INSTRUCTIONAL GUIDE FOR ICT

CLASS: PP-III

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"Your parents, relatives, and friends would be very proud of what you have achieved. At your age, to have completed your studies is your personal accomplishment. Your knowledge and capabilities are a great asset for the nation. I congratulate you for your achievements. Finally, your capabilities and predisposition towards hard work will invariably shape the future of Bhutan. You must work with integrity, you must keep learning, keep working hard, and you must have the audacity to dream big."

- His Majesty Jigme Khesar Namgyel Wangchuck

National School Curriculum

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Department of Curriculum and Professional Development
Ministry of Education, Royal Government of Bhutan

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Foreword

The erstwhile Royal Education Council (REC) developed an Adapted and Prioritized curriculum for schools so that students can continue learning during the disruptions caused by the COVID 19 pandemic since March 2020. With the commencement of the 2021 academic session, the new normal curriculum, later renamed as the National School Curriculum (NSC), was embraced as a paradigm shift of education from conventional knowledge-based learning to competency-based, open-source and experiential learning leveraged on digital technologies. In order to facilitate the effective implementation of the curriculum change, Instructional Guides were developed in all subjects, and the teachers were oriented through virtual and short contact modes as per the prevailing pandemic situations. The curricula were aimed at minimizing the learning loss for learners as it was designed for implementation in different situations - during school closure or during regular contact instructional hours.

While these measures served as a solution to problems brought about by the pandemic and the global changing trend in education, resilient and more dynamic curricula and instructions remain the current priority of the Government. In cognizance of some of the shortfalls in the provisional edition of Instructional Guides (IG), the Department of Curriculum and Professional Development reviewed and revised the existing Instructional Guides across all subjects with the aim of enforcing the competency-based learning, and making teaching-learning happen 'anytime anywhere' commensurate to inclusive education so that all learners are provided with the opportunity to learn at their pace and situation.

The revised Instructional Guides have drawn ideas and inspiration from various educational philosophies and principles, particularly the Delors Report, *Learning: The Treasure Within* (1996). The report prioritizes the development of the whole person and not just academic knowledge through the four pillars: "learning to know", "learning to do", "learning to be", and "learning to live together". Therefore, the New Curriculum and the Instructional Guide is an attempt to transform education from the teaching of "what" to learning of "how" and "why" towards empowering learners with the transversal competencies and the 21st century skills and preparing them to be lifelong learners.

It must be noted that the New Curriculum and the Instructional Guide are not just a response to the pandemic, but a culmination of the curriculum reform work for the last four years by the

Department of Curriculum and Professional Development. The school curricula are to be perceived as integrated and based on themes and problems that inspire learners to learn and to live in peace with our common humanity and our common planet. This has the potential for the development of a strong base of knowledge about one's self and about the world, finding the purpose of learning, and being able to participate in the social and political milieu. Thus, this initiative is envisaged to orient our educational process toward nurturing 'nationally rooted and globally competent citizens.

Wish all our learners and teachers life-enriching teaching and learning.

Tashi Delek

Tashi Namgyal
Director

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Introduction

The National School Curriculum for the Information and Communication Technology (ICT) was developed for implementation in schools from the 2021 academic year. One significant change in the curriculum frameworks is the shift of focus from academic standards to competencies. Over the years, standards-based education has become a means of measuring content coverage and test readiness. The shift to competency-based education is aimed at developing and applying competencies - knowledge, skills and dispositions - to new and challenging situations. It emphasizes mastery of competencies to help our students successfully navigate their personal journeys in learning, living and working.

In school, students develop and apply ICT competencies through ICT subject-area content and learning experiences which provide opportunities for them to transfer their learning to situations and contexts even beyond the classroom. This shift permeates across the curriculum, pedagogy and assessment, and for this change to make a difference in learning, deliberate attempts must be made in all three aspects.

This instructional guide for the ICT curriculum is conceived with two objectives. The first purpose is to provide examples of how pedagogy and assessment are designed to help students develop the required ICT competencies. It also includes examples of curated online resources that can be used as reference materials for teachers, learning resources for students or assessment tools for use by teachers. The second purpose is to provide a reference for ICT teachers to facilitate the delivery of online lessons during emergencies. The guide contains distinct examples of pedagogy and assessment for non-contact online teaching.

The pedagogy, assessment and resources mentioned for every competency for all class levels are only meant to be suggestive. Teachers are encouraged to modify them, use innovative strategies or create new lessons that are relevant to their students and situations, and can help students develop and master the required competencies.

A salient feature of the guide is the conscious integration of ICT in teaching and learning. This may be in the form of blended learning during normal school settings, or fully online teaching during emergencies such as the current pandemic. The curated digital resources provided in the guide can be applied to both blended learning and online teaching depending on the instructional approach being used by the teacher.

Purpose of the Instructional Guide

The content in the instructional guide is aligned with the competencies and topics provided in the National School Curriculum for ICT. The instructional guide comprises competencies, topics, learning experiences, assessments and resources that will facilitate teachers to successfully deliver the ICT curriculum. Using a competency and corresponding topic as the pivot, learning experiences and assessments are written towards achieving the competency.

Learning experiences provide suggestive strategies and pedagogies for the delivery of the listed competencies. It has both contact and online teaching strategies. Contact teaching refers to a situation when schools are open, and teaching and learning take place face-to-face in a classroom. Teachers can apply a blended teaching approach for meaningful ICT integration and delivery of lessons. Online teaching refers to a situation where teaching and learning happen online during school closures due to emergencies like pandemics. In such a situation, teachers need to consider relevant pedagogies that are supported by technologies such as the ones given below:

1. Choose an online learning platform such as Google Classroom, Sherig LMS (under development), WeChat, WhatsApp, Telegram, etc. considering the ease of use and appropriateness of the tool for the students. This platform is to be used as a virtual classroom for presentations, discussions, sharing resources, assigning tasks, and assessment of learning.

2. For lesson delivery by teachers, consider the use of video conferencing tools such as Zoom and Google Meet for synchronous teaching, and creation tools such as Microsoft PowerPoint and Camtasia for asynchronous teaching.

3. For assessment purposes, consider the use of tools such as Google Forms and Kahoot to create quizzes, Google Docs, Google Sheets and Google Drawings in Google Classroom to assign tasks for students.

4. For the recording of student performance, consider the use of the grading feature in Google Classroom or spreadsheets such as Google Sheets and Microsoft Excel. The scores from these sources can be transferred to the student progress report as per the assessment criteria.

Suggestive pedagogies, assessments and resources for each competency are listed below. Teachers are advised to refer to the instructions given therein for their lesson planning and effective delivery of the ICT lesson to the learners.

Class Pre-Primary (PP)

Students will be able to:

1. operate computers correctly and safely.
2. perform basic drawings and typing on the computer to develop mouse handling and keyboarding skills.
3. get relevant information from the Internet to expand understanding of concepts they learnt.
4. play online educational games to enhance learning.
5. demonstrate proper behaviour while using computers in the laboratory for health, safety, and conducive learning.
6. follow instructions and sequences to complete tasks that develop logical thinking.

STRAND A – Technology Operation

1. INTRODUCTION TO COMPUTERS

Computer is an electronic device that takes in input, processes it and gives output in the form of hard or soft. It is a combination of hardware and software. In order for the computers to function properly, the users need to operate in the proper sequence of steps.

Under this topic, students will learn about the definition of computers, some examples of computers and identify essential components like a mouse, monitor, keyboard and CPU. Further, students will learn to turn on and switch off computers in correct steps.

COMPETENCY 1: Students will be able to operate computers correctly and safely.

Topics	Key Stage Standard	Objectives	Time
Introduction to Computers. ● Definition of computer ● Examples of computer ● Computer components o Mouse, Monitor, Keyboard, CPU	A1.1 Categorise computer components and peripherals into input, output, and storage devices.	PP-A1.1.1 Identify basic computer components.	120 mins (3 periods)
Operating a Computer ● Turning on a Computer ● Shutting down a Computer ● Advantage of following proper procedure	A1.2 Perform basic computer operation.	PP-A1.2.1 Follow the correct steps to start and shut down computers.	120 mins (3 periods)

Learning experiences:

- Display and explain basic parts of the computer. Let students touch and observe the computer parts to get familiarized.

- Show examples (laptop, desktop computer) and non-examples (TV, radio) of computers and allow students to differentiate between the two.

- Make a PowerPoint presentation with pictures of the computer and its parts, and instruct students to draw a picture of a computer.

- Demonstrate correct steps of starting and shutting down a computer system and explain the safety factors of computer operation. Then, make students follow the correct steps to start and shut down a computer.

- Create and share videos or interactive animations on computer components or proper computer operation in the online platform identified for the class.

- Provide students with weblinks having videos, pictures or animations on introduction to computers through an online platform and ask them to perform a simple task such as drawing a picture and identifying the computer parts.

- Conduct a video conference to explain basic parts of the computer using tools such as Google Meet and Zoom.

Assessment:

- Ask questions on basic computer components.

- Monitor students while having discussions in pairs or groups on computer components.

- Provide students with worksheets having pictures of computers parts and other devices. Then instruct them to identify only the computer parts.

- Let students demonstrate the correct steps to start and shut down the computer.

- Make flashcards with pictures of steps to shut down a computer and let students arrange them in the correct order.

- Keep a record of students' participation in the online discussions on computer parts, operation and safety.

- Maintain a record of digital artefacts (voice, video, image) of students' work on computer parts and operations.

- Conduct tests such as matching, drag and drop, and multiple-choice questions using appropriate online tools.

Questions:

1. What is a computer?
2. Mention some of the computers you have seen or used?
3. What are the steps to start up and shut down computers?
4. When do you shut down the computer? Why?

Resources:

1. **Basic Parts of Computer:** The weblinks contain videos for children to understand the basic parts of the computer and its function.
   - https://edu.gcfglobal.org/en/computerbasics/basic-parts-of-a-computer/1/
   - Parts of the Computer - MRS. RUDEL'S COMPUTER LAB (weebly.com)

2. **Computer Startup and Shutdown**: The weblinks show the steps to properly start and shut down a computer using animation and images that are relevant to children.
   - https://www.youtube.com/watch?v=ErCQmQ6Jn2Q
   - https://youtu.be/Tx0ntUobTu8
   - https://www.wikihow.com/Turn-Off-a-Personal-Computer

2. MOUSE AND KEYBOARD HANDLING

Mouse balance and typing speed are the essential skills a user needs to acquire to use a computer efficiently. Microsoft Paint is a simple application to draw, paint and manipulate images. This application will help users gain mouse balance. And the typing tutor applications are helpful in improving typing speed.

Under this topic, students will learn to use a mouse and keyboard. Students will use Microsoft Paint to improve mouse balance and Typing Tutor application to improve typing speed. Students will use basic drawing tools in MS Paint to draw shapes and add colour.

COMPETENCY 2: Students will be able to perform basic drawing and typing to develop mouse handling and keyboarding skills.

Topics	Key Stage Standard	Objectives	Time

Computer Mouse
● Definition of mouse
● Mouse actions
  ● Right and left click
  ● Scroll, double click, drag and drop
	A1.3 Develop mouse handling skills.	PP-A1.3.1 Use different mouse actions.	160 mins (4 periods)

Introduction to MS Paint ● MS Paint window ● Basic drawing tools ● Paint bucket, brush, eraser, pencil ● Drawing shapes and adding colours		PP-A1.3.2 Draw shapes in drawing software.	400 mins (10 periods)
Computer Keyboard ● Definition of keyboard ● Typing tutor for kids ● Typing numbers ● Typing alphabets	A1.4 Develop keyboarding skills.	PP-A1.4.1 Type alphabets and numbers on the keyboard.	400 mins (10 periods)

Learning experiences:

● Demonstrate various mouse actions and let students practise using different mouse actions. Provide activities such as clicking games for students to practice mouse actions and make them explain the behaviour of each action.

● Show an art created in Microsoft Paint such as a colourful house made of mathematical shapes, and demonstrate steps one by one for students to follow. Let students draw objects or shapes that they have learned in other subjects.

- Introduce a typing tutor to familiarise them with alphabets and number keys on the keyboard and allow students to practice.
- Make students type their names in the drawings they created in Microsoft Paint to get familiar with the keyboard and improve typing.
- Create and share videos that explain different mouse actions on the class's online platform.
- Provide an online tutorial on Microsoft Paint and assign a task for students to create a drawing from other subjects.
- Provide weblinks for online typing tutors for students to practise typing on their own.
- Conduct a video conference to demonstrate how to draw in Microsoft Paint.

Assessment:

- Observe students while typing or using a mouse, and check their understanding by asking questions.
- Ask students to show their drawings created in Microsoft Paint and explain how they have drawn them to their friends.
- Provide students with worksheets having pictures of basic drawing tools in Microsoft Paint. Then instruct them to write the name of the tools.
- Maintain a record of time spent by students each day on practising typing.
- Maintain a record of drawings created by students in Microsoft Paint.
- Maintain a record of time spent by students each day practising typing at home.

Questions:

1. What is a computer mouse?
2. How is a computer mouse different from an animal mouse?
3. What do you want to draw on computers? why?
4. What are some of the difficulties you face while typing on the keyboard?

Resources:

1. **Introduction to MS Paint:** The weblinks explain features of and demonstrate drawing using Microsoft Paint.
   - https://www.youtube.com/watch?v=amhGcGXtZ_E
   - https://www.youtube.com/watch?v=q5PxEiNfgUE

2. **Mouse Actions:** The weblinks explains different mouse actions to be taught to children.
   - https://youtu.be/X5ZOrB5RvE0
   - https://www.commonsense.org/education/lesson-plans/lessons-for-little-learners-mouse-skills
   - https://www.brisbanekids.com.au/teach-kids-use-mouse/

3. **Typing Games:** The weblinks contain different games to practise typing skills. Students can practice typing on their own using these links.
   - https://www.typing.com/student/games

- https://www.education.com/games/typing/
- https://www.typinggames.zone/

4. **Typing Tutor:** Teachers can use typing tutor software to learn the correct placement of fingers on the keyboard. From the weblinks, download and install the software or access it directly online.
    - https://rapidtyping.com/downloads.html
    - https://www.typingclub.com
    - https://www.roomrecess.com/games/TypingTutorForKids/play.html

5. **Tux Paint:** Tux Paint is a free drawing software that may be used as an alternative to Microsoft Paint. The weblinks provide links to download the software and a video tutorial on Tux Paint.
    - http://www.tuxpaint.org/download/windows/
    - https://www.youtube.com/watch?v=2UNz_VdUTHo

STRAND B – Communication and Collaboration

3. INTERNET SEARCH

There are many search engines available to search for information and resources. Some of the popular search engines are Google, Bing and DuckDuckGo. Knowing how to search using these search engines is important so as to efficiently access a host of repositories on the Internet.

Under this topic, students will learn to search images by typing alphabet or words in a search engine. Students will explore the Internet through search engines for relevant information. The students will be guided by the teacher.

COMPETENCY 3: Students will be able to collect relevant information from the Internet to enhance their understanding of taught concepts.

Topics	Key Stage Standard	Objectives	Time
Internet Search • Searching images 　• Use the alphabet and words (apple, ball, cat, dog, etc.) • Benefits of Internet	B1.1 Search relevant information from the Internet.	PP-B1.1.1 Search images of basic words from the Internet (teacher guided).	320 mins (8 periods)

Learning experiences:

- Demonstrate the steps to search pictures online and facilitate students to search for images such as cartoon characters, animals, places, food, and toys.

- Present the steps involved in searching online information using a PowerPoint presentation and guide students to search for images of their choice.

- Come up with a list of words students learned in English and demonstrate the steps to search images of these words from the Internet.

- Create and share video lessons on how to search pictures online. List some common words that students know and let them search images of them and submit their work.

- Provide weblinks on searching information online and let students search pictures of words they learned in other subjects.

- Conduct a video conference to explain about searching pictures online, and let students search pictures of a list of words provided by the teacher.

Assessment:

- Ask students to share their experience of searching images on the Internet.

- Observe students while searching images on the Internet and keep a record of their progress.

- Make students search for pictures of their favourite animals or fruits and list the number of different images they found.

- Let students search for an image of alphabets or words and submit it through the class online platform.

- Maintain a record of images searched and shared by students on the class online platform.

- Keep a record of students' participation in an online discussion about searching images using the Internet.

Questions:

1. What is your understanding of the Internet?
2. What would you like to search on the Internet?
3. How is the Internet useful to you?

Resources:

1. **Searching the Internet:** The weblinks explains how to search the web using popular search engines, and how to improve your queries to get the most relevant results.
   - https://www.wikihow.com/Search-the-Internet
   - https://www.muo.com/tag/7-vital-google-image-search-hacks/

2. **Safe Search Engine for Kids:** The weblinks are for the student to perform safe searches on the Internet. Teachers may also provide links for parents to guide their children while searching for online information.
   - https://www.kiddle.co/
   - https://www.safesearchkids.com/

3. **Search for Images on Google:** The weblink explains searching images on Google.
   - https://support.google.com/websearch/answer/112511?hl=en&ref_topic=3180360

4. ONLINE EDUCATIONAL GAMES

The Internet provides a collection of online educational games. These games are of various levels of learning and complexity. Over the years, gaming culture amongst the youth has made them spend a lot of time playing online games. Thus the online education games cater to their interest and enhance the curricular requirements seamlessly.

Under this topic, students will learn to play online education games. These online educational games aim to help them identify alphabets, numbers and some basic words. Besides, students will be able to tell some advantages of online educational games. The students will be guided by the teacher to play online educational games.

COMPETENCY 4: Students will be able to play online educational games to enhance learning.

Topics	Key Stage Standard	Objectives	Time
Online Educational Games • Alphabets, words, numbers games • Benefits of educational games	B1.2 Play online educational games.	PP-B1.2.1 Play online educational games (teacher guided).	320 mins (8 periods)

Learning experiences:

- Provide weblinks of educational games to students and allow them to play the games. Observe their participation and provide support to enhance their interaction in the game for fun and learning.

- Demonstrate an online educational game on alphabets and numbers and let students play the game in pairs or groups.

- Create videos on how to play online educational games and share them on the online platform for students to follow and play the games.

- Share the list of online educational games on the class online platform for students to explore and play.

- Use video conferencing tools to demonstrate how to download educational game apps on mobile phones and instruct students to install and play the games.

Assessment:

- Monitor students while playing different online games and keep track of their progress.

- Let students recite alphabets, numbers, and words.

- Conduct video conferences to confirm their learning through online educational games. Let students recite the alphabet or numbers and keep records of them.

- Maintain a record of digital artefacts (voice, video, image) submitted by students based on alphabets, numbers and words.

Questions:

1. Name some of the online educational games that you played in school or at home.
2. How are educational games different from other online games?
3. Which type of online games do you like - educational or other games? why?
4. Name your favourite online educational games and share why you like them.
5. How different is playing online games at home and at school?

Resources:

1. **Alphabet and Numbers Game:** The weblinks show a sample online alphabet game. Share the links with students for them to play.
   - https://www.abcya.com/games/
   - https://www.education.com/games/alphabet/
   - https://www.abcya.com/games/alphabet_puzzle
   - https://www.splashlearn.com/number-games

2. **Android Apps for Alphabet and Number**: The weblinks show sample android apps for alphabet and number. The link can be even shared with students to install the app and play it themselves.
   - https://play.google.com/store/apps/details?id=com.geniusgames.alphabetnumber
   - Alphabet games - Android Apps on Google Play
   - Number games - Android Apps on Google Play

3. **Online Games**: The weblink contains various online games that help students develop keyboard and mouse skills. It also contains games related to mathematics and language.
   - https://primarygamesarena.com
   - https://www.icompute-uk.com/resources/eyfs/unit-fs-5b.html

STRAND C – Safety and Ethics

5. COMPUTER LABORATORY RULES

The Computer Laboratory consists of many electronic and electrical components. Safety should be taken seriously, especially for a first time user of the laboratory. Having laboratory rules would prevent accidents in the laboratory. Having lab rules also shares the ownership with the users in maintaining it.

Under this topic, students will learn to maintain cleanliness in the laboratory and follow safety rules like not fiddling with cables and power sockets, and avoid eating food and drinks. Students will learn to take ownership of maintaining the computer laboratory clean and safe.

COMPETENCY 5: Students will be able to demonstrate appropriate behaviour while using computers in the laboratory for health, safety, and conducive learning.

Topics	Key Stage Standard	Objectives	Time

Computer Laboratory Rules
● Framing rules
  ● Maintain cleanliness
  ● Do not fiddle cables
  ● Keep away from power sockets
  ● Avoid food and drink, etc.
● Benefits of following rules.
	C1.1 Use computers responsibly for personal safety and health.	PP-C1.1.1 Follow computer laboratory rules.	80 mins (2 periods)

Learning experiences:

● Discuss with students and frame computer laboratory rules to be followed by all the students while using the computer facilities.

● Come up with one or two computer laboratory rules and invite students to add some more. Once it is completed, write it on chart paper and paste it on the wall.

● Make a PowerPoint presentation with visuals on computer laboratory rules and explain why everyone needs to follow the rules. Print the rules and paste them on the notice board.

● Conduct a video conference to discuss and frame rules to be followed while using computers, tablets or mobile phones at home.

● Connect with parents and discuss ways to guide the children on responsible use of computers, tablets or mobile phones at home.

- Create or share videos on the importance of following good practices of computer use through class online platforms.

Assessment:

- Let students speak about some rules they will follow while using the computer laboratory.
- Monitor students' behaviour and remind them of the rule as they are following it or when they fail to follow it. Keep a record of their progress.
- Create flashcards containing mixed pictures of school rules and computer laboratory rules, and ask students to sort out the computer laboratory rules.
- Ask parents whether their child is following safe and appropriate use of computers, tablets or mobile phones at home, and maintain a record.
- Conduct a video conference with students to check their understanding of following rules related to computer use.
- Conduct appropriate online tests such as matching, drag and drop, and multiple-choice questions on computer laboratory rules.

Questions:

1. Name one of the computer laboratory rules that we must follow at all times.
2. Why should we have rules for using the computers and Internet in the school?
3. Do you have rules for the use of computers or mobile devices at home?
4. Name two advantages of following the computer laboratory rules.

Resources:

1. **Establishing Ground Rules:** The weblink explains how developing ground rules with the class helps to foster community by balancing the learning needs of the individual with those of the group.
   - https://teaching.cornell.edu/teaching-resources/building-inclusive-classrooms/establishing-ground-rules

2. **Framing Computer Lab Rules:** The weblink contains a video that explains how engaging children in thinking and talking about rules makes them more likely to understand and follow rules and learn self-regulation.
   - https://www.youtube.com/watch?v=zULcO55d31g

3. **Computer Lab Rules:** The weblink contains a video lesson that shows the set of rules that needs to be followed inside the computer lab.
   - https://youtu.be/xL5yM3aCPVw

STRAND D – Coding

6. UNPLUGGED ACTIVITIES

Unplugged activities are tasks that take place away from a computer in order to model key concepts (e.g. selection, variables, algorithms) in different ways. It has become a popular approach to teaching computational thinking and other computer science concepts. The unplugged activities would include locally available resources like grids, cards, worksheets or cups etc.

Under this topic, students will follow the instruction and directions provided by the teacher to perform unplugged activities. Students will learn the process of performing the task and also gain some fundamental computer science vocabulary.

COMPETENCY 6: Students will be able to follow instructions and sequences to complete tasks that develop logical thinking.

Topics	Key Stage Standard	Objectives	Time
Unplugged Activities ● Following instruction, direction and sequence to complete a task. ● Use grids, cards, worksheets, cups, etc.	D1.1 Demonstrate the ability to solve problems without using computers.	PP-D1.1.1 Arrange objects based on instructions (teacher guided)	480 mins (12 periods)

Learning experiences:

- Create an activity that requires students to perform a sequence of actions by following a set of instructions such as a game that involves students moving around objects by following the directions given by others.

- Provide a variety of worksheets on unplugged coding to the students and guide them to complete the task.

- Design an unplugged coding activity on a grid outside the classroom where students take turns to play on the grid while the other group provides the directions.

- Organize competitions in pairs or groups of students to complete the activities that require following correct instructions and performing in proper sequence.

- Create a PowerPoint presentation to provide the instructions for students to follow and complete the unplugged coding activities.

- Create videos that provide instructions for students to follow and complete unplugged coding activities and share them on the class online platform.

- Share students with relevant weblinks having videos, images or worksheets on unplugged coding activities and ask them to complete the assigned tasks.

Assessment:

- Observe and check whether students could follow the instructions and complete the unplugged coding activities.
- Pair students and ask them to verify the steps followed by each other to complete a task. Observe and provide support where required to help students complete the task.
- Evaluate coding activity worksheets given to students.
- Ask students to submit videos of performing unplugged coding activities at home based on the activities assigned to them on the class's online platform.
- Assign coding activity worksheets on the class's online platform and evaluate them.

Questions:

1. List one activity where you have to follow a sequence or order.
2. What type of unplugged activities that you enjoy the most? Why?
3. Name two things that you have learned by playing the unplugged activities?
4. Which one do you prefer - plugged or unplugged activities? Why?

Resources:

1. **Unplugged Activities:** The weblinks contain collections of unplugged coding activities to explain the concept of sequencing and instruction in computer coding.
   - http://info.thinkfun.com/stem-education/6-unplugged-coding-activities-for-hour-of-code
   - https://csunplugged.org/en/at-home/
   - https://www.icompute-uk.com/Downloads/icompute-a-byte-of-computing-for-ks1.pdf
   - https://www.kodable.com/learn/unplugged-coding-activities/
   - https://www.n2y.com/blog/hour-of-code-with-n2y/
   - https://code.org/curriculum/unplugged
   - https://www.youtube.com/watch?v=tf-z99Nyc18

Class One

Students will be able to:

1. perform basic windows navigation to access files, folders, and applications.
2. create simple digital arts using shapes to enhance mouse handling skills.
3. produce a simple document using a word processor to describe a topic and enhance typing skills.
4. create and manage files to store their works on the computer.
5. get relevant videos from the Internet to make their learning interactive, engaging and entertaining.
6. complete online games to develop logical thinking, improve concentration and enhance problem-solving skills.
7. acknowledge the ownership of personal works to avoid plagiarism and appreciate creative works.
8. recognize patterns to complete tasks that develop problem-solving skills.

STRAND A – Technology Operation

1. COMMON COMPUTER PERIPHERALS AND WINDOW OPERATION

Computer peripherals can be categorised into input, output and storage devices. Each peripheral has its own function. Knowing these functions becomes helpful to troubleshoot a problem.

The Window is a Graphical User Interface(GUI). It consists of various components and each has its own function. Some of the basic navigation components are close, minimise, maximise, resize, forward and backwards.

Under this topic, students will learn about common computer peripherals and their functions. They also learn to perform basic window operations in the Windows operating system. Students will be able to independently navigate and perform basic operations on the Windows operating system. They will also troubleshoot basic parts of a computer according to their functions.

COMPETENCY 1: Students will be able to perform basic windows navigation to access files, folders, and applications.

Topics	Key Stage Standard	Objectives	Time
Common Computer Peripherals ● Functions of computer peripherals. o Mouse, monitor, keyboard, printer, projector	A1.1 Categorize computer components and peripherals into input, output, and storage devices.	1-A1.1.1 Explain the functions of basic computer peripheral devices.	80 mins (2 periods)
Basic Window Operation ● Window navigation o Close, minimize, maximize, resize, forward, backward	A1.2 Perform basic computer operation.	1-A1.2.1 Perform basic operations on a Window.	80 mins (2 periods)

Learning experiences:

● Display commonly used computer peripherals (mouse, monitor, keyboard, printer, speaker, projector, etc.), explain their functions and allow students to operate the peripherals.

● Display pictures of computer peripherals one by one on the projector and ask students to find the total of each peripheral available in the room.

● Play a game in groups of two where one group points to a computer peripheral and the other group names it and explains its function. For correct answers, points are added while wrong answers deduct the points.

- Demonstrate basic windows navigation (close, minimize, maximize, resize, forward, backward) and allow students to navigate from one folder to another.

- Share weblinks on functions of computer peripherals through the class's online platform. Ask students to write the name and function of peripherals and submit a screenshot of it on the online platform.

- Create video tutorials on windows navigation and share them on the class's online platform. Ask students to write in their notebook what each navigation button does and submit a picture of it on the class's online platform.

- Arrange a video conference with the students to explain various computer peripherals and demonstrate Windows navigation.

Assessment:

- Select a student randomly from the class and ask him/her to explain the function of a computer peripheral.

- Provide worksheets for students to match the pictures of computer peripherals with their names or functions.

- Observe students when they perform activities on windows navigation and give feedback and maintain a record of their performance.

- Ask students to draw any computer peripheral and write a short description of it. Then, display the drawings on the classroom wall for others to see and give feedback.

- Keep a record of students' participation in the online discussion on computer peripherals and windows navigation.

- Maintain a record of digital artefacts (voice, video, image) of students' work on computer peripherals.

- Conduct tests such as matching, drag and drop, and multiple-choice questions using appropriate online tools.

Questions:

1. Write the functions of some of the common computer peripherals you have used.
2. What are some of the frequently used windows navigation tools or buttons?
3. Why is navigation from one window to another important in computers?
4. How is your learning enhanced by using projectors and printers?

Resources:

1. **Computer Parts and Functions:** The weblinks explain the functions of computer peripherals.
    - https://www.youtube.com/watch?v=t4nsaW-n1XE
    - https://www.informationq.com/about-the-basic-parts-of-a-computer-with-devices/
    - https://www.youtube.com/watch?v=3QCgr6IpuvA

2. **Computer Buttons and Ports:** The weblink describes various computer buttons and ports.
    - https://edu.gcfglobal.org/en/computerbasics/buttons-and-ports-on-a-computer/1/

3. **Windows Navigation**: The weblink explains how to navigate, resize, and move windows.
    - https://edu.gcfglobal.org/en/windowsbasics/navigating-windows/1/

2. DRAWING IN MICROSOFT PAINT

Microsoft Paint is an application software to draw, paint, and perform basic image manipulations. It can be used to draw a digital art which improves the users' mouse balance besides enhances creativity.

Under this topic, students will learn to draw 2D shapes, sceneries, animals, buildings and toys using Microsoft paint. And also learn to use colours, inbuild shapes and add text to their art. Students will be able to handle the mouse and keyboard at a reasonable speed and balance. They will also be able to produce some form of digital art using Microsoft Paint.

COMPETENCY 2: Students will be able to create simple digital arts using shapes to enhance mouse handling skills.

Topics	Key Stage Standard	Objectives	Time

Drawing in Microsoft Paint
● Drawing arts
   o 2D shapes, sceneries
   o Cartoon characters, animals
   o Buildings, toys.
● Writing names in artworks
	A1.3 Develop mouse handling skills.	1-A1.3.1 Draw shapes using drawing software.	480 mins (12 periods)

Learning experiences:

- Show drawings created using Microsoft Paint and ask students to come up with similar drawings. Make them add names in their drawings for identity and ownership.

- Demonstrate how to create simple drawings such as sceneries, cartoon characters, and houses in Microsoft Paint and make students follow the steps one by one.

- Ask students to choose a drawing or diagram they have learned in other subjects like English and Dzongkha, and tell them to recreate it in Microsoft Paint.

- Conduct a drawing competition among the students in Microsoft Paint, and award prizes and certificates.

- Create video tutorials on drawings in Microsoft Paint or mobile Apps, and share them on the class online platform for students to refer to and create drawings of their interest. Ask students to reflect names in their drawings for identity and ownership.

- Provide students with relevant online resources on Microsoft Paint drawings that will facilitate them to come up with different drawings at home.

- Arrange a video conferencing with students through Google Meet or Zoom to demonstrate how to draw different objects such as houses, toys, animals, etc. in Microsoft Paint.

Assessment:

- Observe students when they perform drawing activities and record what they can and cannot do well in Microsoft Paint.

- Grade students' completed drawings in Microsoft Paint based on criteria such as looks, colours and creativity.

- Maintain a record of how students participate in class or group discussions when they learn to draw in Microsoft Paint.

- Print out students' drawings and display them in the class for their friends to look at and paste colourful stickers on drawings they liked. Each student can be given a limited number of stickers. Declare drawings with the highest stickers as drawing champions.

- Maintain a digital portfolio of drawings created by each student in folders.

- Collect Microsoft Paint drawings created by students through the class's online platform and give marks and feedback.

- Maintain a record of the number of drawings created in Microsoft Paint or drawing apps by students at home.

Questions:

1. What is your first digital drawing on MS Paint?
2. Which drawing tool did you like the most in MS Paint?
3. In drawing the pictures in MS Paint, which mouse click do you use the most? why?
4. Besides MS Paint, did you use any other drawing tools on your computer or mobile phone?
5. From your drawings in MS Paint, which one is your best work? Why?

Resources:

1. **Tux Paint:** Tux Paint is a free drawing software that may be used as an alternative to Microsoft Paint. The weblinks provide links to download the software and a video tutorial on Tux Paint.
   - http://www.tuxpaint.org/download/windows/
   - https://www.youtube.com/watch?v=2UNz_VdUTHo

2. **Sample Drawings in Microsoft Paint:** The weblinks contain videos that demonstrate how to draw cartoon characters and sceneries in Microsoft Paint.
   - https://www.youtube.com/watch?v=F-o87_OCspc
   - https://www.youtube.com/watch?app=desktop&v=mkfL6H0mCxk
   - https://www.youtube.com/watch?v=KlfIMkPFABk
   - https://www.youtube.com/watch?v=Q4yq1wfUpEA

3. **Drawing Apps for Android and IOS**: The weblinks provide links to free android and IOS drawing apps and tutorials for students to practice drawing on tablets and mobile phones.
   - https://www.educationalappstore.com/app/category/coloring-apps
   - https://play.google.com/store/apps/details?id=com.rvappstudios.kids.coloring.book.color.painting
   - https://play.google.com/store/apps/details?id=com.sunny.paint.learn.animals
   - https://play.google.com/store/apps/details?id=com.ng_labs.kidspaint
   - https://play.google.com/store/apps/details?id=com.doodlejoy.studio.kidsdoojoy&hl=en&gl=US
   - https://www.youtube.com/watch?v=wnYqXvYIrt4

3. INTRODUCTION TO MICROSOFT WORD

Microsoft Word is a word processing application software developed by Microsoft. It is a popular application being used by large users of the Windows Operating system. It can be used to generate any kind of document and its use depends on the purpose and creativity of the users.

Under this topic, students will learn to use Microsoft Word. Students will type alphabets, numbers and other special characters. Further students will venture into typing short sentences in the word processor and identify basic components of it. This will help them to improve their typing skills and be able to identify the potential of using Microsoft Word.

COMPETENCY 3: Students will be able to produce a simple document using a word processor to describe a topic and enhance their typing skills.

Topics	Key Stage Standard	Objectives	Time
Introduction to Microsoft Word ● Microsoft Word window ● Typing alphabets (A to Z) and numbers (0 to 30) ● Typing special characters o Full stop, Comma, Quotation marks ● Typing short sentences given in the workbooks.	A1.4 Develop keyboarding skills.	1-A1.4.1 Type short sentences in a word processor.	480 mins (12 periods)

Learning experiences:

- Introduce Microsoft Word and explain the importance of Word. Let students type alphabets, numbers and special characters, and save them with appropriate file names.

- Demonstrate how to create a simple Word document and let students type sentences on any concepts learned in other subjects.

- Let students write about any topic in the notebook and then assist them to type it in Microsoft Word.

- Create video tutorials to introduce Microsoft Word and explain its importance. Then share it on the class online platform and let them type alphabets, numbers and special characters.

- Provide relevant online resources on creating a Word document. Ask students to refer to the resources and type a few sentences about themselves in Microsoft Word.

- Conduct video conferences to help students produce a Word document on any topics learned in other subjects.

Assessment:

- Discuss with the students and find out the advantages of using MS Word.

- Evaluate the Word document produced by students based on rubrics.

- Provide a sample sentence for students to type. Monitor and provide necessary feedback and assistance.

- Evaluate the Word document submitted by students on the class's online platform based on rubrics.

- Keep a record of students' participation in online discussions.

Questions:

1. What did you write in MS Word and how is it different from writing on your notebook?
2. What do you like about typing in MS Word? Why?
3. How many words can you type in one minute? five minutes? Compare your answers with your friends.

Resources:

1. **Word Processor:** The weblinks contain information about different types of word processors and their applications in creating documents.
   - https://youtu.be/mdyG2bDTb7I
   - https://www.gr8ambitionz.com/2015/01/word-processing-features-and-advantages.html

2. **Microsoft Word Window:** The weblinks contain videos that present information about the Microsoft Word window and its components.
   - https://youtu.be/BOoq3k1cm0A
   - https://youtu.be/j-ZAVHk5SaU
   - https://youtu.be/HC13M8FGlNc

4. FILE MANAGEMENT

File management is the process and act of creating an organised structure in which you store information for easy retrieval. It includes files and folders and their operations. Creating files and folders are the basic skills of file management which is an essential skill for young learners who are getting familiar with computers.

Under this topic, students will learn basic operation file management in the Windows operating system-like creating, opening, renaming, saving and deleting files. They will also create folders and upload files such as their Word or MS Paint files in it.

COMPETENCY 4: Students will be able to create and manage files to store their work on the computer.

Topics	Key Stage Standard	Objectives	Time
File Management ● File operation. ○ Create, Open, Rename, Save, Delete	A1.5 Manage files and folders	1-A1.5.1 Create files on a computer.	160 mins (4 periods)

Learning experiences:

- Make a PowerPoint presentation on the importance of file management and explain the basic rules for naming a file. Let students create and save files using the rules.

- Demonstrate basic file operations and let students follow the steps to complete an activity.

- Create and share video lessons on the importance of file management and basic file naming rules. let students follow proper naming rules while creating files.

- Conduct video conferences to demonstrate the file operation and let the students perform file operation and follow the naming conventions.

- Provide students with weblinks having video or images on file operations in the computer through an online platform. Ask them to follow the links and apply file operations for proper management of files.

Assessment:

- Use checklists to evaluate students' ability to perform file operations during activity and provide necessary feedback.

- Ask questions to students about the file naming convention and steps of file operation.

- Ask students to follow basic file naming rules and file operations to create Microsoft Word documents. Let them submit it through the class online platform.

- Conduct appropriate online tests such as matching, drag and drop, and multiple-choice questions on naming conventions and file operations.

- Let students take pictures of the files they have created and submit them through an online platform.

Questions:

1. How many files have you created so far on the computer?
2. How many different types of files have you created?
3. Mention some of the basic rules of naming a file.
4. What is the value of saving your files regularly?
5. When do you remove a file from your computer?

Resources:

1. **Files and Folder:** The weblink contains nursery rhymes on computer files and folders.
   - o https://www.youtube.com/watch?v=rHCcRKzM-VM

2. **File Naming Convention:** The weblinks contain naming conventions to be followed while working with files and folders.
   - o https://huridocs.org/resource-library/organising-a-collection-of-human-rights-information/file-naming-conventions/
   - • https://medium.com/thewhybuilder/10-best-practices-for-naming-files-folders-for-you-and-your-team-653f58d5db73
   - • https://www.youtube.com/watch?v=-uro4CjcgqY

3. **Working with Files:** The weblinks contain information on how to manage files and folders.
   - • https://drive.google.com/file/d/1S8GMxLb_AKc8SL6iAKqiuL6bQquUOYLy/view?usp=sharing
   - • https://www.youtube.com/watch?v=k-EID5_2D9U

STRAND B – Communication and Collaboration

5. INTERNET SEARCH

There are many search engines available to search for information and resources. Some of the popular search engines are Google, Bing and DuckDuckGo. Knowing how to search using these search engines is important so as to efficiently access a host of repositories on the Internet.

Under this topic, students explore the Internet to search for videos on Nursery rhymes, Phonics, Stories, Cartoons and tutorials. Students will use the Internet under the guidance of the teacher.

COMPETENCY 6: Students will be able to get relevant videos from the Internet to make their learning interactive, engaging and entertaining.

Topics	Key Stage Standard	Objectives	Time

Internet Search
● Searching videos
   o Nursery rhymes,
       Phonics, Stories,
       Cartoons,
       tutorials
	B1.1 Search relevant information from the Internet.	1-B1.1.1 Search videos related to contents learned in other subjects from the Internet (teacher guided)	240 mins (6 periods)

Learning experiences:

- Demonstrate searching videos from the Internet that are relevant to concepts taught in other subjects. Let students search for rhymes, stories, songs, cartoons, etc. and share them with friends.

- Find out students who have watched videos on YouTube and allow him/her to demonstrate the steps to search educational videos on YouTube. Let other students follow/her instructions to search for educational videos on YouTube.

- Create and share videos by searching for relevant videos on the Internet. Let students search for rhymes, tutorials, stories, cartoons, songs, etc. to learn concepts from other subjects.

- Arrange video conferences to demonstrate and guide students to use YouTube for searching educational videos and let them follow the steps accordingly.

- Provide weblinks for nursery rhymes or educational videos for students to watch and learn.

Assessment:

- Monitor students' ability to search for videos that are relevant to concepts from other subjects.

- Let students form groups and search for nursery rhymes on any subject. Let them sing and perform in the class.

- Provide a list of topics to students and let them search for videos on any of the topics. Let them write the title of the video and submit it through the class's online platform.

- Arrange video conferences and let students sing nursery rhymes that they have learned after searching through the internet.

Questions:

1. Name a video that you have searched on the Internet recently.
2. Explain the steps to search for videos on the Internet.
3. Where do you usually search for the videos on the Internet?
4. Name a nursery rhyme video that you have watched online. What did you like about it?

Resources:

1. **Searching Videos:** The weblink contains information on searching videos online.
   - https://youtu.be/8fYD6q2h0Cw

2. **Nursery Rhyme**: The weblinks contain Nursery rhymes.
   ● https://www.youtube.com/user/checkgate
   ● https://www.youtube.com/channel/UCx7bx9ViRETF04UE3dCxu5w
   ● https://www.youtube.com/channel/UCBnZ16ahKA2DZ_T5W0FPUXg
   ● https://youtu.be/MMcLANFU9ic?list=PLifUWf7BYkKz4XC9_admwUOM2cyIj
     YFuI
   ● https://youtu.be/_lFHTLRKByA?list=PLifUWf7BYkKyWW-NKW0MeXI5k2jD
     2UorT
   ● https://www.youtube.com/channel/UC5Ti4_DVp7LW34PjEwB13Xg
   ● https://www.youtube.com/channel/UCLqBSobZrTVNYbg2s1ZvXrA
   ● https://www.bbc.co.uk/teach/school-radio/nursery-rhymes-a-to-z-index/z4ddgwx

6. ONLINE EDUCATIONAL GAMES

The Internet provides a collection of online educational games for children. These games are of various levels of complexity. Over the years, gaming culture amongst the youth spends a lot of time playing online games. Thus the online education games cater to their interest and enhance the curricular requirements seamlessly.

Under this topic, students explore the Internet to play online games. The teachers will guide them to find games related to mathematics, logic, quizzes, memory and matching games. Further, teachers will ask the students to share what they have learnt from playing online educational games and even share their favourite games with friends.

COMPETENCY 7: Students will be able to complete online games to develop logical thinking, improve concentration and enhance problem-solving skills.

Topics	Key Stage Standard	Objectives	Time
Online Educational Games ● Mathematical games ● Logical games ● Quiz games ● Memory games ● Matching games, etc.	B1.2 Play online educational games to develop logical thinking.	1-B1.2.1 Play online educational games (teacher guided).	320 mins (8 periods)

Learning experiences:

● Provide weblinks on educational games for students to play and develop problem-solving skills. Let students share their experiences in the class.

● Provide offline educational games to students and let them play to enhance their learning in a fun and playful manner. Encourage students to follow personal safety tips while playing games.

- Let students share ideas and help each other while playing educational games in the lab. Monitor students and provide support, feedback and necessary reinforcement.

- Share the list of online or offline mobile/computer games for students to play and enhance their learning and problem-solving skills. Ask students to seek help from their parents while playing online games.

- Conduct video conferences with students to discuss the importance of playing educational games by following instructions. Demonstrate how to play educational games and let students follow them accordingly.

- Provide instructions or video tutorials on playing online educational games. Let students play computer or mobile games to develop knowledge of different subjects in a fun way.

Assessment:

- Observe the level of competency of the students to play and learn the concepts taught through games.

- Monitor students while they are engaged in playing online educational games and provide necessary reinforcements.

- Organize competitions between individuals or groups and declare the winner based on completion time, level, scores, etc.

- Arrange video conferences with students to check their learning through online or offline games.

- Let students write any concepts learned through online/offline games and submit them through the class online platform.

- Provide a game for all students to play. Conduct appropriate online tests to check their understanding of concepts learned from the game.

Questions:

1. Name some of the logical computer games that you have played online.
2. Did online games help you to get new knowledge or skill?
3. What are some of the mathematical concepts you learned through online games?
4. What kind of online games made you think a lot or asked for help from others?

Resources:

1. **Educational Games:** The weblinks contain different educational games for the students to explore and play. Share the links with students and let them play to develop critical thinking, logic and problem-solving skills.
   - https://www.mathplayground.com/grade_2_games.html
   - http://www.mathgametime.com/subject/logic
   - https://www.education.com/games/first-grade/math/
   - https://pbskids.org/games/math/
   - https://home.oxfordowl.co.uk/kids-activities/fun-maths-games-and-activities/
   - https://www.improvememory.org/brain-games/memory-games/
   - https://www.abcya.com/games/
   - https://pbskids.org/games
   - https://kids.nationalgeographic.com/games/

- https://global.cbeebies.com/
- https://www.bbc.co.uk/bitesize/primary
- https://www.bbc.co.uk/bitesize/this-terms-topics
- https://www.education.com/games/first-grade

STRAND C – Safety and Ethics

7. OWNERSHIP OF CREATIVE WORK

Creative ownership pertains to the right of an individual to possess his creative work such as discoveries, know-how, artworks and writing. Some of the creative work could be art, photo, video, story, poems, rhythms etc. Creative work needs to be acknowledged when it is used in one's work.

Under this topic, students explore ownership of creative works, types of creative works, ways to identify owners and the benefits of acknowledging ownership. Students will be able to produce their own work and exercise their ownership.

COMPETENCY 3: Students will be able to acknowledge the ownership of personal works to avoid plagiarism and appreciate creative works.

Topics	Key Stage Standard	Objectives	Time

Ownership of Creative Works
● Types of creative work
  o Art, photo, video, story, rhyme, etc.
● Identifying owners of creative works
  o Name, symbol and date
● Reflecting owner's identity
● Benefits of acknowledging ownership
	C1.2 Acknowledge ownership of personal creations	1-C1.2.1 Assign owner's identity to creative personal works
		
		1-C1.2.2 Identify the sources of materials referred from the Internet
			80 mins (2 periods)

Learning experiences:

- Display examples of creative works (photo, art, document, video, audio, presentation) and show students on how to identify the owner of such works. Show some creative works downloaded from the Internet and ask students to identify the owner.

- Narrate a story on misuse of others' work to explain why it is important to acknowledge creative works that belong to others.

- Ask students to create a digital drawing and reflect their names or symbols in their drawing for identity. Explain the importance of having names or symbols on one's personal creative works.

- Create and share videos to explain different types of creative works and the identity used to protect their works from illegal use. Ask students to identify the owner of the creative works shared on the class online platform.

- Share relevant online resources that explain the types of creative works and the ways to identify the owner's identity. Ask students to create a digital drawing and reflect/her ownership and submit it to the class online platform.

- Arrange a video conference with students to explain types of creative works, ways to identify the owners of creative works, and the benefits of acknowledging others' work. Let students search for pictures of their favourite fruits or animals, write down the owner of those pictures, and submit it through the class online platform.

Assessment:

- Provide a variety of creative works and let students identify the owner's identity. Assess students' ability to identify the owner of the creative work.

- Let students draw a picture of their school and write down short descriptions about it. Make them write their name and class to reflect the ownership. Display their work in the classroom and let students provide feedback on each other's work.

- Monitor and provide necessary feedback when they perform an activity on identifying and creating ownership.

- Share different types of creative works in the class online platform and ask students to identify the owner of the work.

- Give students a task to create a digital drawing in Microsoft Paint or Mobile App and let them add their name and class to reflect the ownership. Let them submit it through the class online platform.

- Maintain a record of digital artefacts submitted by students on creating and identifying owners of creative works.

Questions:

1. Did you write your names on the arts you drew on MS Paint? Why?
2. What are the benefits of acknowledging others' work?
3. How do you identify the sources of the materials you referred to on the Internet?
4. How do you ensure your creative works are identified by others?
5. What digital works do you own? Where do you keep them?

Resources:

1. **Creative work:** The weblink contains information about creative work.
   - https://youtu.be/WXwTm6d8E8I

2. **Teaching Kids About Copyright**: The weblinks provide resources for teachers to understand more about copyright and get ideas to help children learn about copyright.

- https://mediatechparenting.net/2013/10/27/teach-digital-kids-to-respect-ownership-copyright-resource-update/
- http://www.copyrightkids.org/
- https://www.youtube.com/watch?v=ukFl-siTFtg

3. **Acknowledging Ownership**: The weblinks contain information about the importance and ways to acknowledge others' work.
    - https://docs.google.com/presentation/d/1YEjUMzULslYC6qvOZsGrkC-8iZPTWEXT4FHQz_g_xJU/edit?usp=sharing
    - https://www.commonsense.org/education/digital-citizenship/lesson/lets-give-credit

STRAND D – Coding

8. UNPLUGGED ACTIVITIES

Unplugged activities are tasks that take place away from a computer in order to model key concepts (e.g. selection, variables, algorithms) in different ways. It has become a popular approach to teaching computational thinking and other computer science concepts to beginners. The unplugged activities would include locally available resources like grids, cards, worksheets or cups etc.

Under this topic, students will be engaged with unplugged activities. Students will learn the process of performing the task and also gain some fundamental computer science vocabulary. And also able to recognize the pattern to solve a problem.

COMPETENCY 8: Students will be able to recognize patterns to complete tasks that develop problem-solving skills.

Topics	Key Stage Standard	Objectives	Time
Unplugged Activities ● Following instruction, direction and sequence to complete a task. o Use grids, cards, worksheets, cups, etc. ● Recognizing patterns to solve a problem.	D1.1 Demonstrate the ability to solve problems without using computers.	1-D1.1.1 Identify patterns to solve a problem (teacher guided) 1-D1.1.2 Follow verbal instructions to complete a game (teacher guided).	480 mins (12 periods)

Learning experiences:

- Provide an activity that allows students to perform a sequence of actions by following a set of instructions such as a game that requires students to identify patterns to solve problems.

- Provide a variety of worksheets on unplugged coding to the students and guide them to complete the task.

- Organize competitions in pairs or groups of students to complete the activities that require them to follow correct instructions and identify patterns to solve problems.

- Create a PowerPoint presentation to provide the instructions for students to follow and complete the unplugged coding activities. Allow them to study the problem and recognize the patterns to solve it.

- Create video tutorials for unplugged coding activities that allow students to follow instructions and recognize patterns to solve problems.

- Provide students with relevant weblinks having videos or worksheets on unplugged coding activities and let them follow them to complete the assigned tasks.

- Conduct video conferences to demonstrate how to recognize patterns and solve problems. Provide relevant follow-up activity.

Assessment:

- Monitor students' activity in solving problems involving pattern recognition. Evaluate students' work using rubrics.

- Evaluate and provide feedback on coding activity worksheets completed by students.

- Observe students' problem solving and debugging strategies.

- Observe and record students' performance during competitions.

- Keep records of students' participation in online discussions on unplugged coding activities.

- Evaluate and provide feedback on the worksheet completed by students on the unplugged coding activity.

- Let students send video recordings of them solving unplugged coding activities through the class online platform.

- Conduct video conferences to check and record students' ability to solve problems.

Questions:

1. What did you learn from playing the unplugged games and activities?
2. How are unplugged activities different from computer games or activities?
3. What are some advantages of having unplugged activities in the ICT class?
4. Mention one unplugged activity that you liked the most. Why did you like it?

Resources:

1. **Unplugged Activities:** The weblinks contain collections of unplugged coding activities to explain the concept of sequencing, instruction and pattern recognition.

- o http://info.thinkfun.com/stem-education/6-unplugged-coding-activities-for-hour-of-code
- o https://csunplugged.org/en/at-home/
- o https://www.icompute-uk.com/Downloads/icompute-a-byte-of-computing-for-ks1.pdf
- o https://www.kodable.com/learn/unplugged-sequence-activity-fall/
- o https://code.org/curriculum/unplugged
- o https://teachinglondoncomputing.org/algorithmic-doodle-art/
- o https://teachinglondoncomputing.files.wordpress.com/2016/02/simplecolourbynumbercolourkey1v2.pdf.
- o https://teachinglondoncomputing.files.wordpress.com/2014/12/activity-tourguide.pdf
- o https://teachinglondoncomputing.files.wordpress.com/2014/12/activity-knightstour.pdf
- o https://code.org/curriculum/course1/12/Teacher
- o https://www.youtube.com/watch?v=IfHmHZPxuV8

Class Two

Students will be able to:

1. customize the desktop and organise files and folders on the computer.

2. draw 3D arts using a drawing software to express creativity and enhance psychomotor skills.

3. produce a document using word processors to enhance typing skills and convert their work into digital format.

4. get relevant information from the Internet to broaden the understanding of a topic or concept they learnt.

5. complete online educational games to enhance learning, develop strategic thinking and build a positive competitive attitude.

6. exhibit correct body posture and maintain balanced screen time to prevent body strain and injury.

7. exhibit practices of proper computer use to take care of the devices at both school and home.

8. solve problems without using computers to develop logical thinking.

9. create a program using block programming software to develop coding skills and build a positive attitude towards coding.

STRAND A – Technology Operation

1. FOLDER MANAGEMENT

A folder can consist of files and an additional folder(subfolder). The file and folder operations allow copying, moving, renaming, and deleting files and folders on the computer. Folder management helps in organising files and folders, searching documents and making efficient use of the space.

Under this topic, students will be familiarised with Desktop; Icons, taskbar, background, date and time. Students will be able to personalise their desktop and configure the settings. They will be able to manage files and folders efficiently.

COMPETENCY 1: Students will be able to customise the desktop and organise files and folders on the computer.

Topics	Key Stage Standard	Objectives	Time

Folder Management
• Computer Desktop.
  o Icons, taskbar, background, date and time
• Managing folders.
  o Create, rename, delete, sub-folders, move files and folders
	A1.2 Perform basic computer operations.	2-A1.2.1 Customise the desktop interface of a computer.	160 mins (4 periods)

Learning experiences:

● Display and explain different features of the Windows desktop. Let students explore different features and personalize their desktop.

● Demonstrate the steps to manage files and folders on the computer. Let students follow the steps to manage their files and folders properly.

● Make a PowerPoint presentation on the importance of managing files and folders. Let students adopt various strategies to manage their files and folders.

● Create and share video tutorials on customizing Windows desktop and managing folders properly. Ask students to personalize their desktops and create folders to keep their work organized.

● Conduct video conferences to demonstrate how to customize Windows desktops and manage files and folders on their computer.

● Share relevant online resources on customizing desktops and managing files and folders. Let students follow the steps to customize their desktop and manage files and folders.

Assessment:

- Let students demonstrate the steps to customize the desktop. Monitor students and provide the necessary support.

- Ask students to create appropriate folders and subfolders for the proper organization of their files. Provide necessary feedback and reinforcements.

- Arrange video conferences to check students' work on customizing desktops and managing files and folders.

- Keep a record of students' participation in the video conference on customizing desktops and managing folders.

- Let students submit pictures of their personalized desktop and organized folders through the class online platform.

Questions:

1. What are the benefits of creating folders?
2. How do you manage your folders on the computer?
3. What are the differences between a folder on the desktop and a folder in My Documents?
4. What types of files and folders do you keep on the computer desktop? Why?

Resources:

1. **Organizing Files and Folders on Computer**: The weblinks explain ways to organize files and folders on the computer.
   - https://courses.lumenlearning.com/wmopen-compapp/chapter/organizing-files-and-folders-2/
   - https://www.youtube.com/watch?v=HR4eCwYnJd8
   - https://www.youtube.com/watch?v=QPWZsCdTlkc

2. **Managing Desktops**: The weblinks contain video tutorials on customizing Windows desktop.
   - https://www.youtube.com/watch?v=iwLx8pqVEJk
   - https://www.youtube.com/watch?v=vs5HXhNWNEc

2. DRAWING IN MICROSOFT PAINT

Microsoft Paint is an application software to draw, paint, and perform basic image manipulations. It can be used to draw a digital art which improves the users' mouse balance besides enhances creativity.

Under this topic, students will learn to draw 3D shapes, sceneries, cartoon characters and other sequences of drawing and exporting the file. Teachers may also allow students to use other drawing tools available in mobile apps for the creation of digital arts. Such opportunities will allow students to make a judgement on the effectiveness of different digital drawing tools.

COMPETENCY 2: Students will be able to draw 3D arts using drawing software to express creativity and enhance psychomotor skills.

Topics	Key Stage Standard	Objectives	Time

Drawing in Microsoft Paint
● Drawing arts.
   ○ 3D shapes, sceneries, cartoon characters, etc.
● File extension
   ○ export to jpg, png, etc.
	A1.3 Develop mouse handling skills.	2-A1.3.1 Draw objects using drawing software.	280 mins (7 periods)

Learning experiences:

- Show examples of 3D art and demonstrate how to draw similar arts using Microsoft Paint. Then ask students to draw 3D art to express their creativity.

- Show videos on drawing 3D art using Microsoft Paint. Let them watch and create art of their own choice.

- Let students search for information on the Internet on creating art using Microsoft Paint. Ask them to complete a project on designing Bhutanese art and write their name in the artwork to reflect the ownership.

- Make a PowerPoint presentation on steps to save image files in different formats. Let students create art on any topic of their choice and save it in different formats.

- Conduct art competitions among students to express their ideas on any topics or concepts from other subjects. Print their artworks and paste them into the classroom.

- Create and share videos on drawing 3D art using Microsoft Paint. Ask the student to create 3D shapes they have learned in mathematics.

- Arrange video conferences to explain how to save the art with different file extensions. Ask students to create art and save it in different formats.

- Share relevant online resources on using Microsoft Paint to draw 3D art through the class online platform. Ask students to complete the task of creating the 3D art of their choice by referring to the resources shared.

Assessment:

- Print students' 3D Art projects and display them on the classroom walls to be assessed and graded by their mates or other teachers based on the given rubrics.

- Conduct a 3D Art competition amongst students and select the best ones for the art exhibition.

- Conduct video interviews to check students' learning.

- Evaluate projects submitted by students on the class online platform based on the given rubrics and criteria.

- Share their project on the class online platform and get feedback from students and their parents.

Questions:

1. What is the difference between 2D and 3D art?
2. What are some of the 3D arts that you drew on the computer?
3. What type of file extension did you have for the image files?
4. Which type of art do you prefer - 2D or 3D? Why?
5. Mention a 3D art or work that you have seen in a real life.

Resources:

1. **Microsoft Paint**: The weblinks contain videos on creating basic 3D shapes using MS Paint.
   - https://www.youtube.com/watch?v=amPMY0MdztY
   - https://www.youtube.com/watch?v=-DAj2UXemuo
   - https://www.youtube.com/watch?v=B0d4SS3iG_A
   - https://www.softwarert.com/convert-image-file-format-paint-windows-10/

2. **Paint 3D**: The weblinks contain tutorials and download links for Paint3D in Windows 10. It may be used as an alternative to Microsoft Paint for creating 3D shapes.
   - https://blogs.windows.com/windowsexperience/2018/05/21/windows-10-tip-a-guide-to-the-basic-tools-in-paint-3d/
   - https://www.youtube.com/watch?v=U3aZigT14vk
   - https://www.youtube.com/watch?v=j-42l1F7sHg&list=PLWs4_NfqMtoycRV4YeGlaLePsD5cyRPrN
   - https://www.microsoft.com/en-bt/p/paint-3d/9nblggh5fv99?activetab=pivot:regionofsystemrequirementstab

3. MICROSOFT WORD DOCUMENT

Microsoft Word is a word processing application software developed by Microsoft. It is a popular application being used by large users of the Windows Operating system. It can be used to generate any kind of document and its use case depends on the creativity of the users.

Under this topic. students will use MS Word to type sentences, paragraphs, and format characters. Students explore tutorials to learn more about Microsoft word and use different types of keys while typing. Students will be able to create a word document with proper character formatting. They will also be able to identify the advantage and disadvantages of using MS Word to create documents.

COMPETENCY 3: Students will be able to produce a document using word processors to enhance typing skills and convert their work into digital format.

Topics	Key Stage Standard	Objectives	Time

Document in MS Word
● Typing sentences
  ○ Keyboard keys (enter, spacebar, shift, caps lock)
● Typing paragraphs
● Character formatting
  ○ Bold, Italic, Underline, etc.
	A1.4 Develop keyboarding skills.	2-A1.4.1 Type paragraphs in a word processor.	400 mins (10 periods)

Learning experiences:

- Display an image of the computer keyboard on a projector and explain the function of keys such as enter, spacebar, shift, caps lock, etc. Let students use these keys while typing sentences in a Word document.

- Demonstrate basic character formatting in a Word document. Show a sample formatted Word document to students and let them create and apply character formatting properties to enhance the appearance of individual text characters.

- Let students write short paragraphs describing their favourite books in the notebook. Ask students to type the same in Microsoft Word and apply appropriate character formatting.

- Let students write short descriptions on any topic of their choice. Consult English teachers for necessary corrections and create a Word document by applying proper character formatting. Present their work in the class.

- Create and share a video tutorial on the function of keys such as enter, spacebar, shift, caps lock, etc. on the class online platform. Let students use these keys while typing sentences in a Word document.

- Create and share video tutorials on character formatting using Microsoft Word and let students apply the skills to format Word documents.

- Let students download and install Microsoft Word on the phone. Ask their parents to guide them and create a Word document to describe any topic of their choice.

- Let students discuss with their parents and write a few sentences about their favourite subject. Create a Word document to convert it into digital form and submit it through the class online platform.

Assessment:

- Monitor students' activity in writing essays and record students' understanding and skills in formatting documents. Provide necessary support.

- Observe students' participation in discussions with peers and their involvement in the development of a project in Microsoft Word.

- Evaluate formatted Word documents submitted by students based on rubrics.

- Evaluate the formatted Word document submitted by the students based on rubrics.
- Conduct video conferencing to discuss and check students' understanding and ability to format Word documents.
- Record and assess students' submission of tasks through the class online platform.

Questions:

1. What type of document did you create using MS Word?
2. How many words can you type in one minute?
3. Mention some of the new skills that you have learned in MS Word.

Resources:

1. **Introduction to keyboarding skills:** The weblinks provide information on the basics of keyboarding skills.
   - https://www.youtube.com/watch?v=nlNn2Uw3FAg
   - http://www.crazy4computers.net/grade-2--keyboarding-basics.html

2. **Text Formatting in MS Word:** The weblinks contains a tutorial on formatting in Microsoft Word:
   - https://www.youtube.com/watch?v=aKVyPUmVPXo
   - https://www.youtube.com/watch?v=UXdG5octnYM
   - https://www.tutorialspoint.com/word/word_getting_started.htm
   - https://edu.gcfglobal.org/en/word2016/getting-started-with-word/1/
   - https://www.youtube.com/watch?v=ViGf0RKbCyA

STRAND B – Communication and Collaboration

4. INTERNET SEARCH

There are many search engines available to search for information and resources. Some of the popular search engines are Google, Bing and DuckDuckGo. Knowing how to search using these search engines is important so as to efficiently access a host of repositories on the Internet.

Under this topic, students will learn more about web browsers and some of the basic features of web browsers like open, close, minimise, maximise, tabs etc. Students will explore the Internet for countries, people and places, animals, etc. to get a widener understanding and enhance their knowledge. Students will be able to explore a search engine like Google to gather information related to their mainstream curricular needs and realise the importance of the Internet to enhance their learning.

COMPETENCY 4: Students will be able to get relevant information from the Internet to broaden their understanding of a topic or concept they learnt.

Topics	Key Stage Standard	Objectives	Time

Internet Search
  ● Web browser.
     o Examples
  ● Basic features
     o Open, close, minimize, maximize, tabs, forward, backward, etc.
  ● Searching information
     o Examples: countries, famous people, places, animals, vegetations, wonders of the world, flags, music, etc.
	B1.1 Search relevant information from the Internet	2-B1.1.1 Search information related to contents learned in other subjects from the Internet (teacher guided)	200 mins (5 periods)

Learning experiences:

- Make a PowerPoint presentation to introduce the web browser and explain its features. Let students explore common web browsers.

- Guide students to browse for information on any particular topics like countries, animals, places, etc. and let them copy it in their notebook or type it in a Word document.

- Ask students to search for information on any topics learned in other subjects. Let students copy it into a Word document and apply appropriate formatting.

- Create a video explaining a web browser and its features, and share it through an online platform. Let students use one of the web browsers to search for information on topics related to their subjects and ask them to write it in their notebook or type it in a word processor.

- Provide relevant online resources having video, images or text about the web browser and steps to search information using browsers. Let students refer to the resources and browse for information on any particular topics like countries, animals, places, etc.

- Arrange video conferences to explain web browsers and search information using common web browsers. Ask for a volunteer to demonstrate searching for information about any topic learned in other subjects.

Assessment:

- Let the students demonstrate how to search for information using the web browser and provide relevant feedback.

- Evaluate students' project work on searching information based on the rubrics.

- Monitor students' activity and provide support and guidance while searching for information on the Internet.

- Let the students write the steps to search for information from the Internet related to their subjects and share it on the class online platform.

- Keep a record of digital artefacts submitted by students on the class online platform and provide timely feedback.

- Conduct video interviews to check students' learning on browsers and search for information from the Internet.

- Conduct online tests on browsers and their features using appropriate online tools.

Questions:

1. What do you usually search on the Internet?
2. How is the Internet useful to you?
3. Can you get everything from the Internet? Justify your answer.
4. Which website do you use the most to search for information on the Internet?

Resources:

1. **Searching Online Information**: The weblinks contain videos about web browsers and ways to search for relevant online information using web browsers.
   - https://www.youtube.com/watch?v=BrXPcaRlBqo&feature=emb_logo
   - https://www.wikihow.com/Find-Information-Online
   - https://www.tutorialspoint.com/web_developers_guide/web_browser_types.htm
   - https://www.youtube.com/watch?v=u4ipjMYMYik

5. ONLINE EDUCATIONAL GAMES

The Internet provides a collection of online educational games for students at different levels. These games are of various levels of complexity and interactivity. Over the years, gaming culture amongst the youth made them spend a lot of time playing online games. Thus the online education games cater to their interest and enhance the curricular requirements seamlessly.

Under this topic, students will explore the Internet for online educational games. The games would include mathematical, logical, Quiz, memory and matching games. Students will be able to complete online education games independently as well as in teams. They will be able to play a game based on some form of strategy or plan.

COMPETENCY 5: Students will be able to complete online educational games to enhance learning, develop strategic thinking and build a positive competitive attitude.

Topics	Key Stage Standard	Objectives	Time
Online Educational Games ● Mathematical games ● Logical games ● Quiz games ● Memory games ● Matching games, etc.	B1.2 Play online educational games.	2-B1.2.1 Play online educational games (teacher guided).	200 mins (5 periods)

Learning experiences:

● Introduce educational games to students. Let students play those games to develop logical and strategic thinking and problem-solving skills.

● Provide weblinks of online educational games to be explored by students. Guide students to access and play games to enhance their learning.

● Organize competitions among groups in the class to play educational games. Let students compete against each other in a friendly way to encourage healthy competition and build a positive competitive spirit.

● Let students share ideas and help each other while playing educational games in the lab. Monitor students and provide support, feedback and necessary reinforcement.

● Share the list of online or offline educational games for students to play and enhance their learning and positive competitive attitude. Ask students to seek help from their parents while playing online games.

● Create and share video tutorials on playing online educational games to develop strategic thinking. Let students explore relevant mobile or PC games and encourage them to follow proper safety tips.

● Conduct video conferences with students to discuss and emphasize developing a positive competitive attitude while playing games.

Assessment:

● Observe the level of competency of the students to play and learn the concepts taught through games.

● Monitor students while they are engaged in playing online educational games. Provide necessary guidance and reinforcements.

● Assess students based on the result, behaviour and teamwork exhibited during the educational games competition.

● Arrange video conferences with students to affirm learning through playing educational games.

● Let students create recordings of their achievements while playing educational games and submit them through the class online platform.

● Provide a game for all students to play. Conduct appropriate online tests to check their understanding of concepts learned from the game.

Questions:

1. Name an online educational game that you have recently played?
2. What do you usually learn by playing online educational games?
3. Are online games useful to students like you? Justify your answer.
4. What is your favourite online educational game? Why?

Resources:

1. **Online Educational Game:** The weblinks contain online educational games for students.
    o https://pbskids.org/plumlanding/games/ecosystem/make_a_mangrove.html
    ● https://pbskids.org/scigirls/games/code-quest
    ● https://pbskids.org/readyjetgo/games/jets-rocket-ship-creator
    ● https://pbskids.org/designsquad/games/feed_fidgits/
    ● https://www.education.com/games/second-grade/
    ● https://www.safekidgames.com/
    ● https://www.mathplayground.com/
    ● https://www.funbrain.com/games
    ● https://www.turtlediary.com/games/second-grade.html
    ● https://pbskids.org/plumlanding/games/ecosystem/feed_the_dingo.html

STRAND C – Safety and Ethics

6. BALANCE SCREEN TIME AND BODY POSTURE

Screen time is a time spent using a device such as a computer, television or game console. Balancing screen time helps users to ration the time spent in front of a screen so as to reduce the impact on their eyesight. And while in front of a screen one needs to be cautious of the correct body posture.

Under this topic, students will explore ways to balance screen time and learn correct body posture while using a computer. Students will be able to arrange furniture and devices in the lab to support correct body posture. They will also exhibit correct body posture whenever in the laboratory and also be mindful of the screen time.

COMPETENCY 6: Students will be able to exhibit correct body posture and maintain balanced screen time to prevent body strain and injury.

Topics	Key Stage Standard	Objectives	Time
Balanced Screen Time ● Definition of screen time ● Benefits of balanced screen time	C1.1 Use computers responsibly for	2-C1.1.1 Maintain a balanced screen time.	80 mins (2 periods)

● Ways to manage balanced screen time	personal safety and health.		
Correct Body Posture ● Definition of body posture ● Examples of correct body posture ● Benefits of following correct body posture ● Arrangement of furniture and devices to support correct body posture		2-C1.1.2 Adopt correct body postures for safety and health	80 mins (2 periods)

Learning experiences:

- Make a PowerPoint presentation on the importance of balanced screen time. Let students work in groups and discuss the impacts of using digital devices for a long time.

- Divide students into groups and let them discuss different ways to maintain balanced screen time. Ask them to write it on the chart paper and paste it into the classroom.

- Show a video that explains proper body posture while using different digital devices. Ask students to watch and follow the correct body posture.

- Arrange furniture and devices in the computer lab to support proper body posture. Explain the importance of correct body posture and let students adopt correct body postures while using digital devices.

- Create and share videos on the importance of maintaining balanced screen time. Advise students to maintain balanced screen time.

- Create and share a PowerPoint presentation on correct body posture while using different digital devices. Let students go through the presentation and follow the correct body posture while using different digital devices.

- Provide resources to students on arranging furniture and devices to support correct body postures. Ask students to seek support from their parents in arranging devices and furniture to adopt the correct body posture for personal safety and health.

Assessment:

- Let students demonstrate the correct body posture while using the computer. And also allow them to draw the correct body posture using MS paint.

- Provide worksheets containing pictures of various body postures while using digital devices. Divide students into groups and ask them to select only the correct body postures from the sheet.

- Observe students' body posture during activities and provide necessary guidance.

- Create an online survey form for students to fill/answer on how much they spent their time on screen (Computer, TV, Mobile Phone). Share the survey result with the class and provide feedback on screen time.

- Create an online survey form for students to fill/answer on how much they spent their time on screen (Computer, TV, Mobile Phone). Share the survey result on the class online platform and provide feedback on screen time.

- Seek help from parents to monitor and guide their children on balanced screen time.

- Allow them to draw the correct body posture in their notebook and share it on the class online platform.

- Provide worksheets containing different body postures and ask students to choose the correct ones, and submit them through the class online platform.

Questions:
1. Why is it important to maintain a correct body posture while using the computer?
2. How many hours do you spend on computers or mobile devices in a week?
3. Why should children maintain a balanced screen time?
4. What will happen if you are always on the computer or mobile device?

Resources:
1. **Screen-Time Guidelines:** The weblinks contain links on the importance and ways of maintaining balanced screen time.
   - https://www.youtube.com/watch?v=CnFHY16KJXY
   - https://www.youtube.com/watch?v=1RUM5mM2MZw
   - https://www.youtube.com/watch?v=OVwuFrnZPwo

2. **Healthy Digital Life:** The weblink contains a video explaining how you can maintain a healthy digital life.
   - https://youtu.be/wStFn7OwVII

3. **Correct Body Posture:** The weblinks contain links demonstrating correct sitting positions while using a different device.
   - https://www.youtube.com/watch?v=PcsoeDpUSrs
   - https://www.youtube.com/watch?v=kY6H2bHHv5M
   - https://www.wikihow.com/Sit-at-a-Computer
   - https://breakingmuscle.com/fitness/cell-phone-ergonomics-how-to-avoid-the-smart-phone-slump

4. **Computer Ergonomics:** The weblinks contain information on computer ergonomics to reduce the risk of disorders affecting the muscles, spine, and joints.
   - https://youtu.be/x12GnuV9Qgw
   - https://youtu.be/bLBKUbnLYTs
   - https://youtu.be/nnpHLxlj3fQ
   - https://youtu.be/7NLQ3uC8_sw

7. COMPUTER CARE

Computers do need care in terms of the hardware and software. The timely maintenance and care would prolong the device's life. It also prevents major repairs in the long run. There are many ways to take care of the computer starting from proper bootup and shutdown of the computer.

Under this topic, students will learn ways to take care of the computer and also learn to protect data both offline and online. Further students will explore the Internet to gather more ways of taking care of the computer.Students will be able to take care of the computer assigned to them in the lab.

COMPETENCY 7: Students will be able to exhibit practices of proper computer use to take care of the devices at both school and home.

Topics	Key Stage Standard	Objectives	Time
Computer Care ● Ways to take care of computers at school and home ● Benefits of computer care. ○ Data protection, life span, hygiene, repair expenses, etc.	C1.3 Adopt safe measures to	2-C1.3.1 Follow ways to take care of personal computers.	80 mins (2 periods)

Learning experiences:

- Let the students work in groups and discuss ways to take care of computers at school and at home. Ask students to type it in Microsoft Word and present it in the class.

- Let students use the Internet to search for ways to take care of the computer. Ask them to create a poster on ways to take care of computers using Microsoft Paint and present it in the class.

- Make PowerPoint presentations on the benefits of proper computer care at school and home. Ask students to follow appropriate measures to protect the computers.

- Create videos on ways to take care of computers and share it on the class online platform. Ask students to watch the videos and follow appropriate ways to take care of computers at home.

- Prepare and share presentations on the benefits of computer care. Let students explore the Internet and find out ways to take care of the computer.

- Provide relevant online resources to help them understand the benefits of computer care and ways to ensure proper computer care. Ask students to create a simple poster on ways to take care of the computer using Microsoft Paint.

Assessment:

- Let students present and share their group work with the class. Assess their work based on rubrics.
- Observe students' practices while using the computers. Provide necessary suggestions on measures to take care of devices.
- Let students present their posters in the class and provide necessary feedback and reinforcement.
- Conduct interactive quizzes on the ways and benefits of proper computer care using appropriate online tools.
- Evaluate posters on the benefits of computer care and proper computer care submitted by students through the class online platform and provide relevant feedback.
- Conduct online tests on the ways and benefits of proper computer care using appropriate tools.
- Provide online questionnaires to check students' understanding of computer care.

Questions:

1. How do you take care of the computers at home and school?
2. What are the benefits of taking good care of computers at both home and school?
3. How do your teachers and parents take care of their computers or mobile devices?
4. How do you use a computer with care and responsibility?

Resources:

1. **Computer Care:** The weblinks explain the benefits and ways of taking care of computers in school and at home. The links can be shared with the students for them to refer to and adopt measures while using computers.
   - https://edu.gcfglobal.org/en/computerbasics/keeping-your-computer-clean/1/
   - https://www.yumpu.com/en/document/read/36911557/caring-for-your-computer-lesson-plan
   - https://docstore.mik.ua/orelly/networking/puis/ch12_02.htm
   - https://youtu.be/bKiQil_5bZ0
   - https://www.youtube.com/watch?v=iZbvKhEhmkg
   - https://youtu.be/kgBIsKeTLLk

STRAND D - Coding

8. UNPLUGGED ACTIVITIES

Unplugged activities are tasks that take place away from a computer in order to model key concepts (e.g. selection, variables, algorithms) in different ways. It has become a popular approach to teaching computational thinking and other computer science concepts. The unplugged activities would include locally available resources like grids, cards, worksheets or cups etc.

Under this topic, students will perform a lot of unplugged activities. The activities would involve sequencing, pattern recognition, design algorithms, repetition, decision making, decomposition of problems and troubleshooting. Students will be able to perform activities in a logical sequence and not in random order.

COMPETENCY 8: Students will be able to solve problems without using computers to develop logical thinking.

Topics	Key Stage Standard	Objectives	Time
Unplugged Activities ● Activities that involve sequence, pattern recognition, algorithm, loops, decision making, debugging, decomposition	D1.1 Demonstrate the ability to solve problems without using computers.	2-D1.1.1 Develop algorithms to solve a problem.	240 mins (6 periods)

Learning experiences:

- Create an activity that requires students to perform a sequence of actions by following a set of instructions such as a game that involves students moving around objects by following the directions given by others. Let them write an algorithm to solve problems.

- Ask students to identify repeating patterns in the algorithm they developed. Let them use commands such as 'repeat' in the algorithm for better readability, maintainability and performance.

- Provide a variety of worksheets on unplugged coding to the students and guide them to complete the task. Let students understand the importance of decision making and debugging while solving problems.

- Design an unplugged coding activity where students break down a complex sequence of actions into parts and explain the importance of decomposition. Ask students to decompose the problem, look for patterns and use loops to simplify the instructions.

- Introduce logical operations such as if…then…else through dance and other fun activities.

- Organize competitions in pairs or groups of students to complete activities on pattern recognition, problem decomposition and decision making.
- Create and share videos on unplugged activities to demonstrate pattern recognition and problem decomposition. Ask students to follow the instructions from the video to complete tasks.
- Create and share videos to introduce logical operations, loops and decision making through dance and other fun activities. Let students follow instructions from the video to complete an activity.
- Provide students with relevant weblinks having videos or worksheets on unplugged coding activities. Ask them to explore it and complete the assigned task.
- Provide worksheets containing random steps to solve problems. Let students identify errors, perform debugging and reorganize steps to achieve the outcome.

Assessment:

- Monitor students' activity on pattern recognition and problem decomposition. Provide necessary feedback and guidance.
- Allow students to exchange their worksheets with their mates to provide feedback and suggestions on the activity.
- Assess activity worksheets submitted by students based on the rubrics and provide necessary feedback.
- Observe students' performance and participation in the unplugged activities. Ask relevant questions and provide feedback.
- Ask students to submit videos of performing unplugged coding activities at home based on the activities assigned to them on the class online platform.
- Let students submit activity worksheets through the class online platform and evaluate them.

Questions:

1. How are unplugged activities useful to you in learning the coding concepts?
2. What are some of the coding concepts that you have learned from unplugged activities?
3. Which unplugged coding activities did you like the most? Why?
4. How many unplugged activities did you play so far? Which one was enjoyed by the whole class? Why?

Resources:

1. **Unplugged Activities:** The weblinks contain lessons on unplugged activities. Share the links with students to complete different unplugged activities.
   - https://curriculum.code.org/csp-18/unit5/7/
   - https://www.youtube.com/watch?v=vBUtejDNvrs&list=PLzdnOPI1iJNenxbaznvrGszgBCP8-UiNY&index=2
   - https://studio.code.org/s/course1
   - https://makecode.microbit.org/courses/csintro/conditionals
   - https://www.kodable.com/learn/unplugged-coding-activities/

- https://edu.sphero.com/cwists/preview/51799x
- https://www.barefootcomputing.org/resources/abstraction-unplugged-activity
- https://www.youtube.com/watch?v=pnxgN4zD_Rc
- https://viterbik12.usc.edu/wp-content/uploads/2019/02/BOTS19-PD5-Unplugged-Conditionals-Curriculum.pdf
- https://leftbraincraftbrain.com/if-then-backyard-coding-game-for-kids/

9. INTRODUCTION TO SCRATCHJR

ScratchJr is a block-based programming language for young children which has the features of creating interactive stories, animations and games. It was developed by MIT. ScratchJr is one of the best platforms to introduce coding to young children.

Under this topic, students will be introduced to programming in ScratchJr. Students will learn to manipulate characters and backgrounds, move characters, and develop rudimentary games. Students will be able to design character costumes and create animations using ScratchJr and explain the logic.

COMPETENCY 9: Students will be able to create a program using block programming software to develop coding skills and build a positive attitude towards coding.

Topics	Key Stage Standard	Objectives	Time
Introduction to ScratchJr • ScratchJr window • Characters, backgrounds, blocks, etc. in ScratchJr • Simple animations and games • Making connections between unplugged and plugged coding	D1.2 Animate characters and backgrounds using block programming	2-D1.2.1 Familiarize with a block programming tool.	680 mins (17 periods)

Learning experiences:

- Use unplugged activities to relate the importance of instructions and sequencing in programming. Let students perform activities that include giving instructions and following sequences.

- Introduce ScratchJr to students and allow them to explore and get familiarized with the ScratchJr interface. Encourage students to explore and experiment with different blocks.

- Demonstrate creating simple animations, interactive stories and games in ScratchJr, and let students follow the steps to complete a project.

- Provide sample stories or animations. Let students create a project on animations, stories or games individually or in groups. Encourage them to incorporate concepts that they have learned in other subjects and let them present their project in the class.

- Create video lessons explaining the ScratchJr interface and creating projects using different blocks and sharing them on an online platform. Ask students to create a simple animation on any topic of their choice and submit it through the class online platform.

- Provide weblinks on ScratchJr for students to learn about creating animations, stories and games. Ask students to follow instructions given in the videos to create a simple story or game of their choice and submit it through the class online platform.

- Conduct video conferences to demonstrate creating games in ScratchJr. Let students create and submit simple games and submit them through the class online platform.

- Provide sample videos of animation, stories and games in ScratchJr. Let students choose any project from the videos and create it in ScratchJr.

Assessment:

- Create checklists to keep a record of students' progress. Encourage students to maintain a record of their digital artefacts.

- Conduct group-wise competitions to motivate students and keep a record of their work. Students may create a project on animations, games or interactive stories.

- Monitor students' involvement in independent exploration through online resources and discussion with peers.

- Assess the final project based on the rubric. Provide necessary reinforcement and feedback for further improvement.

- Evaluate and maintain records of ScratchJr projects submitted by students.

- Create questions on ScratchJr using online assessment tools and share them on the class online platform.

- Assess students' understanding of coding in ScratchJr by interacting with them through video conferencing.

Questions:

1. What type of animation did you create in ScratchJr?
2. What did you like the most about the ScratchJr?
3. What do you want to create using the ScratchJr platform?
4. Differentiate between the ScratchJr application on the computer and on mobile devices. Which one is easier for you?

Resources:

1. **ScratchJr:** The weblink is for downloading ScratchJr software on the computer.
   - https://jfo8000.github.io/ScratchJr-Desktop/

2. **Mobile App:** The weblinks are for downloading ScratchJr mobile apps.
   - ScratchJr - Apps on Google Play for android
   - ScratchJr on the App Store (apple.com) for iPad

3. **ScratchJr Guide:** The weblinks contain tutorials on ScratchJr and project ideas in ScratchJr.
   - https://www.scratchjr.org/learn/interface
   - https://www.coderkids.com/blog/scratchjr-projects-for-kids
   - https://www.youtube.com/watch?v=JMHFLP_12KM&list=PLRg1kFav0E0feZbKThdsUVh8vIhKew8ot

4. **Lesson Ideas:** The weblinks contain ideas for teachers to plan, prepare and implement ScratchJr lessons in the classroom.
   - https://www.scratchjr.org/curricula/animatedgenres/full.pdf
   - https://www.scratchjr.org/curricula/playground/playground-games-full.pdf

Class Three

Students will be able to:

1. classify computer devices as input, output and storage for the smooth and correct operation of devices

2. draw creative arts using a drawing tool to express their ideas and relate them to concepts learned in other subjects

3. create a simple Dzongkha document using a word processor to appreciate and enhance Dzongkha language

4. gather relevant information from the Internet to broaden their knowledge and skill.

5. complete online educational games and share them with friends to build a community of learners.

6. adopt strong password practices to keep personal data safe and secure.

7. create a simple animation using a block programming tool to exhibit and enhance coding skills.

STRAND A – Technology Operation

1. INPUT, OUTPUT AND STORAGE DEVICES

Computer peripherals are categorised into input, output and storage devices. Input devices are those devices which are used to enter data and control a computer. Some of the input devices are mouse and keyboard. Output devices are those devices on which the output is being rendered. Some of the output devices are printers and monitors. And storage devices store the data. Some storage devices are RAM and hard disc.

Under this topic, students will learn more about the input, output and storage components of a computer and their functions. Students will be able to classify the components as input, output and storage devices, and identify the devices in their computer laboratory.

COMPETENCY 1: Students will be able to classify computer devices as input, output and storage for the smooth and correct operation of devices.

Topics	Key Stage Standard	Objectives	Time
Input, Output and Storage Devices • Definition of input, output and storage devices • Functions of input, output and storage devices • Grouping devices into input, output and storage	A1.1 Categorize computer components and peripherals into input, output, and storage devices.	3-A1.1.1 Categorize computer peripheral devices based on their functions.	80 mins (2 periods)

Learning experiences:

- Make a PowerPoint presentation to explain the input, output and storage devices. Let students explore the Internet and search for examples of input, output and storage devices.

- Show different computer devices to students. Discuss and let them classify those devices into input, output and storage devices.

- Display a list of different devices using the projector. Let students categorize the devices into input, output and storage, and write it in their notebooks.

- Create and share video on input, output and storage devices through the class online platform. Let students complete an activity on categorizing devices after watching the video.

- Arrange video conferences with students to discuss input, output and storage devices. Let students complete a task on categorizing devices and submit it through the class online platform.
- Provide relevant online resources having videos, pictures or weblinks for students to go through and allow them to complete assigned task(s) through an online platform.

Assessment:

- Provide worksheets containing a list of functions of devices. Let students identify the devices based on the function and write the name of the devices in the space provided. Provide necessary feedback and reinforcement.

- Monitor students' activity in categorizing devices into input, output and storage devices. Evaluate students' assignments on input, output and storage devices. Provide feedback based on their work.

- Create and conduct quizzes on input, output and storage devices using online assessment tools such as Kahoot and Triventy.

- Make three boxes and name them as input, output and storage devices. Provide pictures of different devices and let students take turns picking up the picture and placing it in the box according to its category.

- Provide worksheets containing a list of functions of devices. Let students identify the devices based on the function and write the name of the devices in the space provided. Ask them to submit their work through the online platform and provide necessary feedback.

- Evaluate students' work on categorizing devices into input, output and storage based on rubrics. Provide necessary feedback based on their work.

- Conduct online tests such as MCQ, Drag and Drop, and Fill in the blanks to test students' understanding of the peripheral devices and their functions.

Questions:

1. Make a table and list all the input, output and storage devices that you see in the computer laboratory.
2. Which input device do you frequently use in the school? Why?
3. Compare the capacity of computers and mobile phones.
4. When you save your works on the Internet, where do you think are they stored?
5. Mention one input, output and storage device that you use regularly. Explain how they are connected.
6. Explore the Internet and find out some of the input, output and storage devices that you have not used so far in the school.

Resources:

1. **Input, Output and Storage Devices:** The weblinks explain different computer peripherals and how to categorize them as input, output and storage devices based on the function.
   - https://www.youtube.com/watch?v=M0F4cc2dkV8
   - https://youtu.be/1VUn3E-6HXY

- https://youtu.be/ahNgH_Vw5RI
- https://www.youtube.com/watch?v=9fxrFkm2m8U

2. DRAWING IN MS PAINT

Microsoft Paint is an application software to draw, paint, and perform basic image manipulations. It can be used to draw a digital art which improves the users' mouse balance besides enhances creativity.

Under this topic, students will learn to create digital art using Microsoft Paint. Digital art needs to be related to concepts learned in other subjects. Students will be able to handle the mouse and keyboard confidently. Besides the technical skills, students will be able to showcase their creativity.

COMPETENCY 2: Students will be able to draw creative arts using a drawing tool to express their ideas and relate them to concepts learnt in other subjects.

Topics	Key Stage Standard	Objectives	Time
Drawing in MS Paint ● Drawing creative arts ● Drawing arts related to concepts and topics learned in other subjects	A1.3 Develop mouse handling skills	3-A1.3.1 Create a drawing by combining multiple shapes and objects.	160 mins (4 periods)

Learning experiences:

- Show examples of Bhutanese architecture such as Lhakhang or Chorten, and demonstrate how to create the arts in Microsoft Paint. Let students follow the steps to draw art.

- Ask students to draw any art in Microsoft Paint that incorporates concepts from other subjects. Encourage students to discuss with friends and draw art to express their ideas in a creative manner.

- Conduct poster competitions on relevant themes. Ask students to focus on uniqueness, theme, design and creativity.

- Create and share videos on creating arts in Microsoft Paint. Ask students to create art on any Bhutanese architecture such as Chorten or Lhakhang and submit it through the class online platform.

- Provide weblinks to students on drawing creative arts in Microsoft Paint through the class online platform. Ask students to follow the lessons and draw art to express their ideas in a creative manner.

Assessment:

- Maintain a checklist to observe and record students' activity in creating art. Provide necessary feedback and reinforcements.
- Evaluate artworks created by students with the help of criteria. Provide feedback and reinforcements.
- Maintain a record of students' digital artefacts.
- Maintain records of students' digital artefacts and evaluate them based on the criteria.
- Organize an art competition based on a theme. Ask students to submit it through the class online platform. Evaluate the artworks based on the criteria.

Questions:

1. Compare the drawings in MS Paint that you drew over the years. How have you become better? What are some of the areas for improvement?
2. What other software did you or your friends use to draw pictures on the computer. How is it different from MS Paint? Which one do you prefer and why?

Resources:

1. **MS Paint**: The weblinks contain an introduction to Microsoft Paint and a tutorial on creating creative arts in Microsoft Paint.
   - https://www.youtube.com/watch?v=amhGcGXtZ_E
   - https://www.youtube.com/watch?v=T4xssisBZrc
   - https://www.youtube.com/watch?v=G2q1aQF5aUE
   - https://www.youtube.com/watch?v=VDG1MUqDFbM
   - https://www.youtube.com/watch?v=c41mA_iTc6M
   - https://www.youtube.com/c/BipuArt/videos
   - https://www.wikihow.com/Make-Abstract-Art-in-Microsoft-Paint
   - https://www.highsnobiety.com/p/ms-paint-artist-pat-hines/
   - https://www.youtube.com/watch?v=3ySdJRfn8yQ
   - https://www.youtube.com/watch?v=_wSUfk1d3dw

3. TYPING IN DZONGKHA

Typing skill is essential for computer users. As Bhutanese, typing in Dzongkha is something that all our students must acquire from a young age. Knowing to type in Dzongkha is important since day to day correspondence and documentation are being digitised and will also help to promote our national identity.

Under this topic, students will learn to type Dzongkha using different fonts and keyboard layouts. They will also explore a Dzongkha typing tutor to enhance their typing skills. Students will seek support from their Dzongkha teacher to check the content and grammar in the Dzongkha document they type.

COMPETENCY 3: Students will be able to create a simple Dzongkha document using a word processor to acquire and enhance the Dzongkha language.

Topics	Key Stage Standard	Objectives	Time
Typing in Dzongkha ● Dzongkha fonts, keyboard layout & language setting ● Practice in Dzongkha typing tutor ● Typing Dzongkha words and sentences	A1.4 Develop keyboarding skills	3-A1.4.1 Type in Dzongkha using a word processor.	200 mins (5 periods)

Learning experiences:

● Demonstrate how to set up the Dzongkha language keyboard on the computer. Let students follow the steps to select the Dzongkha keyboard on their computer.

● Show Dzongkha keyboard layout and demonstrate how to type in Dzongkha in Microsoft Word. Ask students to type Dzongkha alphabets and numbers.

● Install Dzongkha typing tutor on computers or provide an online Dzongkha typing tutor. Let students practice typing in Dzongkha.

● Allow students to practice typing in Dzongkha by typing their names and other familiar words. Ask students to type a few sentences to describe themselves.

● Create and share videos on the installation of the Dzongkha keyboard on computers and phones. Let students get help from their parents in installing the Dzongkha keyboard on computers or phones.

● Provide weblinks for Dzongkha typing tutor. Ask students to practice typing different characters, words and sentences using a typing tutor.

● Create and share videos on typing Dzongkha alphabets, numbers and words in Microsoft Word. Ask students to watch the videos and type a few sentences about themselves in Dzongkha.

Assessment:

● Monitor students while they perform activities on typing in Dzongkha. Keep a record and provide the necessary support.

● Evaluate students' work on typing sentences in Dzongkha.

● Ask students to submit their work on typing sentences in Dzongkha and evaluate it based on the criteria.

● Conduct a Dzongkha story writing competition. Ask students to type it in Dzongkha using Microsoft Word and submit it through the class online platform.

Questions:

1. What are some of the works you did with Dzongkha typing?
2. How is typing in Dzongkha and English different? Which one is easier for you?
3. Why is typing in Dzongkha important to you?
4. How do you install Dzongkha on your computer?
5. Do you think you can type Dzongkha on mobile devices? Justify your answer.

Resources:

1. **Dzongkha Keyboard**: The weblinks are for downloading and installing the Dzongkha font and keyboard on a computer. It also contains a tutorial on installing a Dzongkha keyboard on the computer.
   - https://www.dzongkha.gov.bt/en/tools
   - https://www.dzongkha.gov.bt/en/article/dzongkha-for-android-version-6-0-above

2. **Dzongkha typing tutor**: The weblinks contain tutorials and links to download Dzongkha typing tutor or practice typing online.
   - http://www.rigsum-it.com/research/projects/dztype2/download
   - http://dztype.rigsum-it.com/DzType2.html
   - https://youtu.be/wLd00YirSa0

3. **Gboard-The Google Keyboard:** The weblinks provide links to download Gboard and use Dzongkha keyboard on phone.
   - https://play.google.com/store/apps/details?id=com.google.android.inputmethod.latin&hl=en&gl=US
   - https://support.google.com/gboard/answer/7068494?co=GENIE.Platform%3DAndroid&hl=en

STRAND B – Communication and Collaboration

4. INTERNET SEARCH

There are many search engines available to search for information and resources. Some of the popular search engines are Google, Bing and DuckDuckGo. Knowing how to search using these search engines is important so as to efficiently access a host of repositories on the Internet.

Under this topic, students will explore techniques of searching to search for relevant information. Students will be able to search for relevant information to their curricular needs as well and share their learning with peers and teachers.

COMPETENCY 4: Students will be able to collect relevant information from the Internet to broaden their knowledge and skill.

Topics	Key Stage Standard	Objectives	Time

Internet Search
   ● Search information from the Internet on relevant topics
   ● Basic search techniques (keywords)
	B1.1 Search relevant information from the Internet.	3-B1.1.1 Search relevant information from the Internet.	200 mins (5 periods)

Learning experiences:

● Ask students to search for information on topics related to their subjects. Let them copy the relevant texts and images and paste them into a Word document. Encourage them to acknowledge the use of others' resources.

● Demonstrate searching information using basic search techniques and ask students to apply the techniques in searching specific information from the Internet.

● Divide students into pairs and provide them with activities on an Internet scavenger hunt. Let them explore and search for accurate information on the Internet.

● Share video tutorials on how to search for relevant information from the Internet through the class online platform. Ask students to search for information on any relevant topic such as geometry in mathematics.

● Create PowerPoint presentations on the basic search techniques and share them in the class online platform. Ask students to copy the relevant texts and images and paste them into a Word document for future reference.

● Share a worksheet for an Internet scavenger hunt with students. Let students search for correct information from the Internet, fill up the worksheet and submit it through an online platform.

Assessment:

● Evaluate the activity worksheets submitted by students on an Internet scavenger hunt.

● Monitor students while they search for information on the Internet.

● Give a common topic to all the students and let them use the Internet to search for information. Ask them to copy it into the notebook and make a presentation.

● Evaluate the activity worksheets submitted by students on an Internet scavenger hunt.

● Give a common topic to all the students and let them use the Internet to search for information. Ask them to copy it in the notebook, take a picture of it and submit it through an online platform.

Questions:

1. How do you use the Internet to search for the information you needed?
2. What types of information do you usually search on the Internet?

3. Based on your experience, what are the benefits and drawbacks of the Internet?
4. Which one do you prefer the Internet to look for - education or entertainment? Why?

Resources:

1. **Internet search**: The weblinks guides you to search for relevant information on the Internet.
   - https://www.youtube.com/watch?v=EDONzKjPVOA
   - https://www.youtube.com/watch?v=erZ3IyBCXdY
   - https://youtu.be/7ond5eF7L-I
   - https://youtu.be/LTJygQwYV84
   - https://youtu.be/7RlB1CJovTs
   - https://www.mindtools.com/pages/article/internet-searching.htm
   - https://blog.reallygoodstuff.com/internet-scavenger-hunt-how-to/

5. ONLINE EDUCATIONAL GAMES

The Internet provides a collection of online educational games. These games are of various levels of complexity. Over the years, gaming culture amongst the youths spends a lot of time playing online games. Thus the online education games cater to their interest and enhance the curricular requirements seamlessly.

Under this topic, students will explore online educational games guided by the teacher. Students will learn to play in a team, demonstrate the game plan to their mates, and share the links. They will also share their new learning from playing online games.

COMPETENCY 5: Students will be able to complete online educational games and share with friends to build a community of learners

Topics	Key Stage Standard	Objectives	Time
Online Educational Games ● Searching online educational games ● Playing interactive educational games ● Sharing links of educational games with friends	B1.2 Play online educational games.	3-B1.2.1 Share links to online educational games with friends.	80 mins (2 periods)

Learning experiences:

- Ask students to search for online educational games. Let them play and share links to relevant educational games with their friends.

- Let students search and play educational games to learn concepts related to their subjects. Ask them to share the concepts learned through playing any particular game.

- Make PowerPoint presentations on the importance of following safety tips while playing games. Advise students to maintain balanced screen time and follow safety measures while playing online games.

- Demonstrate how to play online educational games with friends. Let them share educational games with their friends and play collaboratively.

- Ask students to search for relevant online educational games and share the links in the class online platform.

- Conduct video conferences to discuss the importance of following safety tips while playing games. Advise students to maintain balanced screen time and follow safety measures while playing online games.

- Provide students with links to online educational games. Let students join the game and play against each other to improve collaboration and enhance learning.

Assessment:
- Monitor students' ability to search and share relevant educational games.

- Ask students to share concepts learned from educational games they have played.

- Observe students when they are engaged in playing games and assist them whenever required.

- Allow students to discuss the advantages and disadvantages of playing online games.

- Arrange video conferences with students to affirm learning through playing educational games.

- Provide a game for all students to play. Conduct appropriate online tests to check their understanding of concepts learned from the game.

Questions:
1. Mention a few educational games that you like the most. Why do you like them?
2. How is playing educational games different from playing other online games?
3. What are your experiences of playing online educational games over the last two years?
4. Would you create educational games in future? Justify your answer.
5. How many online educational games did you share with your friends? Why?
6. What is your opinion on playing online games by children of your age?

Resources:
1. **Online Educational Games**: The weblinks contain different types of online educational games that students can play.
   - https://www.education.com/resources/third-grade/
   - https://www.kqed.org/mindshift/34761/10-free-online-educational-game-sites.
   - https://www.abcya.com/games/
   - https://www.mathplayground.com/
   - https://www.education.com/games/?q=3rd%20grade
   - https://playingcards.io/
   - https://www.poptropica.com/

- https://www.arcademics.com/
- https://littlealchemy2.com/
- https://www.roomrecess.com/
- https://www.funbrain.com/games
- https://www.learninggamesforkids.com/health-games.html

STRAND C – Safety and Ethics

6. STRONG PASSWORD

Password is a string of characters that allows access to a computer to gain admission to a place. It's one of the conventional ways to secure communication. It is important to create a strong password in order to secure the account of any platform. And lack of it increases the risk of losing data and privacy to malicious users.

Under this topic, Students will learn about the importance of passwords, functions and ways to create strong passwords. Students will also explore some of the risks of weak passwords. Students will be able to secure their accounts by creating strong passwords.

COMPETENCY 6: Students will be able to adopt strong password practices to keep personal data safe and secure.

Topics	Key Stage Standard	Objectives	Time
Strong Password ● Definition of password ● Function of password ● Features of strong password ● Setting passwords for personal account	C1.3 Adopt safe measures to protect computers.	3-C1.3.2 Use passwords to keep data safe.	80 mins (2 periods)

Pedagogy:
- Make a PowerPoint presentation to explain the features and importance of maintaining a strong password. Demonstrate the steps to create strong passwords for data security.

- Discuss with students the disadvantages of using weak passwords with examples. Ask them to create strong passwords for their computer or mobile phones.

- Explain ways to protect personal data. Ask them to follow safety tips while using computers or phones.

- Arrange video conferences to discuss the importance of maintaining a strong password. Let students share their views on the importance of securing personal data.

- Provide videos or weblinks to show the steps in creating a strong password to secure data. Ask students to create strong passwords after watching the video.
- Create and share videos to explain ways to protect personal data. Ask them to follow safety tips to protect data while using computers or phones.

Assessment:
- Monitor students while discussing setting strong passwords. Guide them to come up with a strong password.
- Let students do group presentations on ways to secure personal data. Evaluate their work based on the criteria.
- Conduct interactive quizzes on ways of protecting personal data and features of a strong password.
- Evaluate the task submitted by students on ways to secure personal data. Provide necessary feedback based on their work.
- Conduct interactive quizzes using online tools on ways of protecting personal data and features of a strong password.

Questions:
1. Why are passwords important for computer users?
2. How do you set a strong password for the computer devices or online platforms?
3. Collect old passwords from a few of your friends and find out which one is the strongest or weakest password.
4. How many times did you change your passwords within the last four months?

Resources:
1. **Protecting Personal Data**: The weblinks contain ways of protecting personal data and the importance of setting strong passwords for data security.
   - https://www.mentalfloss.com/article/504786/8-tips-make-your-passwords-strong-possible
   - https://www.webroot.com/us/en/resources/tips-articles/how-do-i-create-a-strong-password
   - https://www.howtogeek.com/195430/how-to-create-a-strong-password-and-remember-it/
   - https://www.youtube.com/watch?v=aEmF3Iylvr4&feature=emb_title
   - https://www.securedatarecovery.com/resources/the-importance-of-strong-secure-passwords
   - https://www.youtube.com/watch?v=3f0u-vw58A0
   - https://www.getcybersafe.gc.ca/en/blogs/how-strong-your-password-five-ways-evaluate
   - https://digitalguardian.com/blog/101-data-protection-tips-how-keep-your-passwords-financial-personal-information-safe
   - https://www.cybintsolutions.com/7-easy-steps-to-protect-your-data/
   - https://usm.maine.edu/computing/10-steps-data-and-network-security

STRAND D – Coding

7. INTRODUCTION TO SCRATCH

Scratch is a free block-based programming language designed for young children to create stories, animation and games. Unlike other text-based programming languages, Scratch has a front-end and business logic interface. Scratch has all the features just as other high-level programming languages.

Under this topic, students will explore motion, event, look, control and sensing blocks. Students will learn to code for adding effects, animation and interaction. Students will be able to develop animation, simulation, stories and games using the Scratch platform. Besides, students will exhibit strong computational thinking and problem-solving zeal.

COMPETENCY 7: Students will be able to create a simple animation using a block programming tool to exhibit and enhance coding skills.

Topics	Key Stage Standard	Objectives	Time

Introduction to Scratch
• Scratch Interface
  ○ Sprite, Backdrop, Stage, Blocks, Code, Costumes, etc.
• Motion block
  ○ move, turn, glide, if on edge bounce, set rotation style
• Event block- green flag
• Looks Block
  ○ next costume, say, next backdrop, think, etc.
• Control Block
  ○ forever, wait, repeat, if
• Sensing block
  ○ touching, key pressed, mouse position
	D1.2 Animate characters and backgrounds using block programming	3-D1.2.1 Apply linear and angular motion on a character.	1600 mins (40 periods)

		3-D1.2.2 Change the costumes and backgrounds.	
	D1.3 Develop a simple interactive project using block programming.	3-D1.3.1 Control the behaviour of a character by using a mouse or keyboard.	
		3-D1.3.2 Modify effects of a character based on user interaction.	

Learning experiences:

● Make a PowerPoint presentation to discuss and explain the importance of learning Scratch to generate motivation and interest in students.

- Introduce the Scratch interface to students and let them explore it to get familiarized with blocks. Assign appropriate tasks for them to complete.

- Demonstrate creating an animation based on the algorithm. Let students plan, write algorithms and create projects individually or in groups.

- Let students create simple animations using appropriate sprites and backdrops to express ideas and concepts that they have learned in other subjects.

- Develop a project that controls the behaviour and effects of characters in Scratch and allows students to apply similar concepts and strategies while creating their own project.

- Adopt a project-based learning approach to teach block coding and let students imagine, create and share their projects with friends.

- Conduct video conferences to demonstrate and explain the Scratch interface and blocks. Ask students to create simple animation and submit it through the class online platform.

- Create and share short video lessons on creating projects using motion, looks, sensing and event blocks. Assign projects and let them apply relevant blocks in completing the project.

- Share links of relevant Scratch tutorials on creating interactive projects on an online platform. Let students explore and develop projects, and share them on the class online platform.

- Provide the list of project ideas for the students to refer to and develop. Share ideas and clarify students' doubts through video conferencing and other social media apps.

Assessment:

- Allow students to create an animation project individually or in groups, and assess it based on the rubrics.

- Conduct practical tests to assess students' competency in creating animations.

- Monitor students' involvement in discussions with peers or with the teacher while creating projects.

- Maintain checklists to assess students' learning and provide remedial help.

- Create and conduct quizzes in the classroom on Scratch using online assessment tools such as Google Forms, Kahoot and Triventy.

- Maintain records of Scratch projects such as animation and interactive projects submitted by students through the class online platform.

- Create questions on Scratch using online assessment tools such as Google Forms and Kahoot and share them on the class online platform.

- Assess students' understanding of coding in Scratch by interacting with them through video conferencing.

Questions:

1. How do you find block programming?
2. What are some of the challenges you face in block programming and how do you intend to overcome them?

3. What is the first animation you created in Scratch? How did you feel?
4. What type of animation or games are you thinking to create in Scratch?
5. What do you like about Scratch programming? Why?
6. How did Scratch programming help you to think or solve problems?

Resources:

1. **Scratch Software:** The weblink is for downloading Scratch software.

   o https://scratch.mit.edu/download

2. **Scratch Tutorials**: The weblinks contain guides on programming in Scratch. The link may even be shared with students for them to explore and create different projects in Scratch.
   - Getting-Started-With-Scratch-3.0.pdf (mit.edu)
   - https://en.scratch-wiki.info/wiki/Getting_Started_with_Scratch
   - https://scratch.mit.edu/ideas
   - https://brainbasket.org/en/free-scratch-lessons/
   - http://scratch.redware.com/lessonplan
   - http://scratched.gse.harvard.edu/guide/curriculum.html
   - https://sites.google.com/a/googleapps.wrdsb.ca/hour-of-code/primary-scratch-lessons
   - https://junilearning.com/blog/coding-projects/how-to-make-a-scratch-game-step-by-step/
   - https://youtu.be/1E8opsBP_98

3. **Literacy with ICT Textbook**: The weblink can be explored by teachers to refer Scratch chapters from Class IV and V Literacy with ICT textbook.
   - https://rec.gov.bt/textbooks-and-manuals/#683-902-wpfd-ict-1586092614

Annexure

Annexure 1: Class-wise period and time allocation

The period allocation for classes PP to XII ICT curriculum are as per the revised instructional time allocation notified by the Ministry of Education in March 2020.

Class	No. of Periods per Week (40 mins per period)	Total Period in Year (30 weeks)	Total Time (in mins)
PP	2	60	2400
I	2	60	2400
II	2	60	2400
III	2	60	2400
IV	2	60	2400
V	2	60	2400
VI	2	60	2400
VII	3	90	3600
VIII	3	90	3600
IX	3	90	3600
X	3	90	3600
XI	3	90	3600
XII	3	90	3600

Annexure 2: Key stage-wise assessment matrix

The table below provides an overview of assessment weighting for five key stages. Assessment at each key stage is broken down into four modes of assessment as specified in the ICT Curriculum Framework.

Sl#	Assessment Area	Mode	Classes PP-III	Classes IV-VI	Classes VII-VIII	Classes IX-X	Classes XI-XII
			Weighting %	Weighting %	Weighting %	Weighting %	Weighting %
1	Participation and completion of classwork. (face-to-face or online) *(Formative assessment)*	Observation, Conversation	10	10	10	10	10
2	Participation and completion of homework. (face-to-face or online) *(Formative assessment)*	Observation, Conversation	10	10	10	10	10
3	Planning, research, documentation, creation and presentation of digital artefacts including coding projects. *(Formative assessment)*	Assessment of Digital Artefacts	80	60	50	40	30
4	Theory and/or Practical Test (unit, mid-term and annual exams) *(Summative assessment)*	Testing	0	20	30	40	50
	Total		100	100	100	100	100

Note: *Similar to other subjects in Key Stage I, the assessment for Classes PP to III will follow Continuous Formative Assessment (CFA). In CFA, there will be no examinations, but regular formative assessment in the form of observations, conversations and digital artefacts for the ICT lessons will be carried out quarterly on different competency-based standards. The assessment record will be finally calculated and reflected in the progress report to show students' learning progress in four ICT strands the beginning, approaching, meeting or exceeding.*

Annexure 3: Progress report format for key stage I (PP to III)

At the end of the year, students' record of continuous formatives assessment in ICT will be reflected in the progress report according to their learning progress in the four strands as given below. Teachers are required to even provide qualitative feedback on students' strength and growth in ICT based on the assessment record maintained over the year.

Exceeding (རྨ་ད་ག་ལུ་ང་།)	The student demonstrates competencies beyond expectations and targets
Meeting (ར་ཚ་མཐུན།)	The student demonstrates competencies that meet the expected competencies
Approaching (ཉེ་འགྱུར།)	The student demonstrates competencies that are towards the expected competencies
Beginning (གཞི་འཛུགས།)	The student demonstrates competencies that are below expectations

		SUBJECT WISE ACADEMIC TRANSCRIPT						
རྫོང་ཁ། (Dzongkha)	གནས་ཚད།	English	Level	ICT	Level	Mathematics	Level
ཉན་སྨྲ་བ། (Listening and Speaking)		Listening and Speaking		Technology Operation		Numbers and Operations	
ལྷག་རིག་དང་རྩོམ་རིག། (Reading and Literature)		Reading and Literature		Communication and Collaboration		Patterns and Algebra	
སྐད་དང་ཡིག་སྦྱོར།(Language and Grammar)		Language and Grammar		Safety and Ethics		Measurement	
བྲི་ཡིན།(Writing)		Writing		Coding		Geometry	
						Data Management and Probability	
དམིགས་བསལ་ཁྱད་ཆོས།(Areas of Strength)	Areas of Strength:		Areas of Strength:		Areas of Strength:		
ཡར་དྲག་གཏང་དགོ་པ།(Areas for Growth)	Areas for Growth:		Areas for Growth:		Areas for Growth:		
Name & Signature of Subject Teacher	Name & Signature of Subject Teacher		Name & Signature of Subject Teacher		Name & Signature of Subject Teacher		
Attendance	Number of days attended		Parent/Guardian's Signature:				
	Total Instructional days		Name				

SAMPLE DIGITAL ARTEFACT
ICT Curriculum | Class PP

**Title**: My Colourful House   **Artefact Number**: 1

Tools to use: Microsoft Paint

Objective: Use mathematical shapes to draw a house to improve mouse balance and drawing skills.

Instruction:
1. Draw a colourful house using the geometrical shapes in MS Paint. (sample attached)
2. Use different shapes and colours to make it look better.
3. Save the work. (teacher may print and display it in the class)
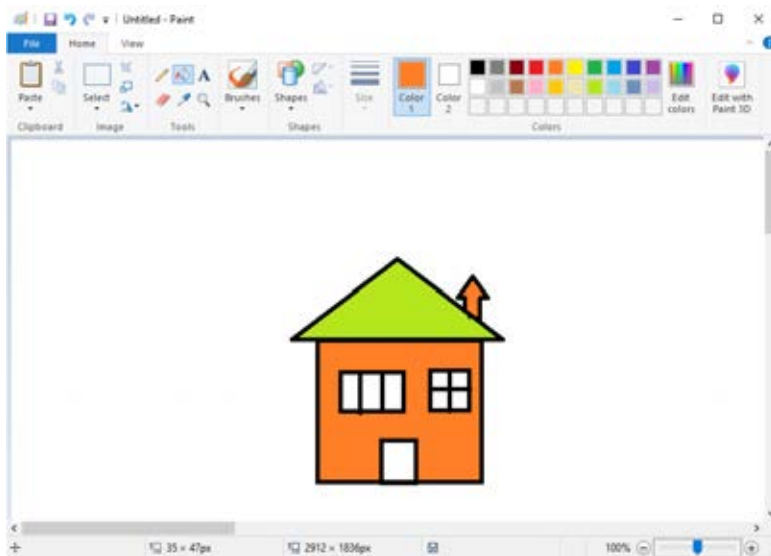
Assessment Rubric

Area	1	2	3	Score
Shapes in the drawing	1-2 different shapes are used	3-4 different shapes are used	More than 4 different shapes are used.	
Colours in the drawing	1 colour is used	2-3 different colours are used	More than 3 colours are used in the drawing	
Creative elements in the drawing	Attempt to make it creative is visible	Some elements of creativity are visible.	Original creative elements are visible	
Overall looks of the drawing	Drawing looks incomplete and unpolished	Drawing is complete but slightly unpolished	Drawing is complete and visually attractive	

	Total	

Artefact Number: 1

Title: My First Digital Sentences

Tools to use: Microsoft Word, Paint

Objective: Perform English activities on making sentences in computer to demonstrate their understanding of sentences and develop keyboarding skills.

Instruction:
1. Refer to your English workbook A for the read and write activity as shown here.
2. Type the activity in Word and complete the sentence on Dechen and her family.
3. Add relevant pictures. You may draw in Paint.
4. Write your name and class at the bottom of the page to show the work belongs to you.
5. Save the work (the teacher may print and display it to the class).

Assessment Rubric:

Area	1	2	3	Score
Spelling error in the document	Several spellings error.	Few spellings error.	No spellings error.	
Correct and Complete Sentence in the task	Some sentences are incomplete or wrong	Few sentences are incomplete or wrong	Task is completed without any mistake	
Spacing and layout of the sentences.	Some sentences are not arranged properly in terms of spacing and layout.	Few sentences are not arranged well in terms of spacing and layout.	All sentences are arranged well with proper spacing and layout.	
Ownership – name and class in the document.	Either name or class is written and typed in the document.	Both name and class are mentioned in the document.	Name, class and other information are mentioned in the document	

	Total	