate findings through charts and graphs.	

Strand 4: Computational Thinking and Programming	<u>Standard-IV:</u> Develop computational thinking and programming skills to solve problems through logical reasoning, algorithms and creative digital solutions.	
	<u>Benchmark-I:</u> Develop problem-solving and algorithmic thinking skills to identify everyday problems and design simple solutions.	<u>Benchmark-II:</u> Create interactive projects using visual programming tools to develop computational thinking and programming skills.
Strand 5: Emerging Technologies	<u>Standard-V:</u> Understand emerging technologies and explore their uses in everyday life.	
	-	<u>Benchmark-I:</u> Explore emerging technologies such as AI, Robotics, IoT, Virtual Reality and Cloud Computing and their applications.
Strand 6: Digital Safety	<u>Standard-VI:</u> Cultivate responsible technology use by strengthening online security awareness, preserving personal privacy and making ethical digital choices.	
	<u>Benchmark-I:</u> Students will identify common online risks and use simple ways to protect their personal information, privacy and digital safety.	<u>Benchmark-II:</u> Students will practice safe and respectful online behavior by making good choices and treating others kindly.

Chapter 3

Student Learning Outcomes

3.1 Grade-wise Content:

The following grade-wise content provides a progressive pathway for developing learners' knowledge, practical skills and digital competencies.

Table 8: Grade-wise Content

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Strand A: ICT Fundamentals	Technology Around Us	Input/output Devices and Navigation of Applications	Storage devices and managing files/folders	Communication devices	Troubleshooting skills
Strand B: Digital Skills	Learning through Educational Games	Drawing tools	Typing & word-processing skills	Search engines and Email platforms	Presentation tools
Strand C: Data Literacy		Data recognition through pictures, symbols and patterns	Data collection methods	Organizing data using spreadsheets	Data representation through charts/ graphs
Strand D: Computational Thinking and Programming	Identifying and solving everyday problems	Step-by-step problem-solving approach	Developing logical thinking through Programming	Block-based programming: Conditions and Loops	Block-Based Programming: Events, Sensing and Debugging
Strand E: Emerging Technologies	-		Basic concepts and applications of AI	Basic concepts and applications of IoT and VR	Basic concepts of Cloud Computing and AR
Strand F: Digital Safety	Safe/Unsafe everyday practices	Safe/Unsafe use of digital devices	Personal Data Safety	Safe and Responsible Digital citizenship	Digital Risks & Protection

3.2 Student Learning Outcomes

The following section presents the grade-wise SLOs for Grades I–V, showing a clear progression from foundational ICT skills to more independent and purposeful application. The SLOs are age-appropriate, practical, observable and aligned with the development of digital literacy, computational thinking, data literacy and responsible technology use.

Table 9: Grade-wise SLOs for Grades I-V

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Strand A: ICT Fundamentals	[SLO-ICT-01-A-01]: Explore technology around us. <i>Cognitive: Understand</i>	[SLO-ICT-02-A-01]: Identify common input and output devices <i>Cognitive: Remember</i>	[SLO-ICT-03-A-01]: Recognize basic storage devices. <i>Cognitive: Remember</i>	[SLO-ICT-04-A-01]: Recognize basic communication devices. <i>Cognitive: Remember</i>	[SLO-ICT-05-A-01]: Use basic troubleshooting skills to solve common technology problems. <i>Cognitive: Apply Psychomotor: Precision</i>
	[SLO-ICT-01-A-02]: Identify the use of technology in daily life. <i>Cognitive: Remember</i>	[SLO-ICT-02-A-02]: Use of input/output devices such as a keyboard, mouse, monitor and printer. <i>Cognitive: Apply Psychomotor: Manipulation</i>	[SLO-ICT-03-A-02]: Create files and folders to manage information. <i>Cognitive: Apply</i>	[SLO-ICT-04-A-02]: Understand the purpose of common communication devices. <i>Cognitive: Understand</i>	
		[SLO-ICT-02-A-03]: Navigate applications. <i>Cognitive: Apply Psychomotor: Manipulation</i>			
		[SLO-ICT-02-A-04]: Interact with simple user interfaces. <i>Cognitive: Apply Psychomotor: Manipulation</i>			
Strand B: Digital Skills	[SLO-ICT-01-B-01]: Develop basic digital	[SLO-ICT-02-B-01]: Create digital artwork using	[SLO-ICT-03-B-01]: Develop	[SLO-ICT-04-B-01]: Use search engines to find	[SLO-ICT-05-B-01]: Create multimedia

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
	awareness, interaction and problem-solving skills by exploring educational games. <i>Cognitive: Apply</i>	basic drawing tools in applications such as MS Paint, Tux, or Google drawing. <i>Cognitive: Create</i> <i>Psychomotor: Manipulation</i>	basic typing skills. <i>Cognitive: Understand</i> <i>Psychomotor: Precision</i>	relevant information. <i>Cognitive: Apply</i> <i>Psychomotor: Manipulation</i>	presentations by combining text, images, audio and video using presentation software. <i>Cognitive: Apply</i> <i>Psychomotor: Manipulation</i>
			[SLO-ICT-03-B-02]: Create and save simple documents using a word processor. <i>Cognitive: Apply</i> <i>Psychomotor: Manipulation</i>	[SLO-ICT-04-B-02]: Demonstrate basic email skills to compose, send and respond to messages appropriately. <i>Cognitive: Apply</i> <i>Affective: Responding</i> <i>Psychomotor: Manipulation</i>	[SLO-ICT-05-B-02]: Use suitable layouts and transitions to organize and improve presentations. <i>Cognitive: Apply</i> <i>Psychomotor: Manipulation</i>
			Edit and format simple documents using basic word-processing tools <i>Cognitive: Apply</i>		Select and arrange multimedia elements to make presentations clear and engaging. <i>Cognitive: Apply</i>
Strand C: Data Literacy		[SLO-ICT-02-C-01]: Identify different types of data. <i>Cognitive: Remember</i>	[SLO-ICT-03-C-01]: Apply simple data collection methods through observation, counting and class surveys. <i>Cognitive: Apply</i>	[SLO-ICT-04-C-01]: Identify the basic elements/interface of a spreadsheet. <i>Cognitive: Remember</i>	[SLO-ICT-05-C-01]: Identify patterns in data. <i>Cognitive: Analyze</i>

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
		[SLO-ICT-02-C-02]: Sort data into simple groups. <i>Cognitive: Apply</i>	[SLO-ICT-03-C-02]: Record results using tally marks/simple tables. <i>Cognitive: Apply</i>	[SLO-ICT-04-C-02]: Organize data using spreadsheet. <i>Cognitive: Analyze</i>	[SLO-ICT-05-C-02]: Interpret results based on the data. <i>Cognitive: Understand</i>
		[SLO-ICT-02-C-03]: Represent information using pictures and symbols. <i>Cognitive: Apply</i>		[SLO-ICT-04-C-03]: Apply basic mathematical formulas/ functions to obtain results. <i>Cognitive: Apply</i>	[SLO-ICT-05-C-03]: Create charts/graphs (Column, Pie, Line, Bar) to represent data findings. <i>Cognitive: Create</i>
Strand D: Computational Thinking & Programming	[SLO-ICT-01-D-01]: Identify common problems in everyday life. <i>Cognitive: Remember</i>	[SLO-ICT-02-D-01]: Arrange steps in the correct order to solve simple problems. <i>Cognitive: Apply</i>	[SLO-ICT-03-D-01]: Use visual programming tools such as Scratch, Code.org, or Blockly to create simple programs. <i>Cognitive: Create</i>	[SLO-ICT-04-D-01]: Apply conditional statements to solve problems. <i>Cognitive: Apply</i>	[SLO-ICT-05-D-01]: Apply events to control the actions and behavior of block-based programs. <i>Cognitive: Create</i>
	[SLO-ICT-01-D-02]: Develop simple solutions to solve problems. <i>Cognitive: Apply</i>		[SLO-ICT-03-D-02]: Create simple Scratch programs using movement and sounds. <i>Cognitive: Create</i>	[SLO-ICT-04-D-02]: Develop programs using loops to solve problems. <i>Cognitive: Apply</i>	[SLO-ICT-05-D-02]: Use sensing blocks to make block-based programs respond to user input and surroundings. <i>Cognitive: Create</i>
					[SLO-ICT-05-D-03]: Apply basic debugging techniques to identify and fix

Strand	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
					errors in block-based programs. <i>Cognitive: Apply</i>
Strand E: Emerging Technologies			[SLO-ICT-03-E-01]: Understand basic concepts and applications of AI in everyday life. <i>Cognitive: Understand</i>	[SLO-ICT-04-E-01]: Understand basic concepts and applications of IoT in everyday life. <i>Cognitive: Understand</i>	[SLO-ICT-05-E-01]: Understand cloud computing and its use for storing, accessing and sharing files. <i>Cognitive: Understand</i>
			[SLO-ICT-03-E-02]: Solve simple problems or puzzles using AI tools. <i>Cognitive: Apply</i>	[SLO-ICT-04-E-02]: Explore Virtual Reality (VR) through interactive games, virtual experiences and fun activities. <i>Cognitive: Understand</i>	[SLO-ICT-05-E-02]: Explore Augmented Reality (AR) and its applications. <i>Cognitive: Understand</i>
Strand F: Digital Safety	[SLO-ICT-01-F-01]: Classify safe and unsafe practices in everyday life. <i>Cognitive: Understand</i> <i>Affective: Responding</i>	[SLO-ICT-02-F-01]: Identify safe and unsafe activities when using digital devices. <i>Cognitive: Understand</i>	[SLO-ICT-03-F-01]: Understand personal data safety. <i>Cognitive: Understand</i>	[SLO-ICT-04-F-01]: Apply safe practices to protect personal information, accounts and privacy when using digital technologies. <i>Cognitive: Apply</i> <i>Affective: Valuing</i>	[SLO-ICT-05-F-01]: Recognize common digital risks such as phishing, scams, malware and cyberbullying. <i>Cognitive: Understand</i>
		[SLO-ICT-02-F-02]: Follow simple rules for staying safe while using digital devices. <i>Cognitive: Apply</i> <i>Affective: Responding</i>		[SLO-ICT-04-F-02]: Demonstrate respectful, ethical and responsible behavior when sharing and using digital content online. <i>Cognitive: Apply</i> <i>Affective: Valuing</i>	[SLO-ICT-05-F-02]: Apply basic safety measures to protect personal information and digital accounts. <i>Cognitive: Apply</i> <i>Affective: Valuing</i>

3.3 Key Suggested Activities:

The following overview highlights the key suggested learning activities across Grades I-V, designed to foster active participation, logical thinking, and digital literacy through hands-on practice:

Table 10: Key Suggested Learning Activities across Grade I-V

Grade - I	
Unit-01: ICT Fundamentals	
Content areas/ Topics	Suggested learning Methods/Activities
Technology Around Us:	Technology or Not? Show different pictures (book, mobile phone, pencil, computer, bicycle). Students give a thumbs-up if they think it is technology. What Am I?: Give clues about device, such as “I have a screen and help you call people.” Students identify the device and state its purpose. Match the Device: Give students cards showing devices and separate cards showing their purposes. Students match each device with its correct use. What Would You Use?: Present situations such as “You want to talk to someone far away.” Students choose the most suitable device and explain why.
Unit-02: Learning through Educational Game	
Learning Through Educational Games	Guided Game Exploration: Teacher demonstrates an age-appropriate educational game and guides students in using the mouse, keyboard, touchscreen, and game controls. Hands-on Game-Based Learning: Students work individually or in pairs to play educational games involving counting, matching, letters, shapes, colors, or patterns. Digital Problem-Solving Challenge: Students complete simple digital puzzles by matching objects, completing patterns, or arranging items in the correct order. Discussion and Reflection: Students share what they learned, how they solved a challenge, and which game they enjoyed most.
Unit-03: Identifying and solving simple everyday problems	
Thinking and Problem-Solving	Problem of the Day: Present a simple daily-life problem and ask students to suggest two or three practical solutions. Think–Pair–Share: Give a problem such as sharing one computer with a friend. Students think individually, discuss in pairs, and share their best solution. Picture Problem-Solving: Show a picture of a problem and ask students to identify the problem and suggest a safe and suitable solution. Choose the Best Solution: Present a problem with three possible solutions. Students select the best solution and explain why it is the most appropriate.

Unit-04: Safe use of Technology	
Safe use of Technology	Safe or Unsafe? Show pictures of children wearing a seatbelt, touching a hot stove, or walking on a wet floor. Students identify whether each action is safe or unsafe. Safety Sorting: Students sort familiar activities, such as wearing a helmet, playing near electrical sockets, or crossing at a zebra crossing, into Safe and Unsafe groups. Show the Safe Way: Students demonstrate safe practices through role-play, such as crossing the road, using scissors, walking on stairs.

Grade - II

Unit 01: ICT Fundamentals	
Content areas/Topics	Suggested learning Methods/Activities
ICT Fundamentals: Basic Computing Skills	Click and Explore: Students practice clicking, double-clicking, right-clicking, and dragging by completing simple on-screen tasks. Keyboard Exploration Students locate letters, numbers, Spacebar, Enter, Backspace, and arrow keys and use them to type simple words. Click and Drag Challenge: Students drag shapes, pictures, or objects to their correct locations in an age-appropriate application. Application Treasure Hunt: Give students instructions such as “Open the drawing app → find the pencil tool → draw a circle → save your work.” Interface Hunt: Ask students to find common interface elements such as the close button, toolbar, menu, and icons in a simple application. Follow-the-Path Activity: Students use the mouse to guide an on-screen object through a simple maze, developing mouse control and navigation skills.
Unit 02: Digital Skills	
Digital Skills: Digital Artwork	Tool Exploration: Students explore basic drawing tools such as pencil, brush, eraser, shapes, fill, and color selection with teacher guidance. Follow-the-Teacher Teacher demonstrates one tool at a time while students follow the same steps. Shape Challenge: Students use line, circle, rectangle, and other shape tools to create a simple picture, such as a house or robot. Color My Picture: Students draw a simple object and use the fill/color tools to add different colors. Create a Digital Scene: Students create a simple digital scene, such as “My Garden,” “My House,” or “A Sunny Day.” Fix My Drawing: Students use the eraser and undo tools to correct mistakes and improve their artwork. Save It Safely: Teacher demonstrates how to save artwork. Students save their work using a simple file name, such as My Garden. Pair-and-Create: Two students work together to plan a picture; one student draws while the other suggests shapes and colors, then they switch roles. Creative Challenge: Give students a challenge such as “Create a picture using at least 3 shapes, 2 colors, and one drawing tool.”

Unit 03: Data Literacy

Data Literacy: Understanding Data

Data Collection Survey: Ask students a simple question such as “What is your favorite fruit/game?” or “How did you come to school today?”; Students collect classmates' responses.

Sort It Out! Give students objects or picture cards such as fruits, animals, shapes, or stationery. Students sort them into groups based on color, type, size, or shape.

Find the Pattern: Show patterns such as ☆ ● ☆ ● ☆ __ or 🍎 🍎 🍌 🍎 🍎 __. Students identify what comes next.

Picture Graph: Students use pictures or symbols to represent collected data. Example: one 🍎 = one student who likes apples.

Data Detective: Show a simple picture chart and ask questions such as “Which fruit is liked by the most students?” and “Which is liked by the fewest?”

Pattern Hunt: Ask students to find patterns around the classroom, such as floor tiles, colors, shapes, books, or classroom decorations.

Human Data Chart: Ask students to stand in groups according to a category, such as favorite color. Students observe which group has more or fewer members.

Symbol Matching: Give students simple information and ask them to represent it using symbols. Example: 3 books → 📖📖📖.

Build a Class Chart: Create a class chart showing favorite animals, fruits, colors, or hobbies. Students place a picture/symbol. Which fruit is liked by more students: apples or oranges?

Which fruit has fewer choices: bananas or grapes? in the appropriate category.

Read, compare, and interpret the data: Students learn to look at a simple class chart or picture graph, find information, compare different categories, and answer basic questions using the data, Which fruit is liked by more students: apples or oranges? Which fruit has fewer choices: bananas or grapes? Encourage students to make simple statements based on the chart like “Grapes are the least popular fruit.”

Unit 04: Computational Thinking and Programming

Computational Thinking and Programming: Thinking Step by Step

Step-by-Step Challenge: Give students a familiar task such as “How do you get ready for school?” e.g. Verbal Sequencing Activity like Students listen to a series of steps and verbally arrange them in the correct order. For example, ask: “What do we do first, next, and last when getting ready for school?” Students explain the sequence aloud using words such as first, next, then, and finally.

Unplugged Algorithm Cards: Provide mixed-up instruction/picture cards for a task such as brushing teeth. Students put the steps in the correct order.

Human Robot: One student acts as a robot while another gives precise instructions, such as “Take two steps forward, turn right, and pick up the ball.”

Fix the Algorithm: Give students an incorrect sequence, such as “Put on shoes → put on socks → leave for school.” Students identify the mistake and rearrange the steps.

Partner Algorithm Challenge: One student creates instructions for a simple

	task, and the partner follows them exactly. Students check whether the instructions work and improve them if necessary.
Unit 05: Personal Data Safety	
Be Smart with Personal Data	Safe or Unsafe? Students sort activities into SAFE and UNSAFE categories and explain their choices. Digital Safety Traffic Light: Students raise Green = Safe, Red = Unsafe, Yellow = Ask an Adult cards in response to different digital-safety situations. Healthy Digital Routine: Students create a simple daily routine that includes limited screen time, breaks, outdoor play, meals, and sleep. Safety Role-Play: Students act out simple scenarios involving personal information or unknown messages and practice saying “No” and telling a trusted adult.

Grade - III

Unit 01: ICT Fundamentals	
Content areas/Topics	Suggested learning Methods/Activities
ICT Fundamentals: Storage and communication devices	Device Detective: Students identify common storage devices such as USB drives, memory cards, hard drives, and explain their basic purpose. Storage? Students classify different storage devices. Match the Device to Its Use Students match devices with their functions, e.g., USB → stores files, memory card → stores photos. Folder Organization Challenge Students create folders such as School, Pictures, Projects, and Homework and decide where different files should be saved. Create, Save, and Organize Students create a simple document or drawing, give it an appropriate file name, save it, and place it in the correct folder.
Unit 02: Digital Skills	

Digital Skills Typing & word-processing skills	Keyboard Practice: Students practice finding letters, numbers, Spacebar, Enter, Backspace, and Shift by typing their name and simple words. Typing Challenge: Students type short sentences such as “I like to read.” Focus on accuracy, spacing, and correct use of the keyboard. Type and Format: Students type a short paragraph and practice bold, italic, underline, font size, and alignment. Create and Edit: Students create a simple document such as “My Favorite Animal.” They type a few sentences, correct mistakes, and add a title. Save and Organize: Students save their document with a suitable file name, such as My_Favorite_Animal, and save it in the assigned folder.
Unit 03: Data Literacy	
Data Literacy: Understanding Data	Class Survey: Ask a simple question such as “What is your favorite sport?” Students ask classmates, count responses, and record them using tally marks. Observation Count: Ask students to observe the classroom and count items such as chairs, books, windows, or computers. They record the results in a simple table. Tally Mark Challenge: Give students a set of objects or responses to count. Students practice recording every five items using tally marks. Data Collection Walk: Students observe a selected area of the school, count different objects or items, and record their findings in a simple table. Create and Present a Simple Data Table: Students organize the information they collected into a simple table with clear categories and numbers. Describe their findings to the class using statements such as “The most popular choice is...” or “The fewest students chose...”.
Unit 04: Computational Thinking and Programming	
Computational Thinking and Programming: Programming and logical thinking	Block-Based Program Builder: Students use Scratch or Blockly to create simple programs by arranging blocks in the correct sequence. Animated greeting: Create a character that moves and says “Hello” with a sound. School tour: Program a character to move between classroom, library, and playground. Healthy habits: Create an animation showing activities such as washing hands, eating healthy food, or exercising. Road Safety Animation: Create a simple road-safety animation using movement and sounds.
Unit 05: Emerging Technologies	

Emerging Technologies: Basic concepts and applications of AI & Robotics	AI Around Us: Students identify everyday examples of AI and robots, such as voice assistants, smart devices, robot cleaners, and recommendation systems. AI or Robot? Students are given examples of different technologies and decide whether they are AI, a robot, both, or neither, with a simple explanation. AI Puzzle Solver: Students use a teacher-selected AI tool to solve simple patterns, riddles, or number puzzles and discuss the solution. Human vs. AI Challenge: Students solve a simple problem themselves, then compare their solution with an AI-generated solution and discuss the differences.
Unit 06: Digital Safety	
Digital Safety	Personal or Not? Show picture cards/sticky notes or write on the board; name, favorite color, home address, phone number, toy and password. Students sort them into “Personal Information” and “Not Personal Information.” Keep It Private- Verbal Activity! Teacher says different types of information. Students say “Private” or “Safe to Share.” e.g “Password” → Private, “Home address” → Private, “Favorite color” → Safe to Share, “Favorite food” → Safe to Share. What Would You Do? Ask: “Someone asks for your phone number. What should you do?” Students discuss the safest response: Do not share it and tell a trusted adult. Trusted Adult Circle: Students identify people they can go to for help, such as a parent, teacher, or caregiver. Emphasize asking a trusted adult before sharing personal information. Password Protect: Explain that passwords are private, like a key to a house. Students practice identifying safe behavior: “Keep your password private.” Safety Role-Play One student acts as someone asking for personal information. The other practices saying “No, I won't share that” and telling a trusted adult. My Safety Poster Students create a simple poster with 3 rules, such as “Keep passwords private,” “Don't share my address,” and “Ask an adult for help.”

Grade - IV	
Unit 01: ICT Fundamentals	
Content areas/Topics	Suggested learning Methods/Activities
ICT Fundamentals: Communication devices	Device Sorting Activity: Students work in groups to sort pictures of communication devices into categories such as mobile, wired, and wireless devices. Match the Device: Students match each communication device with its main use, e.g., mobile phone → calling, email → sending messages, video call → face-to-face communication. Think–Pair–Share: Students discuss how they use communication devices in daily life and share one benefit of each device with the class.
Unit 02: Digital Skills	
Digital Skills: Search engines and Email platform	Search Challenge: Students use a search engine to find information about a simple topic, such as animals, planets, or healthy food, using suitable keywords or phrase such as “Which is the largest planet?” Students search for the answer and identify relevant information. Email Writing Practice: Students compose a simple email, such as a thank-you message or classroom update, using an appropriate subject and language. Email Reply Practice: Students read a simple email and write a clear, polite reply.
Unit 03: Data Literacy	
Data Literacy: Organizing Data using spreadsheets	Explore the Spreadsheet: Students open spreadsheet application and identify rows, columns, cells, and cell addresses through a guided exploration. Enter and Organize Data: Students enter a simple data, such as names and marks, and organize it using appropriate headings. Formula Practice: Students use basic formulas to perform addition, subtraction, multiplication, and division on the entered data. Function Challenge: Students use simple built in mathematical functions like SUM, AVERAGE, COUNT, MIN, and MAX to calculate and explore results from a simple data. Spreadsheet Task: Students create and organize simple spreadsheets for everyday purposes, such as a result sheet, grocery list, or pocket-money record, and use formulas and functions to calculate and analyze data.
Unit 04: Computational Thinking and Programming	
Computational Thinking and Programming: Basic concepts of block-based programming	Block-Based Program Builder: Students use Scratch or Blockly to create simple programs by arranging blocks in the correct sequence. Condition Challenge: Students create a program that makes a decision based on a condition, e.g., “If the answer is correct, say ‘Well done!’; otherwise, try again.” Loop Challenge: Students use loops to repeat an action, such as making a character move 10 steps five times or draw a repeated shape. Problem-Solving tasks: Students combine sequences, conditions, and loops to create a simple program that solves an everyday or game-based problem.

Unit 05: Emerging Technologies	
Emerging Technologies: Basic concepts and applications of IoT and Virtual Reality (VR)	IoT Around Us Students identify everyday IoT devices, such as smart watches, smart TVs, security cameras, and smart lights, and discuss how they connect and share information. 2. Smart or Not? Students look at examples of everyday devices and identify which devices can connect to the internet and work smartly. 3. Virtual World Exploration Students experience a teacher-selected VR environment and explore places such as a museum, space, ocean, or historical site. 4. VR Game Activity Students participate in a simple, age-appropriate VR game or interactive activity and describe what they experienced. 5. Create a Virtual Experience Students explore or design a simple virtual scene or environment using a child-friendly VR tool and share their experience with classmates.
Unit Name: Digital Safety	
Digital Safety: Safe & Responsible Digital citizenship	Scenario-Based Learning Present situations such as receiving a message from an unknown person or being asked for a password. Students decide “Safe or Unsafe?” and explain what they should do? Password Activity: Compare weak and strong passwords and create examples of strong passwords without using their actual passwords. Digital Etiquette Detective: Identify respectful and disrespectful online comments and improve inappropriate ones. Think Before You Share: Students examine examples of messages, images, and information and decide whether they are appropriate or inappropriate to share. Be Respectful Online: Students role-play common online situations, such as disagreeing with someone or responding to an unkind comment, and demonstrate respectful responses. Give Credit: Students use a teacher-provided image or piece of information and practice acknowledging the original creator/source when using digital content.

Grade - V	
Unit 01: ICT Fundamentals	
Content areas/ Topics	Suggested learning Methods/Activities
Troubleshooting skills	What's Wrong? Present simple technology problems, such as “The computer has no sound” or “The mouse is not working.” Students identify the possible problem. Fix-It Challenge: Give students common technology problems and ask them to suggest simple steps to solve them. Check and Test: Students try a solution, test the device, and decide whether the problem has been fixed.
Unit 02: Digital Skills	
Digital Skills Presentation tools	Guided Multimedia Creation: Create a presentation on a familiar topic using text, images, audio, and video. Hands-on Exploration: Insert, resize, arrange, and edit multimedia elements on slides using presentation software. Peer Learning: Review a partner's presentation and suggest improvements in multimedia use, layout, and transitions. Project-Based Learning: Create a multimedia presentation on a real-world topic using appropriate content and presentation features.
Unit 03: Data Literacy	
Data Literacy Data Presentation through charts and graphs	Pattern Identification: Students examine a dataset and identify patterns such as highest/lowest values, increases, decreases, or repeated trends. Data Analysis: Students examine a dataset and explain what the results show. Data-Based Conclusions: Students answer questions and make conclusions using evidence from the data. Chart Selection: Students examine different datasets and select the most appropriate chart or graph to represent the data.
Unit Name: Computational Thinking and Programming	
Computational Thinking and Programming: Advanced concepts of block-based programming	Event Challenge: Create a project where a character performs different actions when events occur, such as clicking a character or pressing a key. Sensing Challenge: Create a program where a character responds to surroundings, such as touching an obstacle, detecting another character, or asking for user input. Debugging Detective: Examine a block-based program with intentional errors, identify the errors, and explain why the program is not working correctly. Fix and Test: Correct the identified errors, run the program, and test different inputs to ensure it works as intended.

Unit Name: Emerging Technologies	
Emerging Technologies Basic concepts of Cloud Computing	Cloud in Everyday Life: Students explore familiar cloud-based services such as Google Drive, OneDrive, or online photo storage. Upload: Students upload a completed school assignment to a cloud platform. Access: Students open and access the assignment from another device. Share: Students share the assignment with their teacher or a classmate using the cloud platform.
Unit Name: Digital Safety	
Digital Safety: Digital Risks & Protection	Spot the Risk: Students examine real-life scenarios, such as receiving a suspicious email, clicking an unknown link, or being contacted by a stranger online, and identify the digital risk involved. Protect Your Account: Students create a strong sample password and identify safety practices such as keeping passwords private, enabling two-step verification, and avoiding sharing personal information online.

Chapter 4: Pedagogy

4.1 Approaches to Teaching and Learning

Teaching and learning in primary ICT should be learner-centered, practical, activity-based and age-appropriate. Learners should develop ICT knowledge and skills through exploration, hands-on practice, creation, problem-solving and reflection.

Pedagogy should be aligned with the progressive development of learners from Grade I to V and with the intended learning outcomes across the six strands of the curriculum. Learners should gradually progress from identifying and exploring technology to applying digital skills, organizing and interpreting data, developing computational thinking, creating simple programs, exploring emerging technologies and demonstrating safe and responsible digital behaviour.

The following teaching and learning approaches are recommended to support practical, age-appropriate and progressive ICT skills across Grades I–V:

- Use concrete objects, demonstrations, games and guided exploration in the early grades.
- Provide regular opportunities to interact with input/output devices, applications and digital tools.
- Develop digital skills through meaningful tasks such as drawing, typing, document creation and searching for information.
- Use real-life situations to develop skills for data collection, classification, representation and interpretation.
- Introduce computational thinking through sequencing, problem-solving, block-based programming, loops, conditions, events, sensing and debugging.
- Introduce emerging technologies such as AI, IoT, Cloud Computing and VR/AR through age-appropriate examples and experiences.
- Integrate digital safety, privacy, responsible behavior and ethical use of digital content throughout the curriculum.
- Encourage learners to work individually, in pairs/groups to develop communication, collaboration, creativity and problem-solving competencies.
- Provide differentiated activities and appropriate scaffolding to accommodate different levels of digital experience and learning needs.

A balanced combination of inquiry-based, experiential, activity-based, project-based and collaborative learning, together with problem-solving and technology-supported learning, should be used according to the nature of the topic and the developmental level of learners.

4.2 Suggested Methodologies

4.2.1 Inquiry-Based Learning

Inquiry-based learning encourages learners to ask questions, explore, investigate, observe and discover concepts through guided learning experiences. The teacher facilitates learning by posing questions and providing appropriate resources rather than simply providing answers.

Inquiry is particularly useful for ICT because learners can explore how devices, applications and technologies work. It develops curiosity, logical thinking and the ability to investigate and draw conclusions.

For example, learners can investigate the role of different devices, identify patterns in data or explore how a block-based program behaves when different commands are changed.

Example Activity

" Match the Device" – Grade - I

Learners observe technology used at home and school and identify devices such as computers, television and smartphone. They discuss; identify the device, how does it help us?

This supports the SLO: Identify the use of technology in daily life.

4.2.2 Experiential Learning

Experiential learning enables learners to develop understanding through direct experience, observation, experimentation and reflection.

ICT skills require learners to interact directly with devices and applications. Experiential learning allows learners to learn by doing for example, using a mouse and keyboard, creating digital artwork, organizing files, collecting data or experimenting with a program.

It also helps learners connect ICT concepts with their everyday experiences.

Example Activity

"Create, Save and Find My File" – Grade - III

Learners create a simple document using a word processor, save it with an appropriate name and locate the saved file. The teacher then discusses why files need to be named and organized properly. This directly supports the curriculum outcomes related to creating and saving documents and managing information through files and folders.

4.2.3 Activity-Based Learning

Activity-based learning engages learners in hands-on tasks, games, practice exercises and structured activities to develop skills.

ICT involves practical skills; learners need repeated opportunities to perform tasks themselves. Activities develop digital fluency, coordination, creativity and confidence.

Example Activity

"Create a Digital Scene" – Grade - II

Learners use MS Paint, Tux or Google Drawing to create a picture using basic drawing tools. They experiment with shapes, lines and colors and then save their artwork. This supports the SLO on creating digital artwork using basic drawing tools.

4.2.4 Project-Based Learning

Project-based learning engages learners in authentic, real-world tasks that require them to apply knowledge and skills through inquiry, problem-solving, collaboration and creation of a tangible product or solution.

Projects allow learners to integrate ICT skills. They can combine word processing, drawing, data handling, presentations, searching and computational thinking to produce digital artefacts. Mini projects should be age-appropriate in Grades I–II and progressively develop greater structure, complexity and independence in Grades III–V.

Example Activity

" Class Survey" – Grade-III-IV

Learners conduct a simple class survey, such as favorite fruits or favorite games. They:

1. Collect responses.
2. Record the results in a simple table.
3. Organize the data.
4. Create a simple chart.
5. Discuss what the chart shows.

This integrates the curriculum outcomes related to data collection, tables, spreadsheets, data interpretation and charts/graphs.

4.2.5 Collaborative Learning

Collaborative learning involves learners working in small groups to discuss ideas, share responsibilities, solve problems and produce a common outcome.

Example Activity

"Create a Multimedia Presentation" – Grade - V

Groups create a presentation on a familiar topic. **Group activities can be organized by assigning specific roles to learners, ensuring active participation and collaboration.**

- **Information Researcher:** Selects relevant information.
- **Text Editor:** Arranges and edits the text.

- **Image Coordinator:** Selects appropriate images.
- **Media Coordinator:** Manages audio and video elements.
- **Presenter:** Presents the final product.

They use suitable layouts, transitions and multimedia elements to make the presentation clear and engaging.

4.2.6 Problem-Solving and Critical Thinking

Problem-solving and critical thinking encourage learners to identify problems, analyze situations, sequence steps, test solutions, identify errors and improve their solutions. The curriculum progressively develops learners from identifying everyday problems to designing and creating programs using sequences, loops, conditions, events, sensing, and debugging to solve problems effectively. Learners should be encouraged to try different solutions and understand that errors are a natural part of the problem-solving process.

Example Activity

"Debugging Detective" – Grade - V

The teacher provides a simple block-based program containing error(s). Learners run the program, observe the unexpected behaviour, identify the incorrect block and modify the program so that it works correctly.

This develops debugging and problem-solving skills and directly reflects the curriculum SLO on applying basic debugging techniques to identify and fix errors in block-based programs.

4.2.7 Integration of Technology and Digital Tools

Technology and digital tools should be integrated into learning to enable learners to create, communicate, investigate, practice and demonstrate their understanding. Appropriate tools can support learning in areas such as digital artwork, word processing, presentations, spreadsheets, searching, programming and emerging technologies.

Technology should be used purposefully and should always be aligned with the intended learning outcome.

Example Activity

"Create a Data Chart" – Grade - V

Learners enter class data into a spreadsheet, organize the information and use an appropriate chart to represent the findings. This integrates spreadsheet skills, data organization, mathematical functions and visual representation of data through charts/graphs.

4.3 Developmental Considerations

Pedagogical approaches should become progressively independent, investigative and application-oriented from Grade I - V.

Lower Primary (Grade I- II)

At this stage, learning should be concrete, playful, highly interactive and closely guided. Learners should develop foundational ICT concepts through exploration, observation, storytelling, games, demonstrations and hands-on activities.

ICT Fundamentals

Learners should explore technology around them and identify common input/output devices. They should gradually learn to use devices such as the keyboard, mouse, monitor and printer.

Digital Skills

Learning should emphasize the use of educational games and digital artwork creation. Activities should involve demonstration followed by guided practice.

Data Literacy

Learners should begin with identifying different types of data and representing information through pictures and symbols.

Computational Thinking and Programming

Utilize screen-free sequencing tasks and unplugged activities to foster early problem-solving, computational thinking and programming readiness for Grade I-II.

Digital Safety

Utilize interactive stories, scenario tasks and role-play to guide young learners in distinguishing safe from unsafe choices and following essential safety guidelines.

Upper Primary (Grades III - V)

Learners at this stage are capable of independent thinking, sustained engagement, investigation and application. Activity-based learning should therefore be complemented by structured inquiry, collaboration, projects and problem-solving.

ICT Fundamentals

Enable Grade III–V learners to recognize common storage and communication devices while applying hands-on skills in file management, application navigation, interface interaction and basic troubleshooting.

Digital Skills

Teaching should provide opportunities for learners to develop typing skills, document creation, searching information, email skills, document formatting and multimedia presentation skills.

Data Literacy

Learners should begin with observing, counting, conducting class surveys, using tally marks. They should progress from organizing data using spreadsheets, applying basic mathematical formulas/functions and creating charts and graphs.

Computational Thinking and Programming

Design instruction that guides learners from basic movement and sound projects to advance block-based problem-solving, integrating loops, conditional statements, events and sensing blocks and debugging.

Emerging Technologies

Introduce AI, IoT, cloud computing and VR/AR through familiar examples, demonstrations, stories, videos and interactive experiences rather than technical explanations. Learning should move from understanding concepts to simple applications, such as using AI tools to solve simple problems or puzzles and using cloud platforms to store, access and share files.

Digital Safety

Learners will identify online safety threats such as scams, phishing, malware and cyberbullying while learning to protect their personal privacy and practice safe, respectful and ethical digital citizenship.

4.4 Implications for Teacher Professional Development

Successful implementation of the curriculum requires teachers to develop both subject knowledge and pedagogical competence. Professional development should focus on enabling teachers to translate the SLOs into practical and age-appropriate learning experiences. Teachers should be supported in the following areas:

1. Subject Knowledge

Teachers should develop practical knowledge and confidence in:

- ICT fundamentals and common digital devices
- Word processing, digital drawing and presentation tools
- Search engines and basic email
- Spreadsheets, data organization and representation
- Sequencing, loops, conditions, events, sensing and debugging using Scratch, Code.org or Blockly etc.
- Basic concepts of AI, IoT, Cloud Computing and VR/AR
- Digital safety, privacy, phishing, scams, malware and cyberbullying

2. Pedagogical Competencies

Teachers should be trained to:

- Design hands-on and activity-based tasks
- Use guided inquiry and effective questioning techniques
- Facilitate project-based and collaborative learning
- Foster computational thinking skills by integrating unplugged tasks with interactive digital activities.
- Integrate digital tools purposefully rather than demonstrating them
- Connect learning with real-life situations and cross-curricular areas

3. Assessment Competencies

Teachers should be able to assess both knowledge and practical performance through:

- Observation
- Practical tasks
- Demonstrations
- Digital products
- Presentations
- Checklists and rubrics
- Problem-solving and programming tasks

Assessment should measure learners' ability to apply knowledge and skills, not merely recall terminology.

4. Inclusive Classroom Practices

Teachers should be trained to:

- Differentiate activities according to learners' abilities.
- Provide additional practice where required.
- Promote peer and collaborative learning while ensuring equitable access to devices and learning opportunities.
- Provide unplugged alternatives where devices or connectivity are limited.
- Adapt activities for learners with diverse needs.

5. Teacher Support, Mentoring and Monitoring

A continuous support mechanism should include:

- Grade-specific professional development.
- Demonstration and model lessons.
- Peer learning and collaborative lesson planning.
- Facilitate ongoing instructional support and mentoring through capable teachers to ensure effective implementation.
- Classroom observation followed by constructive feedback.
- Periodic review of learners' practical work.

Overall, Teacher Professional Development (TPD) should enable teachers to shift from traditional Demonstrate-and-Instruct approach towards Inquire-and-Solve approach. This is particularly important because the progression grid moves learners from basic recognition and guided practice in the early grades towards application, creation, problem-solving and responsible use of technology.

DRAFT

Chapter 5: Assessment

5.1 Introduction - Purpose of Assessment

Assessment in ICT is an integral part of teaching and learning. Its purpose is to determine how well **students understand digital concepts, operate tools, solve problems, create digital products, interpret data, apply computational thinking and behave safely and responsibly**. Assessment should make learning visible, inform teaching, guide feedback, identify support needs and document progression from guided exploration in Grade I to increasingly independent and purposeful application in Grade V.

Each assessment begins with the relevant grade-level SLO from one of the six curriculum strands. The evidence and scoring criteria must reflect the stated cognitive demand (for example remember, understand, apply, analyze, evaluate or create), psychomotor demand (such as manipulation or precision) and affective demand (such as responding or valuing).

Table 11: Alignment with Standards, Benchmarks and SLOs

Curriculum intention	Assessment decision	Evidence
Standard → Defines the broad area of learning and the overall expectations for student achievement.	Select the relevant grade and strand/domain.	Coverage across the taught curriculum.
Benchmark/progression → indicates increasing skill level	Set clear expectations for learners' level of independence, task complexity and quality of performance appropriate to each grade level.	Observable growth between grades and within the year.
SLO → states what the learner should know or be able to do	Align assessment tasks, conditions (resources, level of support, setting, time, tools and context) and scoring criteria with the SLO's action verb and content.	A response, performance, product, explanation or behavior that directly demonstrates the SLO.

5.2 Principles of Assessment

This section highlights the key principles of assessment in ICT as a guideline for curriculum developers to be considered when designing assessments.

Table 12: Key Principles of Assessment in ICT

Principle	Application in ICT
Alignment	Assess what has been taught and intended in the standards, benchmarks and SLOs. A task requiring creation should not be reduced to a recall question.
Balanced evidence	Combine knowledge, practical skills, attitudes and competencies. Use more than one method for important decisions.
Developmental appropriateness	Use short, concrete, visual and hands-on tasks in early grades. Increase independence, complexity, written explanation and project duration gradually.
Fairness, inclusion and accessibility	Remove unnecessary language, reading, motor, sensory, connectivity and device barriers without changing the ICT construct being assessed.
Validity	Ensure the task elicits the intended capability as defined by SLO and suggested activities/ methods. For example, assess spreadsheet use through a spreadsheet task, not only through definitions.
Reliability and consistency	Use clear administration instructions, common task conditions, observable criteria, annotated examples and moderation.
Continuous feedback	Develop clear mechanisms to record evidence and provide feedback. Use evidence promptly to affirm strengths, identify the next manageable step, provide practice and allow revision.
Higher-order thinking	Include explaining choices, comparing solutions, identifying patterns, debugging, evaluating digital information, problem solving and improving products to address higher order SLOs demand.
Authentic and real Word applications	Use real word applications and familiar contexts such as classroom surveys, digital artwork, messages, presentations, safe-device scenarios and simple programs
Ethics, privacy and safety	Never require students to reveal real passwords or personal information. Use teacher-controlled, simulated or offline environments where needed.
Transparency	Share learning intentions and age-appropriate success criteria before the task. Students should understand what quality looks like.
Manageability	Gather sufficient evidence without over-testing. Record significant evidence and reuse authentic learning activities for ongoing assessment.
Fair comparison	Differences in device availability, internet connectivity, keyboard familiarity or prior access must be documented and considered. Assessment should not penalize students for resources that were not available during instruction.

5.3 Types of Assessment

Diagnostic Assessment

Purpose: To identify prior knowledge, digital exposure, operational skills, misconceptions, accessibility needs and starting points before teaching a unit, concept or grade.

Description: Brief, low-stakes and non-graded tasks administered at the beginning of learning. Results should guide grouping, pacing, scaffolding, device practice and enrichment. They should not be used to label students.

Examples:

- Picture/device sort; oral questions about technology in daily life; safe/unsafe scenario cards.
- Teacher observation while a learner opens an application, uses a mouse/keyboard or follows a sequence.
- A short pre-task such as organizing sample data, predicting a program's action, or identifying a suspicious message.

Formative Assessment

Purpose: To improve learning while it is taking place and to help students understand their current performance and next steps.

Description: Planned and spontaneous evidence gathered during lessons through observation, questioning, checkpoints, drafts, demonstrations, peer dialogue and exit tasks. Feedback should be specific, timely, understandable and actionable.

Examples:

- Observe a student selecting tools, saving a file, entering data, sequencing blocks or responding to a safety scenario.
- Pause-and-predict questions before running a block-based program; error analysis after running it.
- Draft–feedback–revise cycles for artwork, documents, spreadsheets, presentations and programs.
- Student self-check against two or three child-friendly success criteria; structured peer feedback on a product, not on the person.
- A practical demonstration (for example create and organise a file, enter data and use a formula, or debug a program).
- A completed digital product with an explanation of choices and evidence of revision.
- A short oral, pictorial or written component assessing concepts, interpretation and safe decision-making.
- A portfolio review using common criteria and a brief student reflection.

Summative Assessment

ICT is a non-credit course; therefore, formal summative assessment is not recommended. Assessment should instead focus on formative and practical activities that support students' continuous learning and development of ICT skills.

5.4 Assessment Methods

Table 13: Assessment Methods

Method	Purpose	Appropriate use and ICT examples
Pictorial, oral and written assessments	Check vocabulary, concepts, interpretation, reasoning and safe choices.	Grades I–II: Use oral questioning, picture prompts, practical demonstrations and observation-based assessment. Grades III–V: Use practical tasks, scenario-based activities, data interpretation, program tracing and troubleshooting activities to assess ICT skills.
Performance-based assessment	Assess what students can actually do with hardware, software, data and programs.	Ask learners to navigate an interface, create/save/organize a file, draw, type and format, use a spreadsheet, create a presentation, troubleshoot or debug.
Projects and investigations	Assess integration, planning, problem-solving, creativity and communication over time.	Class survey and chart, digital safety campaign, multimedia presentation, programmed animation, comparison of human and AI-supported solutions.
Portfolio assessment	Show growth, range, revision and reflection across the year.	Include dated work samples, screenshots/printouts where permitted, teacher notes, rubrics, student reflections and improved versions.
Self-assessment	Develop metacognition, ownership and ability to judge quality.	Use visual traffic lights, ‘I can’ statements, checklists and short reflections explaining what worked and what to improve.
Peer assessment	Develop communication, collaboration and criteria-based feedback.	Identify one strength and provide one specific suggestion for improvement; assess the product or process using teacher-provided criteria; protect privacy and use respectful language.

5.5 Assessing Different Types of Learning

Knowledge-Based Outcomes

Conceptual understanding should be assessed through identification, classification, explanation, prediction, comparison and interpretation. Items should use clear language and familiar contexts. Students may identify devices (input, output, storage & communication), explore cloud storage, IoT in simple terms, interpret data, predict a program’s behaviour, distinguish safe from unsafe digital actions etc.

Table 14: Evidence Sought / Suitable Techniques / ICT Examples

Evidence sought	Suitable techniques	ICT examples
Recall and Recognize	Pictures, matching, sorting, labels, oral questions, selected response	Identify a storage device, recognize a phishing clue; locate a spreadsheet cell.
Understanding & relating concepts	Explore, classify, compare, scenario response	Identify the purpose and practical uses of different digital devices; basic applications of artificial intelligence (AI) in everyday life; and classify safe and unsafe activities while using digital devices.

Skill-Based Outcomes

Application and performance should be assessed through direct observation and examination of products.

Table 15: Skill-Based Outcomes

Skill	Observable evidence
Device and interface operation	Selects appropriate controls, navigates, uses input/output devices. Creates saves and retrieves file. Troubleshoots safely.
Digital literacy	Creates digital artwork, documents and multimedia presentations.
Data literacy	Collects, organizes and analyzes data, uses formulas/functions, creates an appropriate chart, interprets findings.
Computational thinking and programming	Sequences instructions, constructs program, uses movement/sound, conditionals, loops, events and sensing. Tests, identifies errors and debugs.
Emerging technologies	Uses teacher-approved AI, VR or cloud tools purposefully and safely where included in the grade-level SLO.

Attitude and Value-Based Outcomes

Attitudes and values should be assessed through repeated, observable behavior in appropriate situations. Evidence should be collected over time, rather than based on a single incident or personal impression.

- Protect personal information, use technology safely and seek help when needed.
- Communicate respectfully, follow rules and work cooperatively with others.
- Keep trying, learn from mistakes and improve work responsibly.

5.6 Developmental Considerations

ECCE and Lower Primary: Grades I–II

Early Childhood and Lower Primary (Grades I-II): Assessments prioritize observation, play-based interactions and oral responses. This accommodates early literacy levels, focusing on hands-on manipulation and basic memory recall.

Assessment should be brief, concrete, visual, oral, play-based and closely embedded in learning. The teacher models task routines, uses familiar language, permits physical or verbal demonstration and records performance politely.

- Use picture cards, device matching, safe/unsafe sorting, oral explanation, educational games, teacher observation and simple digital products.
- Break a task into short steps and distinguish between independent performance, performance after a prompt and performance after modelling.
- Collect a small portfolio of dated evidence, such as a drawing, picture graph, sequence cards and teacher observation notes.
- Provide immediate descriptive feedback using simple language: what was done well and the next action to practice.

Transition Stage: Grade III

Grade-III bridges guided learning with independent application through practical, pictorial and performance-based assessment. Students demonstrate skills in file management, document creation, data handling, programming, AI concepts and personal-data safety.

Upper Primary: Grades IV–V

- Use practical projects, investigations, scenarios and tasks to assess data, programming, presentations, troubleshooting and digital safety skills.
- Encourage students to work independently, explain their choices, assess their work using clear criteria and improve it based on feedback

5.7 Assessment of Competencies and Cross-Cutting Themes

- **Critical Thinking & Problem-Solving:** Apply reasoning to solve problems, test solutions and improve them.
- **Creativity, Communication & Collaboration:** Create original work, communicate respectfully and contribute effectively to group tasks.
- **Digital Literacy & Citizenship:** Use technology safely and responsibly, protect privacy and respect sources and others.
- **Learning, Environmental & Social Responsibility:** Learn from feedback and mistakes, care for devices and resources and make responsible choices.

5.8 Implications for Teacher Professional Development

Teacher professional development should build both ICT capability and assessment literacy. Training should be practical, grade-specific and sustained through coaching, collaborative planning, moderation and review of student learning.

Table 16: Implications for Teacher Professional Development

TPD Focus Area	Required Teacher Capability	Suggested TPD Training Activities
Curriculum, SLO and Activity Alignment	Translate ICT SLOs into age-appropriate learning experiences and align activities with expected learning outcomes.	SLO-to-Activity Workshop; activity alignment exercises.
Activity-Based ICT Teaching	Use demonstration, guided practice, exploration and hands-on activities to develop practical ICT skills.	Model lessons; Teach–Try–Reflect; hands-on teaching practice; guided practice.
Computational Thinking and Problem-Solving	Develop sequencing, logical thinking, problem-solving and debugging through unplugged and digital activities.	Human Robot; Fix the Algorithm; Problem of the Day; Debugging Practice.
Digital Literacy, Data and Emerging Technologies	Develop learners’ digital and emerging-technology skills through age-appropriate, real-world contexts.	Digital skill challenges; Data Detective; AI/IoT exploration; cloud and VR/AR activities.
Assessment, Feedback and Differentiation	Use formative assessment, observation, questioning, simple rubrics and feedback while adapting activities to diverse learner needs.	Observation and questioning workshops; rubric development; feedback practice; differentiated task design.
Project-Based Learning and Continuous Improvement	Design meaningful ICT projects that promote creativity, collaboration, communication and problem-solving and use evidence to improve teaching.	Project Design Challenge; peer review; project showcase; Teach–Observe–Reflect cycle.

Grade-wise Assessment Specifications

Grade I – Assessment Matrix

In Grade 1, learning is heavily play-based. Assessments should feel like natural classroom activities, relying on oral responses and teacher observation.

Table 17: Grade 1 / Assessment Matrix

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
A. ICT Fundamentals Explore technology around us; identify its use in daily life.	Identifies examples and selects a suitable device for a familiar purpose.	Diagnostic: Oral responses and play-based observation (Knowledge)
B. Digital Skills Explore educational games for digital awareness, interaction and problem-solving.	Uses basic controls with increasing independence and explains a simple challenge.	Formative: Teacher observation during play (Knowledge & Skills)
D. Computational Thinking Identify common everyday problems and develop simple solutions.	States the problem and suggests a safe, workable solution.	Formative: Class discussion and oral responses (Knowledge & Skills)
F. Digital Safety Classify safe and unsafe practices in everyday life.	Classifies examples and states safer action.	Formative: Scenario-based oral sorting tasks (Attitude & Values)

Grade II – Assessment Matrix

Assessments in Grade 2 introduce basic psychomotor manipulation, utilizing simple performance tasks and observational checklists.

Table 18: Grade 2 / Assessment Matrix

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
A. ICT Fundamentals Identify and use common input/output devices; navigate applications and simple interfaces.	Selects and uses controls to complete a short task with limited prompting.	Picture-matching or oral responses (Knowledge & Skills)
B. Digital Skills Create digital artwork using basic drawing tools.	Selects tools, creates a purposeful picture, corrects an error and saves work.	Performance: Portfolio assessment of drawings (Skills)
C. Data Literacy Identify types of data; sort into groups; represent information using pictures/symbols.	Classifies data and constructs/reads a simple picture representation.	Formative: Observation during group activities (Skills & Attitude)
D. Computational Thinking Arrange steps in the correct order to solve a simple problem.	Creates or repairs an unambiguous sequence and tests it.	Formative: (Knowledge)

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
F. Digital Safety Identify safe/unsafe device activities and follow simple safety rules.	Chooses a safe response and demonstrates the rule in a scenario.	Formative: Oral Q&A and observation (Knowledge)

Grade III – Assessment Matrix

Students begin engaging with higher-order thinking and practical tool usage, necessitating early project-based and written assessments.

Table 19: Grade 3 / Assessment Matrix

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
A. ICT Fundamentals Recognize storage devices; create files and folders to manage information.	Identifies devices and creates, names, saves and retrieves work in an appropriate folder.	Diagnostic: Short written assessments/matching (Knowledge & skills)
B. Digital Skills Develop typing skills; create, save, edit and format a simple document.	Types accurately enough for meaning, edits errors, applies required formatting and saves correctly.	Performance: typing and guided searches (Skills)
C. Data Literacy Collect data through observation/counting/survey; record with tally marks/simple tables.	Collects consistently, tallies accurately, organizes results and states a finding.	Formative & Performance: Practical demonstration Knowledge & Skills
D. Computational Thinking & Programming Create simple visual programs using movement and sounds.	Builds a working sequence, runs it and makes a correction.	Formative: Project assessment (movement/sound) Skills
E. Emerging Technologies Understand AI/robotics applications; solve a simple puzzle using an AI tool.	Identifies an example, uses a teacher-approved tool and compares its output with own thinking.	Diagnostic: Oral presentations or short tasks (Knowledge & Skills)
F. Digital Safety Understand personal data safety.	Distinguishes private and shareable information and selects a trusted-adult response.	Formative: Scenario-based written/oral assessments (Knowledge)

Grade IV – Assessment Matrix

Assessments demand authentic, real-world application, utilizing multiple sources of evidence such as independent investigations and peer reviews.

Table 20: Grade 4 / Assessment Matrix

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
A. ICT Fundamentals Recognize communication devices and understand their purposes.	Matches device/service to purpose and explains an appropriate choice.	Formative: Written assessments and investigations (Knowledge)

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
B. Digital Skills Use search engines; compose, send and respond to messages appropriately.	Uses suitable keywords, identifies relevant information and drafts a clear respectful email in a safe environment.	Performance: Portfolio of word docs and slides (Skills)
C. Data Literacy Identify spreadsheet elements; organize data; apply basic formulas/functions.	Enters data and uses correct formulas/functions to answer questions.	Formative: Projects collecting real data (Knowledge & Skills)
D. Computational Thinking & Programming, Apply conditional statements and create programs using loops.	Selects appropriate condition/loop, constructs a working program and explains the logic.	Formative: Performance-based coding tasks (Skills)
E. Emerging Technologies Understand IoT; explore VR through guided experiences.	Identifies connected-device examples and describes VR experience, use and safety consideration.	Formative: Interactive problem-solving tasks (Knowledge & Skills)
F. Digital Safety; Protect personal information/accounts; demonstrate ethical, respectful digital behavior.	Selects secure actions, improves an inappropriate message and credits a supplied source.	Formative: Self-assessment and observation (Attitude & Values)

Grade V – Assessment Matrix

Culminating assessments integrate critical thinking, cross-cutting competencies and complex problem-solving suitable for upper primary students.

Table 21: Grade 5 / Assessment Matrix

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
A. ICT Fundamentals Use basic troubleshooting skills for common technology problems.	Diagnoses a likely cause, applies a safe sequence, tests the outcome and seeks help when required.	Performance: Practical troubleshooting tasks (Skills)
B. Digital Skills Create multimedia presentations; use layouts, transitions and media appropriately.	Produces a coherent presentation for a purpose and justifies design choices.	Formative: Peer assessment for emails; portfolio (Skills & Attitude)
C. Data Literacy Identify patterns, interpret results and create suitable charts/graphs.	Finds patterns, makes evidence-based conclusions and selects/creates an appropriate chart.	Formative: Project assessment (Skills)
D. Computational Thinking & Programming Use events and sensing; debug block-based programs.	Builds responsive behavior, identifies errors, fixes them and tests different inputs.	Performance: Coding tests identifying/fixing errors (Skills)
E. Emerging Technologies Understand cloud computing; store, access and share files.	Understands the basic concepts and performs upload/access/share using safe permissions.	Formative: Observation during cloud computing, VR/AR activities (Skills)

Strand and intended SLO focus	Expected evidence	Assessment Method/ Learning Domain
F. Digital Safety Recognize phishing, scams, malware and cyberbullying; protect information/accounts.	Identifies risk indicators and selects proportionate protective and reporting actions.	Formative: Quizzes and ethical observation (Knowledge & Attitude)

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Chapter 6

Teaching and Learning Material

Essential Guidelines for Grades I-V for Teaching and Learning Material

6.1 Introduction: Role of Teaching and Learning Materials

ICT education bridges the gap between theoretical knowledge and practical digital literacy. At this developmental stage teaching and learning materials transform theoretical technical terms into understandable hands-on experience. The textbook and learning materials provide appropriate framework that introduces fundamental concepts step-by-step. It systematically breaks down national curriculum standards, benchmarks and learning outcomes into age-appropriate experiences that directly drive student achievement. Quality learning material do not just provide theory, they feature guided activities, lab exercises and project-based assignments.

6.2 Types of Learning Materials

The following learning materials are suggested that support learning in the subject of ICT.

- **Textbook:** Present topics in an organized manner, support classroom teaching, simplify concepts through diagrams and illustrations and develop reading and ICT vocabulary.
- **Educational videos and animations:** Enhance understanding, reinforce concepts, increase attention and make learning engaging.
- **Activity books:** Develop practical skills, encourage active learning, strengthen problem-solving skills and make lessons more interactive.
- **Interactive digital activities and simulations:** Provide opportunities for exploration and practice, helping students understand concepts through virtual and hands-on experiences.
- **Coding exercises and project-based tasks:** Develop computational thinking, creativity, problem-solving and practical skills through meaningful application.

6.3 Content Organization and Learning Experiences

The following guidelines describe how learning materials should translate curriculum standards, benchmarks and student learning outcomes into meaningful learning experiences for learners.

Conceptual Understanding and Progression

- Ensure that content is factually accurate, error-free and presented in language that is clear, accessible and appropriate for the learners' developmental level.
- Organize content according to the progression of concepts and skills outlined in the curriculum, using age-appropriate examples, contexts and illustrations that make learning relevant and meaningful.
- Present concepts in ways that promote conceptual understanding and the application of knowledge rather than rote memorization of facts.
- Create clear links between concepts and skills to support continuity and progression across grade levels.

- Ensure that the learning material is appropriate in scope and depth and aligned with the instructional time available.

Learning Experiences and Skill Development

- Provide opportunities for students to practice and apply their knowledge, engage in discussion and develop higher-order thinking skills, where these are identified as part of the curriculum.
- Incorporate curriculum-recommended activities and projects that effectively support and reinforce intended learning outcomes.
- Recognize that learning outcomes can be effectively achieved through practical work that focuses on building fundamental digital skills and creative problem-solving through hands-on activities and projects rather than relying solely on explanatory text.

Cross Cutting Themes

Authors should integrate cross-cutting themes into teaching and learning content, activities, examples and exercises. Four key points are:

- **Digital Citizenship and Ethics:** Promote responsible, safe, respectful and ethical use of technology, including privacy, online behavior and appropriate use of digital content.
- **Inclusion, Equity and Diversity:** Use examples, images, activities and language that represent different genders, abilities, backgrounds and communities, ensuring all learners can participate.
- **Environmental Awareness:** Encourage responsible use of technology by addressing e-waste, energy conservation, recycling and environmentally friendly use of digital devices.
- **Health and Well-being:** Include guidance on healthy technology use, such as proper sitting posture, appropriate screen time, eye care, safe handling of devices and maintaining a balance between digital and physical activities.

Learner Engagement

- Actively involve learners through hands-on activities, problem-solving, creativity and meaningful use of technology.
- Promote collaboration through pair and group activities that encourage sharing ideas and completing tasks together.
- Connect learning to real-life contexts by using examples from home, school and the community, aligned with standards, benchmarks and learning outcomes.
- Encourage exploration and creativity through activities that allow learners to experiment with digital tools and create solutions.
- Develop problem-solving skills through age-appropriate challenges and tasks that require learners to apply concepts.

6.4 Alignment with Pedagogical Approaches

Textbook and learning material should be aligned with pedagogical approaches – they should explore, practice, create, collaborate and apply skills.

Pedagogical Approaches

- **Learner-centered learning:** Use simple explanations followed by activities that allow learners to make choices and solve problems.
- **Activity-based learning:** Include practical task after each concept rather than lengthy theoretical explanations.
- **Learning by doing:** Present concepts through step-by-step practical activities.
- **Collaborative learning:** Provide pair and group activities requiring learners to communicate and share ideas.
- **Problem-solving approach:** Guide students to identify real-life problems, explore their possible causes and develop appropriate solutions through logical thinking and practical investigation.
- **Experimental learning:** Connect concepts with situations learners experience at home, at school and community.
- **Differentiated Learning:** Provide activities at varying levels of difficulty to accommodate learners with different abilities.

A Useful Textbook Structure

1. Engage → 2. Explore → 3. Explain → 4. Practice → 5. Apply → 6. Reflect → 7. Assess

1. **Engage:** Introduce each topic through age-appropriate questions, pictures, stories, games, or familiar real-life situations that capture learners' interest.
2. **Explore:** Provide simple, hands-on activities that allow learners to observe, investigate, experiment and discover concepts with increasing independence.
3. **Explain:** Present concepts, vocabulary, processes and skills in clear, simple language supported by appropriate examples, illustrations and demonstrations.
4. **Practice:** Provide guided and independent activities that help learners develop and reinforce knowledge and practical skills through repeated practice.
5. **Apply:** Encourage learners to use their knowledge and skills in meaningful real-life tasks, creative activities and age-appropriate problem-solving situations.
6. **Reflect:** Provide simple prompts that encourage learners to think about what they learned, describe their experiences, identify difficulties and consider ways to improve.
7. **Assess:** Include age-appropriate formative assessment through questions, practical tasks, quizzes, observation, self-assessment and peer assessment to monitor learning and provide feedback.

6.5 Visual Design

- Use visually appealing, age-appropriate and engaging learning materials that encourage learners to read, explore and participate actively in the learning process.
- Maintain balance between text and illustrations appropriate to the learning outcomes.
- Incorporate charts, diagrams, photographs and other visuals into the textbook to make learning more engaging and easier to understand.

6.6 Inclusion and Representation

- Textbook and learning materials should promote inclusion, equity and respect for diversity by ensuring that every learner can see themselves represented, access the content, participate in activities and develop skills regardless of different linguistic, cultural, geographic, religious and socio-economic background.
- Show people with different abilities using technology and include examples of assistive technologies that support learners with disabilities.

6.7 Assessment Opportunities within Learning Materials

- Observe students while they use digital tools and identify their strengths and difficulties.
- Assess learners during lessons through simple activities such as matching, sorting, sequencing and puzzles to check their understanding of concepts and encourage them to present their ideas.
- Monitor students during mini projects and provide feedback on their progress, skills and problem-solving.
- Provide timely and clear feedback to help learners identify mistakes, correct their work and improve their skills through practice.

6.8 Grade-Wise Guidelines:

Grade-Wise Guidelines for Incorporating Suggestions/Activities Aligned with the Curriculum Standards, Benchmarks and Learning Outcomes into Learning Material

Grade-I

- Ask students to look around their home or classroom and identify things that use technology. Students name or draw each item and tell what it is used for. For example, a student draws a mobile phone and says, *“We use a mobile phone to talk to family members.”*. Another student points to a television and says, *“We use a television to watch educational programs and cartoons.”*.
- Let students play a simple educational game on a tablet or computer. Ask them to **tap, drag, match, or choose** the correct answer to complete a fun puzzle. **For example**, students play a **shape-matching game** by dragging each shape to the matching space. They learn to use a mouse or touchscreen while thinking about where each shape belongs.

- Show students a picture of a simple daily-life problem and give them multiple solutions. Let students look at the picture, think about each solution, discuss with a partner and choose the best one.
- Show students pictures of everyday actions and ask them to identify each action as safe or unsafe and explain why. For example, show a picture of a child holding a hot cup. Students say, “*Unsafe because the cup may burn the child.*” Give students simple everyday situations and let them role-play the safe action. For example, one student pretends to cross a road by stopping, looking both ways and waiting until it is safe to cross.

Grade-II

- Identify common digital devices and their basic components, match each device with its purpose and explore how the devices are used in familiar real-life situations through pictures and hands-on activities.
- Students use a basic drawing application to create a picture of a favorite place, such as a park, classroom, or playground, using simple shapes, lines, colors and drawing tools and then save their artwork with a suitable name.
- Collect simple data, such as the colors of objects in the classroom, sort the information into groups and identify and describe simple patterns they notice.
- Arrange picture cards showing the steps for making a cup of tea in the correct order, such as boil water → add tea → add milk → stir → serve and explain why the steps must be followed in that sequence.
- Students look at picture cards and sort them into “Safe” and “Not Safe”, such as keeping a password secret, telling a stranger your address and asking an adult for help.

Grade-III

- Students look at pictures of common storage devices, match each device with what it is used for and use a computer to create, name and organize simple files in a folder.
- Locate letters on the keyboard, type a short sentence in a word processor, save it with a suitable name and format selected words using bold, italic, or underline.
- Conduct a simple class survey, such as finding their classmates’ favorite fruits, collect responses by counting and using tally marks and organize the results in a simple table.
- Use Scratch, Code.org, or Blockly to create a simple character, program it to move across the screen and add basic actions to create a short animation showing a familiar activity.
- Play a simple game or solve a set of puzzles, first completing the task themselves and then comparing their answers with an AI-generated response to identify similarities, differences and which answer they think is better.
- Identify examples of personal information, such as name, home address, phone number, school name, password and photos, sort them into “Safe to Share” and “Keep Private” groups and discuss safe choices when sharing information online.

Grade-IV

- Sort pictures of basic communication devices and match each device with its purpose, such as making calls, sending messages, or video calling. Discuss in pairs how the devices help people communicate and share their ideas with the class.
- Use a search engine to find information on a simple topic and practice identifying useful and relevant results.
- Compose a short email, add an appropriate subject and message and practice sending and responding to it using polite and respectful language.
- Practice opening, creating and saving a worksheet by entering simple data such as a class timetable or list of items. Apply basic formulas and functions to calculate simple totals or averages and discuss how spreadsheets can help organize and calculate information.
- Use simple conditions and loops to create a program, such as making a character move forward only when a condition is met and repeat the movement several times. Test the program, make simple corrections and explain how the statements and loops help the program complete the task.
- Sort pictures of everyday IoT devices, such as smartwatches, smart lights, smart TVs and smart home appliances and match each device with its use. They discuss how these devices connect to the internet and share information, then give one example of how an IoT device can make life easier at home or school.
- Students explore a virtual interactive game or virtual experience to visit a place or environment, such as a museum or zoo. After the activity, discuss what they saw, how the virtual experience felt and how VR can be used for learning and entertainment.
- Identify safe and unsafe ways to protect personal information, accounts and privacy. Learners create a simple checklist of safe digital practices, such as using strong passwords and not sharing personal information.
- Students sort cards showing safe and unsafe online behaviors and discuss why each action is safe or unsafe to practice safe digital habits

Grade-V

- Identify simple technology problems, such as a computer not turning on, no sound, a device not connecting to Wi-Fi, or a program not responding. In pairs, students identify the problem and follow basic steps such as checking connections, restarting the device and checking settings to find a solution.
- Create a short multimedia presentation by adding text, images and audio, then insert, resize, arrange and edit the elements to improve the presentation.
- Collect data about classmates' favorite sports, organize the data in a table and represent it using a bar graph. Discuss the results, compare the numbers, identify patterns and use the data to make a simple conclusion about the most popular sport.
- Create a simple block-based program using events and sensing blocks to respond to user inputs, then test, identify errors and debug the program to make it work correctly.
- Demonstrate how students can save a project online using Google Drive and open it from any Internet-connected device such as smart phone, tablet or computer from anywhere.

- Students recognize simple online scenarios, identify digital risks such as phishing, scams, malware and cyberbullying and apply basic safety measures to protect personal information, accounts and privacy.
- Students identify rules for safe, respectful, ethical and responsible use of digital devices, such as protecting passwords, using polite language, respecting others' privacy, avoiding harmful content and asking for help when needed.

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