Information and Communication Technology

1. Introduction

The ICT program is designed to create a balance between the imparting of skills, the acquisition of techniques and knowledge, the growth and awareness of the students' personal responses. It challenges all students by providing opportunities for different needs and learning styles. Also, it encourages students to explore the role of technology in both historical and contemporary contexts. And lastly, it contributes to raising students' awareness of their responsibilities as world citizens when making decisions and taking actions on technology issues.

1.1 Teaching and Learning Approaches and Strategies

A variety of learning and teaching approaches are interwoven and deployed to suit and challenge all students by proving opportunities for different needs interests, abilities, prior knowledge and learning styles. Students are assessed against defined assessment criteria and not against other students. AI-powered tools enhance the program by personalizing learning, providing real-time feedback, and adapting to individual needs.

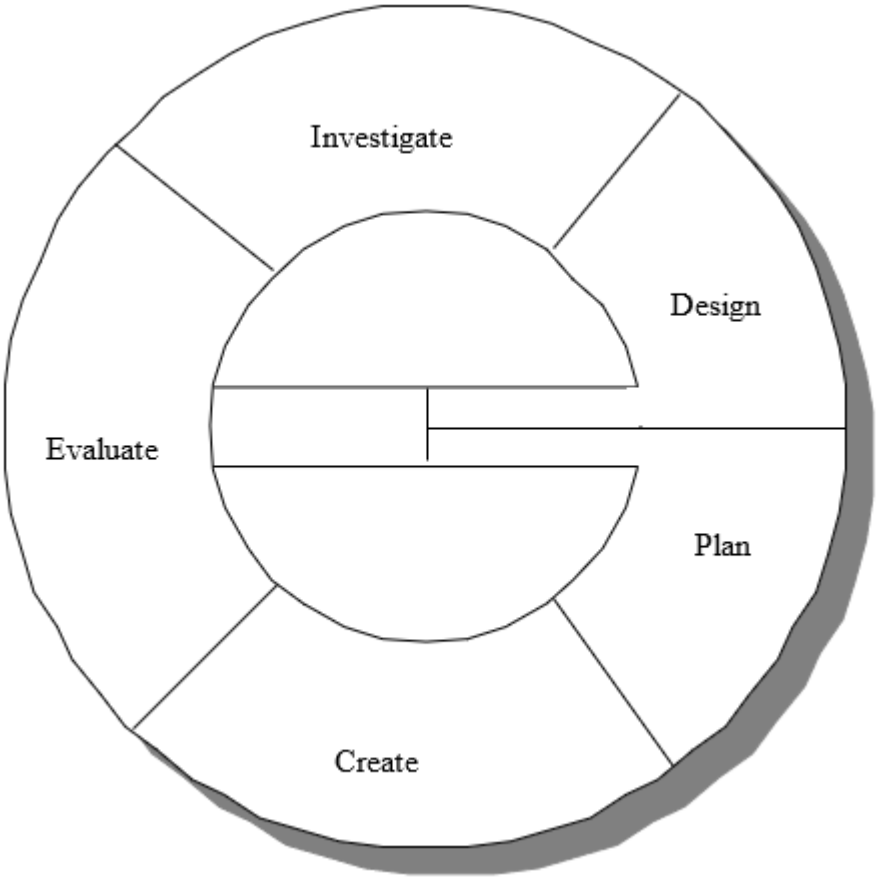
Pedagogical approaches include:

- Direct instruction
- Inquiry & Investigation
- Scaffolding
- Construction
- Self-directed learning
- e-Learning and flipped classroom
- AI-powered tools

1.2 The Design Cycle

Investigate

Show that the students have researched and analyzed the problem to be solved, the IT skills required, and have used appropriate sources. This should be written in an organized manner.



Design

Generate several feasible designs that meet the design specification and to evaluate these against the design specification. You will then select one design, justify your choice and evaluate this in detail against the design specification.

Plan

Construct a clear and thorough plan on how to create a chosen product/solution that has a series of logical steps, and that makes effective use of resources and time. Indicate how the students

will organize their time and resources. Evaluate the plan and justify any modifications to the design.

Create

Follow the plan using appropriate tools to create an original product/solution.
Create a Journal showing all the steps of how to create a product/solution, including all the mistakes and corrections made along the way and reasons for making any amendments.

Evaluate

Evaluate the effectiveness, quality, and efficiency of the final product/solution. Include improvements that could be made.

Attitudes in Technology

It is expected that students will motivate themselves to enthusiastically and independently create products/solutions that are interesting and engaging. Students are expected to adhere to deadlines and make themselves aware of all assessment criteria.

2. The aims of ICT

The aims of Information and Communication Technology are to:

- encourage an awareness of the impact of technology
- develop an appreciation of the international, intercultural aspects of technology
- provide a variety of technological information and ideas
- encourage curiosity, ingenuity, resourcefulness and discrimination
- stimulate self-confidence through the knowledge and application of technology
- develop practical skills through the creation of products/solutions
- promote effectively, informed, appropriate communication
- foster responsibility for designs, decisions, actions and assessment
- promote effective co-operation and respect for individual differences when responding to technological challenges
- develop logical thinking skills.
- To understand and apply AI for problem-solving and innovation.

3. Framework of ICT Curriculum

3.1 Framework of the New Senior Secondary ICT Curriculum

ICT Curriculum (S4 – S6) (For 2025 DSE or after)			
The Compulsory Part	**The Elective Part (choose any two only)**		
Information Processing Internet and its Application Social Implication Computer System Fundamentals Computational Thinking and Programming	A. Databases	B. Web Application Development	C. Algorithm and Programming

3.2 Delivery Schedule

	S4	S5	S6
	Information Processing ➢ Data Control and Data Organisation ➢ Data Representation ➢ Spreadsheet ➢ Database **Computer System Fundamentals** ➢ Input and Output Devices ➢ Computer Hardware ➢ Computer Software **Internet and Its Applications** ➢ Networking and Internet Basics ➢ Internet Protocols ➢ Internet Services and Applications ➢ Elementary Web Authoring ➢ Network Security and Privacy Threats	**The Elective Part (A/B/C)** **A. Database** ➢ Managing Data Using SQL ➢ SQL Operators and Functions ➢ SQL Operations on Multiple Tables ➢ Relational Database ➢ Database Design and ER Diagram **B. Web Application Development** ➢ Styling Web Pages (CSS) ➢ Introduction to Server Side Scripting (PHP I) ➢ Receiving Client Input (PHP II) ➢ Connecting to Database (PHP III) ➢ Introduction to	**Social Implication** ➢ Technological Innovations ➢ Health and Ethical Issues ➢ Intellectual Property **SBA: Final Review**

	➢ Network Security Measures **Computational Thinking and Programming** ➢ Problem-Formulation and Analysis ➢ Algorithm Design (I) ➢ Algorithm Design (II) ➢ Introduction to Python Programming ➢ Integrated Problem-solving in Python ➢ Program Testing and Debugging	Client-Side Scripting (JS) ➢ Network Services and Implementation **C. Algorithm and Programming** ➢ Algorithm Design & Basics ➢ of Python Programs ➢ Program Testing and Debugging (II) ➢ Advanced Control Structures ➢ Sub-programs ➢ Data Structures ➢ Searching and Sorting ➢ Handling of Text Files ➢ Applications of Programming in Real Life **SBA**	

4. Assessment

4.1 Summative assessment

Summative assessment is the judgment made by the teacher of the standard of achievement reached by each student at the end of the year, carefully designed to measure the level of achievement expected for the relevant year.

4.2 Formative Assessment

The following shows how various aspects of students' work could be assessed formatively.

- Preparation for class
- Participation in class
- Identifying and considering strategies
- Using and acknowledging a variety of sources for research effectively
- Communicating ideas and information
- Managing time

- Working as a member of a group/Collaborative skills
- Working independently and confidently with self-motivation and a positive attitude
- Examining the efficacy of his/her own planning process
- Punctuality in meeting deadlines
- Taking responsibility for personal learning

4.3 Assessment for Learning

Quiz and Homework – 20%
Tests – 20%
Examination – 60%

4.4 Assessment criteria

S4	S5	S6
Information System	Information System	Information Processing
Computer System Fundamentals	Computer System Fundamentals	Computer Systems, Internet and Its Applications
Networking Basics and Internet Applications	Networking Basics and Internet Applications	Basic Programming Concepts and Social Implications
Computational Thinking and Programming	Computational Thinking and Programming	Electives
	Social Implications	
	Electives Module	

5. The role of parents at home and home learning

In ICT, students are assessed through continuous assessment. Both **effort in the project -based learning and the demonstration of the organization of learning** during the lesson time will count heavily towards assessment. Class time will be given for designated tasks to be completed, where interactions within groups and amongst students will take place and will accordingly be duly assessed.

There will be a need for students to work on DSE papers at home. Students are encouraged to manage their time effectively and work to deadlines where all homework must be completed by certain dates. When needed, time will be made available at lunchtimes or after school for students who wish to keep working on their work in school. For students with an interest in developing their computer skills at home and at school are strongly encouraged to do so.

Students are required to keep up with the latest technology knowledge. Parents can help if students find difficulty in some technical terms or special names. The discussion will be requested for the news reading section. Parents can also pay attention on students use of AI, to ensure it supplements, not replaces, learning. Encourage critical thinking and problem-solving skills.

Written assignments are usually started in class and completed as home learning. Deadlines for each assignment are extremely important and it is essential that each student makes every effort to hand in work on time.

Parents who have queries with regard to home learning should consult the ICT teachers.