REPUBLIC OF KENYA

MINISTRY OF EDUCATION

JUNIOR SECONDARY SCHOOL CURRICULUM DESIGN

COMPUTER SCIENCE
GRADE 7

KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

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FOREWORD

The Government of Kenya is committed to ensuring that policy objectives for Education, Training and Research meet the aspirations of the Kenya Constitution 2010, the Kenya Vision 2030, National Curriculum Policy 2019, the United Nations Sustainable Development Goals (SDGs) and the Regional and Global conventions to which Kenya is a signatory. Towards achieving the mission of Basic Education, the Ministry of Education (MoE) has successfully and progressively rolled out the implementation of the Competency Based Curriculum (CBC) at Pre-Primary and Primary School levels. The roll out of Junior Secondary School (Grade 7-9) will subsequently follow as from 2023-2025.

The curriculum designs at this level build on competencies attained by learners at the end of the Primary School cycle. Further, they provide opportunities for learners to continue exploring and nurturing their potentials as they prepare to transit to Senior Secondary School.

The curriculum designs present National Goals of Education, essence statements, general and specific expected learning outcomes for the learning areas (subjects) as well as strands and sub strands. The designs also outline suggested learning experiences, key inquiry questions, core competencies, Pertinent and Contemporary Issues (PCIs), values, Community Service Learning (CSL) activities and assessment rubric.

It is my hope that all Government agencies and other stakeholders in Education will use the designs to plan for effective and efficient implementation of the CBC.

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PREFACE

The Ministry of Education (MoE) is implementing the second phase of the curriculum reforms with the national roll out of the Competency Based Curriculum (CBC) having been implemented in 2019. Grade 7 is the first level of the Junior Secondary School (JSS) in the new education structure.

Grade 7 curriculum furthers implementation of the CBC to the JSS education level. The main feature of this level is a broad curriculum for the learner to explore talents, interests and abilities before selection of pathways and tracks at the Senior Secondary education level. This is very critical in the realisation of the Vision and Mission of the on-going curriculum reforms as enshrined in the Sessional Paper No. I of 2019 whose title is: *Towards Realizing Quality, Relevant and Inclusive Education and Training for Sustainable Development* in Kenya. The Sessional Paper explains the shift from a Content - Focused Curriculum to a focus on **Nurturing every Learner's potential.**

Therefore, the Grade 7 curriculum designs are intended to enhance the learners' development in the CBC core competencies, namely: Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Imagination, Citizenship, Digital Literacy, Learning to Learn and Self-efficacy.

The curriculum designs provide suggestions for interactive and differentiated learning experiences linked to the various sub strands and the other aspects of the CBC. The curriculum designs also offer several suggested learning resources and a variety of assessment techniques. It is expected that the designs will guide teachers to effectively facilitate learners to attain the expected learning outcomes for Grade7 and prepare them for smooth transition to the next Grade. Furthermore, it is my hope that teachers will use the designs to make learning interesting, exciting and enjoyable.

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ACKNOWLEDGEMENT

The Kenya Institute of Curriculum Development (KICD) Act Number 4 of 2013 (Revised 2019) mandates the Institute to develop curricula and curriculum support materials for basic and tertiary education and training. The curriculum development process for any level of education involves thorough research, international benchmarking and robust stakeholder engagement. Through a systematic and consultative process, the KICD conceptualised the Competency Based Curriculum (CBC) as captured in the *Basic Education Curriculum Framework* (BECF), that responds to the demands of the 21st Century and the aspirations captured in the Kenya Constitution 2010, the Kenya Vision 2030, East African Community Protocol and the United Nations Sustainable Development Goals (SDGs).

KICD receives its funding from the Government of Kenya to enable the successful achievement of the stipulated mandate and implementation of the Government and Sector (Ministry of Education (MoE) plans. The Institute also receives support from development partners targeting specific programmes. The Grade 7 curriculum designs have been developed with the support of the World Bank through the Kenya Secondary Education Quality Improvement Program (SEQIP) commissioned by the MoE. Therefore, the Institute is very grateful for the support of the Government of Kenya, through the MoE and the development partners for the policy, resource and logistical support. Specifically, special thanks to the Cabinet Secretary – MoE and the Principal Secretary – State Department of Early Learning and Basic Education.

We also wish to acknowledge the KICD curriculum developers and other staff, all teachers, educators who took part as panelists; the Semi-Autonomous Government Agencies (SAGAs) and representatives of various stakeholders for their roles in the development of the Grade 7 curriculum designs. In relation to this, we acknowledge the support of the –Chief Executive Officers of the Teachers Service Commission (TSC) and the Kenya National Examinations Council (KNEC) for their support in the process of developing these designs.

Finally, we are very grateful to the KICD Council Chairperson Prof. Elishiba Kimani and other members of the Council for very consistent guidance in the process. We assure all teachers, parents and other stakeholders that these curriculum designs will effectively guide the implementation of the CBC at Grade 7 and preparation of learners for Grade 8.

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LESSON ALLOCATION

	Subject	Number of Lessons Per Week (40 minutes per lesson)
1.	English	5
2.	Kiswahili/KSL	4
3.	Mathematics	5
4.	Integrated Science	4
5.	Health Education	2
6.	Pre-Technical Studies	4
7.	Social Studies	3
8.	Religious Education (CRE/IRE/HRE)	3
9.	Business Studies	3
10.	Agriculture	3
11.	Life Skills Education	1
12.	Sports and Physical Education	2
13.	Optional Subject	3
14.	Optional Subject	3
	Total	**45**

NATIONAL GOALS OF EDUCATION

Education in Kenya should:

i) Foster nationalism, patriotism and promote national unity.

Kenya's people belong to different communities, races and religions, but these differences need not divide them. They must be able to live and interact as Kenyans. It is a paramount duty of education to help young people acquire this sense of nationhood by removing conflicts and promoting positive attitudes of mutual respect which enable them to live together in harmony and foster patriotism in order to make a positive contribution to the life of the nation.

ii) Promote the social, economic, technological and industrial needs for national development.

Education should prepare the youth of the country to play an effective and productive role in the life of the nation.

a) Social Needs

Education in Kenya must prepare children for changes in attitudes and relationships which are necessary for the smooth progress of a rapidly developing modern economy. There is bound to be a silent social revolution in the wake of rapid modernisation. Education should assist our youth to adapt to this change.

b) Economic Needs

Education in Kenya should produce citizens with the skills, knowledge, expertise and personal qualities that are required to support a growing economy. Kenya is building a modern and independent economy which is in need of an adequate and relevant domestic workforce.

c) **Technological and Industrial Needs**

Education in Kenya should provide learners with the necessary skills and attitudes for industrial development. Kenya recognises the rapid industrial and technological changes taking place, especially in the developed world. We can only be part of this development if our education system is deliberately focused on the knowledge, skills and attitudes that will prepare our young people for these changing global trends.

iii) Promote individual development and self-fulfilment.

Education should provide opportunities for the fullest development of individual talents and personality. It should help children to develop their potential interests and abilities. A vital aspect of individual development is the building of character.

iv) **Promote sound moral and religious values.**
Education should provide for the development of knowledge, skills and attitudes that will enhance the acquisition of sound moral values and help children to grow up into self-disciplined, self-reliant and integrated citizens.

v) **Promote social equality and responsibility.**
Education should promote social equality and foster a sense of social responsibility within an education system which provides equal educational opportunities for all. It should give all children varied and challenging opportunities for collective activities and corporate social service irrespective of gender, ability or geographical environment.

vi) **Promote respect for and development of Kenya's rich and varied cultures.**
Education should instil in the youth of Kenya an understanding of past and present cultures and their valid place in contemporary society. Children should be able to blend the best of traditional values with the changing requirements that must follow rapid development in order to build a stable and modern society.

vii) **Promote international consciousness and foster positive attitudes towards other nations.**
Kenya is part of the international community. It is part of the complicated and interdependent network of peoples and nations. Education should therefore lead the youth of the country to accept membership of this international community with all the obligations and responsibilities, rights and benefits that this membership entails.

viii. **Promote positive attitudes towards good health and environmental protection.**
Education should inculcate in young people the value of good health in order for them to avoid indulging in activities that will lead to physical or mental ill health. It should foster positive attitudes towards environmental development and conservation. It should lead the youth of Kenya to appreciate the need for a healthy environment.

LEARNING OUTCOMES FOR MIDDLE SCHOOL

By end of Middle School, the learner should be able to:

1. Apply literacy, numeracy and logical thinking skills for appropriate self-expression.
2. Communicate effectively, verbally and non-verbally, in diverse contexts.
3. Demonstrate social skills, and spiritual and moral values for peaceful co-existence.
4. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.
5. Practise relevant hygiene, sanitation and nutrition skills to promote health.
6. Demonstrate ethical behaviour and exhibit good citizenship as a civic responsibility.
7. Appreciate the country's rich and diverse cultural heritage for harmonious co-existence.
8. Manage pertinent and contemporary issues in society effectively.
9. Apply digital literacy skills for communication and learning.

ESSENCE STATEMENT

Computer science is the study of computers and algorithmic processes, including their principles, hardware and software designs, applications and their impact on society. Computer Science subject, will enable learners acquire knowledge, develop competencies and skills in foundation of computer science, computer and society, computer networks and basic computer programming. This will equip the learners with computational thinking competencies such as critical thinking, problem solving, creativity, innovation, communication and networking which are necessary for learners who opt to specialize in STEM pathway. The curriculum design will provide opportunities for learners to develop computer basic skills through learning experiences and inquiry-based learning approaches with an emphasis on engagement, exploration, explanation, collaboration and hands-on. The skills emphasised in the design are envisaged in the 21st Century skills, the Constitution of Kenya 2010, the Kenya Vision 2030 and the National ICT Policy of Kenya 2016 (revised 2020).

GENERAL SUBJECT OUTCOMES

By the end of Junior Secondary School, the learner should be able to:

1. Apply fundamental computer knowledge and skills in everyday life.
2. Demonstrate ethical behaviour, security and safety when using computers.
3. Acquire foundational knowledge and skills in computer networks and programming.
4. Exhibit competency in the use of computers to adapt to the fast-changing technological world.
5. Appreciate the use of computers in managing pertinent and contemporary issues in society.
6. Promote an inquiry-based learning that provokes interest for further education and training in computing disciplines.

STRAND 1.0: FOUNDATION OF COMPUTER SCIENCE

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.1 Computer Concepts (3 Lessons)**	By the end of the sub strand the learner should be able to: a) explain the characteristics of a computer for awareness b) use computers to perform daily life activities c) outline the stages of processing cycle in a computer d) explore the advantages and disadvantages of using computers in data processing e) appreciate analysing the application areas of computers.	The learner is guided to: • use digital devices to search for and present the definition of the terms; *computer, data and information,* • take turns to list examples of computers (*Notebook, desktop, laptop, tablet, PDA (Personal digital assistant), server, iPad, MacBook, smartphone, smartwatch, workstation*), • in turns discuss the characteristics of a computer, • watch a video clip that shows the functions of a computer, • use computing device to; *perform arithmetic operations such as addition of numbers, search for information on business ideas, draw diagrams, listen to music*,	1. Why do computers have different features? 2. How are computers used in real life situation?

			• draw accurately and label correctly the computer processing cycle, • display an illustration that demonstrates a general model of a computer, • in groups, discuss the advantages and disadvantages of using computers in data processing, • share experiences on the application of computers in various areas such as (*education, business, banking, military, communication, government, home, insurance, marketing, healthcare, engineering design, manufacturing*).	

Core competencies:

- Communication and collaboration: learner develops speaking skills when using appropriate language to clearly and effectively share experiences on the applications of computers in various areas.
- Digital literacy: learner interacts with technology when searching for and presenting the definition of the terms computer, data, processing and information.

Values:

- Unity: learners discuss in groups the advantages and disadvantages of a computer.
- Responsibility: learners draw and label the computer processing cycle.

Pertinent and Contemporary Issues (PCIs):

- Learner support programmes: peer education is enhanced when learners, in groups, use computing devices to perform arithmetic operations such as addition of numbers.

Link to other subjects:

- English: learner uses appropriate language to clearly and effectively share experiences on the use of computers in real life situation.
- Mathematics: learner uses computing devices to perform arithmetic operations such as addition of numbers.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to explain the characteristics of a computer for awareness	Correctly and systematically explains the characteristics of a computer for awareness	Correctly explains the characteristics of a computer for awareness	Correctly explains some of the characteristics of a computer for awareness	Has difficulty explaining the characteristics of a computer for awareness
Ability to use computers to perform daily life activities	Appropriately and confidently uses computers to perform daily life activities	Appropriately uses computers to perform daily life activities	Uses computers to perform some daily life activities	Has challenge using computers to perform daily life activities

Ability to outline the stages of processing cycle in a computer	Correctly and precisely outlines the stages of processing cycle in a computer	Correctly outlines the stages of processing cycle in a computer	Correctly outlines some of the stages of processing cycle in a computer.	Has difficulty outlining the stages of processing cycle in a computer even with assistance
Ability to explore the advantages and disadvantages of a computer	Appropriately and confidently explores the advantages and disadvantages of a computer	Appropriately explores the advantages and disadvantages of a computer	Explores some advantages and disadvantages of a computer	Has difficulty exploring the advantages and disadvantages of a computer even with assistance
Ability to analyse the application areas of computers	Correctly and accurately analyses the application areas of computers	Correctly analyses the application areas of computers	Correctly analyses some application areas of computers	Has challenges analysing the application areas of computers even with assistance

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.2 Evolution of Computers (3 Lessons)**	By the end of the sub strand, the learner should be able to: a) identify the evolution stages of computers from first mechanical device to modern electronic digital devices b) relate computer technological advancement to functionality of computers c) distinguish between the difference engine and the analytical engine in relation to computer development d) describe the evolution of computers based	The learner is guided to: • watch a video clip and learn about the evolution stages of computers from abacus to mechanical devices, electromechanical devices and modern digital computers, • listen keenly to a computer resource person when explaining the tasks performed by computers at different evolution stages of computers (*mechanical devices, abacus, electromechanical devices, modern electronic digital computers*), • inturns, relate computer technological advancement to functionality of computers, • in turns, discuss the difference engine and the analytical	1. What role did the analytical engine play in the development of computers? 2. Why are there different evolution stages of computers?

		on technological advancement e) appreciate examining the sustained development of computers in respect to contemporary technology.	engine in relation to computer development, • in turns, discuss the evolution of computers based on technological advancement, • share experiences on the development of computers in respect to contemporary technology.	
Core competencies: • Learning to learn: learner learns from a computer resource person the tasks performed by computers at every stage in the evolution of computers. • Communication and collaboration: learner shares experiences on the development of computers in respect to contemporary technology.				
Values: • Respect: learner shares experiences on the development of computers in respect to contemporary technology.				
Pertinent and Contemporary Issues (PCIs): • Citizenship: learner shares experiences on the development of computers in respect to contemporary technology.				
Link to other subjects: • Social Studies: learner identifies the evolution stages of computers from the first mechanical device to the modern electronic digital devices				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify the evolution stages of computers from the first mechanical device to modern electronic digital devices	Correctly and explicitly identifies the evolution stages of computers from the first mechanical device to modern electronic digital devices	Correctly identifies the evolution stages of computers from the first mechanical device to modern electronic digital devices	Correctly identifies some of the evolution stages of computers from the first mechanical device to modern electronic digital devices	Has challenges identifying the evolution stages of computers from the first mechanical device to modern electronic digital devices
Ability to relate computer technological advancement to functionality of computers	Accurately and clearly relates computer technological advancement to functionality of computers	Accurately relates computer technological advancement to functionality of computers	Accurately relates some of the computer technological advancement to functionality of computers	Has challenges relating computer technological advancement to functionality of computers
Ability to distinguish between the difference engine and the analytical engine in relation to computer development	Correctly and accurately distinguishes between the difference engine and the analytical engine in relation to computer development	Correctly distinguishes between the difference engine and the analytical engine in relation to	Needs assistance to distinguish between the difference engine and the analytical engine in relation to computer development	Has challenges distinguishing between the difference engine and the analytical engine in relation to

		computer development		computer development
Ability to describe the evolution of computers based on technological advancement	Appropriately and confidently describes the evolution of computers based on technological advancement	Appropriately describes the evolution of computers based on technological advancement	Needs assistance to describe the evolution of computers based on technological advancement	Has challenges describing the evolution of computers based on technological advancement
Ability to examine the sustained development of computers in respect to contemporary technology	Correctly and keenly examines the sustained development of computers in respect to contemporary technology	Correctly examines the sustained development of computers in respect to contemporary technology	Needs assistance to examine the sustained development of computers in respect to contemporary technology	Has challenges examining the sustained development of computers in respect to contemporary technology

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.3 Generations of Computers (3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify the generations of computers from the first to the latest b) describe the characteristics of different computer generations for awareness c) apply technologies of different computers generations in daily life situation d) match computer generations to their corresponding technologies e) appreciates analysing the technological advancement of	The learner is guided to: • search for information on the generations of computers from the first to the latest, • visit a computer user environment and find out the year of manufacture of the available computers and map them to their appropriate generation. • share experiences on the characteristics of each generation of computers, • consult a computer resource person to discuss technologies used in different generations of computers. • use technologies of different computer generations in daily life situation; *search information on personal hygiene, prepare personal time table,*	1. Why are there different generations of computers? 2. How are different generations of computers used in daily life situation?

		computers from one to the next generation.	• take turns to match computer generations to their corresponding technologies, • actively participate in a debate on the technological advancement of computers from one to the next generation, • use computers of different generations to perform a task and compare their efficiency.	
Core competencies: • Self-efficacy: learner uses computers of different generations to perform a given task and compare their efficiency. • Creativity and imagination: learner matches computer generations to corresponding technologies.				
Values: • Unity: learner shares experiences on the characteristics of each generation of computers.				
Pertinent and Contemporary Issues (PCIs): • Learner support programmes: peer education, is promoted as learner demonstrates to peers how to use computers of different generations to perform a task.				
Link to other subjects: • Integrated Science: learner distinguishes between the technologies used in different generations of computers.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify the generations of computers from the first to the latest	Appropriately and specifically identifies the generations of computers from the first to the latest	Appropriately dentifies the generations of computers from the first to the latest	Appropriately identifies some of the generations of computers from the first to the latest	Has challenges identifying the generations of computers from the first to the latest
Ability to describe the characteristics of different computer generations for awareness	Correctly and clearly describes the characteristics of different computer generations for awareness	Correctly describes the characteristics of different computer generations for awareness	Correctly describes some of the characteristics of different computer generations for awareness	Has challenges describing the characteristics of different computer generations for awareness
Ability to apply technologies of different computer generations in daily life situation	Appropriately and confidently applies technologies of different computers generations in daily life situation	Appropriately applies technologies of different computer generations in daily life situation	Appropriately applies some of the technologies of different computer generations in daily life situation	Has challenges applying technologies of different computers generations in daily life situation
Ability to match computer generations to their corresponding technologies	Accurately and intelligently matches computer generations to their corresponding technologies	Accurately matches computer generations to their corresponding technologies	Accurately matches some computer generations to their corresponding technologies	Has challenges matching computer generations to their corresponding technologies

Ability to analyse the technological advancement of computers from one to the next generation	Correctly and briefly analyses the technological advancement of computers from one to the next generation	Correctly analyses the technological advancement of computers from one to the next generation.	Correctly analyses some technological advancement of computers from one to the next generation	Has challenges analysing the technological advancement of computers from one to the next generation

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.4 Classification of Computers** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) explain the types of computers in a computer user environment b) apply appropriate criteria to classify computers c) select appropriate types of computers for use in different situations d) describe the use of embedded computers in daily life activities e) appreciate the use of different types of computers in performing tasks.	The learner is guided to: • participate actively in discussing and listing different types of computers in a computer user environment, • discuss with the resource person the criteria used to classify computers, • take turns to match different types of computers to their respective classes, • takes turns to assess user computing needs and select appropriate computers for different situations *(a user on a fixed budget, a home business user, a gaming enthusiast, a photographer, a home video enthusiast, a distance education user, a human resources manager, an accountant)*.	1. How are different types of computers used in daily life? 2. Why are embedded computers used?

			• share experiences on the use of embedded computers (*ATM machines, MP3 players, DVD players, Drones, Anti-lock braking system, Airbag control system, Digital watches, Microwaves),* • in groups, use different types of computers to perform tasks (*draw images, write a letter, play games)*.	
Core competencies: • Critical thinking and problem solving: learner intelligently assesses user computing needs and selects appropriate computers for different situations. • Communication and collaboration: learner discusses engagingly with the resource person the criteria to use when classifying computers.				
Values: • Peace: learner calmly participates in matching different types of computers to their respective classes.				
Pertinent and Contemporary Issues (PCIs): • Financial literacy: learner assesses user computing needs and selects appropriate computers for different situations.				
Link to other subjects: • Music: learner shares experiences on the use of embedded computers such as MP3 and DVD players.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to explain the types of computers in a computer user environment	Correctly and systematically explains the types of computers in a computer user environment	Correctly explains the types of computers in a computer user environment	Explains correctly some of the types of computers in a computer user environment	Has challengs explaining the types of computers in a computer user environment
Ability to apply appropriate criteria to classify computers	Appropriately and confidently applies appropriate criteria to classify computers	Applies appropriate criteria to classify computers	Sometimes applies appropriate criteria to classify computers	Has challenges applying appropriate criteria to classify computers
Ability to select appropriate types of computers for different situations	Exactly and accurately selects appropriate types of computers for different situations	Selects appropriate types of computers for different situations	Selects some of the appropriate types of computers for different situations	Has challenges selecting appropriate types of computers for different situations
Ability to describe uses of embedded computers in daily life activities	Correctly and concisely describes uses of embedded computers in daily life activities	Correctly describes uses of embedded computers in daily life activities	Correctly describes some uses of embedded computers in daily life activities	Has challenges describing uses of embedded computers in daily life activities even with assistance
Ability to use different types of computers in performing tasks	Perfectly and confidently uses different types of computers in performing tasks	Perfectly uses different types of computers in performing tasks	Sometimes uses different types of computers in performing tasks	Has challenges using different types of computer in performing tasks

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.5 Computer User Environment** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) explain factors to consider when setting up a computer user environment b) identify appropriate resources for computer user environment c) observe safety precautions and practices in the computer user environment d) appreciate examining emerging trends in computer user environment.	The learner is guided to: • watch a video about different computer user environments, • brainstorm on the factors to consider when setting up a computer user environment, • search for the resources required when setting up a computer user environment and list them, • in groups, set rules to follow in a computer user environment, • practise observing safety precautions when in the computer user environment,	1. How is a computer user environment set up? 2. Why is computer user environment important?

			• participate actively in setting up a computer user environment, • share ideas on emerging trends in computer user environment.	
Core competencies: • Critical Thinking and Problem Solving: learner sets rules to follow in a computer user environment. • Creativity and Imagination: learner intelligently sets up a computer user environment.				
Values: • Integrity: learner genuinely identifies appropriate resources for computer user environment.				
Pertinent and Contemporary Issues (PCIs): • Safety education: learner observes safety precautions and practices in the computer user environment.				
Link to other subjects: • Life Skills Education: learner sets up a computer user environment. • Health Education: laerner observes safety precautions and practices in the computer user environment.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to explain factors to consider when setting up a computer user environment	Correctly and clearly explains factors to consider when setting up a computer user environment	Correctly explains factors to consider when setting up a computer user environment	Correctly explains some of the factors to consider when setting up a computer user environment	Has challenges explaining factors to consider when setting up a computer user environment
Ability to identify resources for a computer user environment	Accurately and explicitly identifies resources for a computer user environment	Accurately identifies resources for a computer user environment	Accurately identifies some of the resources for a computer user environment	Has challenges identifying resources for a computer user environment
Ability to observe safety precautions and practices in the computer user environment.	Perfectly and confidently observes safety precautions and practices in the computer user environment	Perfectly observes safety precautions and practices in the computer user environment	Perfectly observes some safety precautions and practices in the computer user environment	Has challenges observing safety precautions and practices in the computer user environment
Ability to examine emerging trends in computer user environment	Creatively and precisely examines emerging trends in computer user environment	Creatively examines emerging trends in computer user environment	Creatively examines some of the emerging trends in computer user environment	Has challenges examining emerging trends in computer user environment

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.6 Physical Parts of a Computer** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify the physical parts of a computer b) explain the functions of the physical parts of a computer c) connect the physical parts of a computer for use d) utilise the physical parts of a computer to minimise wastage e) appreciate interacting with physical parts of a computer.	The learner is guided to: • visit a computer user environment and observe, identify and then list various physical parts of a computer, including the peripheral, • take turns to match the physical parts of a computer to their respective functions, • in groups, connect physical parts of a computer for use, • take part in modelling interlinked physical parts of a computer, • take turns to talk about reusing or recycling the physical parts of a computer that are in good working condition to minimise wastage, • in groups, interact with physical parts of a computer.	1. How are the physical parts of a computer connected? 2. What are the physical parts of a computer?

Core competencies:

- Self-efficacy: learner connects physical parts of a computer appropriately and confidently.
- Creativity and imagination: learner takes part in modelling interlinked physical parts of a computer.

Values:

- Responsibility: learner participates actively in connecting physical parts of a computer.
- Respect: learner takes turn to match the physical parts of a computer to their respective functions.

Pertinent and Contemporary Issues (PCIs):

- Environmental education: learners take part in reusing or recycling the physical parts of a computer that are in good working condition.

Link to other subjects:

- Visual Arts: learner takes part in modelling interlinked physical parts of a computer.

Assessment Rubric

Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify the physical parts of a computer	Accurately and specifically identifies the physical parts of a computer	Accurately identifies the physical parts of a computer	Accurately identifies some of the physical parts of a computer	Has difficulty identifying the physical parts of a computer
Ability to explain the functions of the physical parts of a computer	Correctly and systematically explains the functions of the physical parts of a computer	Correctly explains the functions of the physical parts of a computer	Correctly explains some of the functions of the physical parts of a computer	Has difficulty explaining the functions of the physical parts of a computer

Ability to connect the physical parts of a computer for use	Accurately and confidently connects the physical parts of a computer for use	Accurately connects the physical parts of a computer for use	Accurately connects some of the physical parts of a computer for use	Has difficulty connecting the physical parts of a computer for use
Ability to utilise physical parts of a computer to minimise wastage	Properly and correctly utilise physical parts of a computer to minimise wastage	Properly utilises physical parts of a computer to minimise wastage	Properly utilises some physical parts of a computer to minimise wastage	Has difficulty utilising physical parts of a computer to minimise wastage
Ability to interact with physical parts of a computer	Appropriately and confidently interacts with physical parts of a computer	Appropriately interacts with physical parts of a computer	Occasionally interacts with physical parts of a computer appropriately	Has challenges interacting with physical parts of a computer

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.7 Hands-on Skills Concepts (6 Lessons)**	By the end of the sub strand the learner should be able to: a) apply the appropriate procedure to start and shut down a computer b) explain the functions of the keys on a computer keyboard c) categorise the keys on a computer keyboard d) use pointing devices to manipulate objects in the computer e) appreciate interacting with the keyboard and the pointing devices of a computer.	The learner is guided to: • take part in starting and shutting down a computer using appropriate procedure, • take turns to locate different keys on the computer keyboards and demonstrate their functions, • in groups, model or draw different categories of the keys on the computer keyboard, • take part in manipulating objects in the computer using pointing devices skills, • practise different ways of using the computer keyboard; *typing a simple text, multiplying numbers, drawing diagrams,* • practise typing using the home keys on the computer keyboard, • in groups, use computer keyboard and pointing devices to; *scroll up pages of a document, make corrections in a text document, draw diagrams*	1. Why are there different keys on a computer keyboard? 2. How is a computer keyboard used?

Core competencies:

- Digital literacy: learner uses the computer keyboard and a pointing device to type simple text and manipulate objects on the screen.
- Learning to learn: learner practises typing using the home keys on the computer keyboard.

Values:

- Love: learner cheerfully shares experiences on the use of the computer keyboard and pointing devices.
- Responsibility: learner shuts down a computer appropriately.

Pertinent and Contemporary Issues (PCIs):

- Learner support programmes: peer education as learners assist one another on how to use pointing devices to manipulate objects in the computer.

Links to other subjects:

- Visual Arts: learner creatively and correctly models or draws a well labelled computer keyboard showing the categories of the keys.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to apply the appropriate procedure to start and shut down a computer	Perfectly and confidently applies the appropriate procedure to start and shut down a computer	Perfectly applies the appropriate procedure to start and shut down a computer	Sometimes applies the appropriate procedure to start and shut down a computer	Has difficulty applying the appropriate procedure to start and shut down a computer

Ability to explain the functions of the keys on a computer keyboard	Correctly and systematically explains the functions of the keys on a computer keyboard	Correctly explains the functions of the keys on a computer keyboard	Correctly explains some of the functions of the keys in a computer keyboard	Has difficulty explaining the functions of the keys on a computer keyboard
Ability to categorise the keys on a computer keyboard	Correctly and accurately categorises the keys on a computer keyboard	Correctly categorises the keys in a computer keyboard	Correctly categorises some of the keys on a computer keyboard	Has difficulty categorising the keys on a computer keyboard
Ability to use pointing devices to manipulate objects in the computer	Appropriately and confidently uses pointing devices to manipulate objects in the computer	Appropriately uses pointing devices to manipulate objects in the computer	Appropriately uses some pointing devices to manipulate objects in the computer	Has difficulty using pointing devices to manipulate objects in the computer
Ability to interact with the keyboard and pointing devices of a computer	Appropriately and creatively interacts with the keyboard and pointing devices of a computer	Appropriately interacts with the keyboard and pointing devices of a computer	Occasionally appropriately interacts with the keyboard and pointing device of a computer	Has difficulty interacting with the keyboard and pointing devices of a computer

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.8 Computer Systems Overview** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify the components of a computer system in a computer user environment b) relate computer system components to their functions c) use computer system components to perform tasks d) describe the linkage among the components of a computer system e) appreciate analysing the importance of computer systems in society.	The learner is guided to: • search for the meaning of the terms system and computer system, and share the findings with peers, • discuss engagingly the components of a computer system (*hardware, software, liveware*) and list them, • take turns to match components of computer system to their functions, • in groups, use computer system components to perform a task; *draw diagrams, search for learning materials*, • take part in creating an illustration of the linkage among the components of a computer system, • share experiences on the importance of computer systems in society.	1. Why are computer systems used in daily life? 2. How do computer system components function?

Core competencies:

- Learning to learn: learner confidently shares experiences on the importance of computer systems in society.
- Creativity and imagination: learner creates an illustration of the linkage among the components of a computer system.

Values:

- Peace: learner remains calm when creating an illustration of the linkage among the components of a computer system.

Pertinent and Contemporary Issues (PCIs):

- Learner support programmes: learners take turns in matching components of computer system to their corresponding functions during clubs.

Link to other subjects:

- Visual Arts: learner creates an illustration of the linkage among the components of a computer system.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify the components of a computer system in a computer user environment	Accurately and explicitly identifies the components of a computer system in a computer user environment	Accurately identifies the components of a computer system in a computer user environment	Accurately identifies some of the components of a computer system in a computer user environment	Has difficulty identifying the components of a computer system in a computer user environment

Ability to relate computer system components to their functions	Correctly and creatively relates computer system components to their functions	Correctly relates computer system components to their functions	Correctly relates some computer system components to their functions	Has difficulty relating computer system components to their functions
Ability to use computer system components to perform tasks	Appropriately and confidently uses computer system components to perform tasks	Appropriately uses computer system components to perform tasks	Occasionally uses computer system components to perform tasks	Has difficulty using computer system components to perform tasks even with assistance
Ability to describe the linkage among the components of a computer system	Accurately and expansively describes the linkage among the components of a computer system	Accurately describes the linkage among the components of a computer system	Occasionally describes the linkage among the components of a computer system	Has difficulty describing the linkage among the components of a computer system
Ability to analyse the importance of computer systems in society	Accurately and concisely analyses the importance of computer systems in society	Accurately analyses the importance of computer systems in society	Accurately analyses some of the importance of computer systems in society	Has difficulty analysing the importance of computer systems in society

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.9 Computer Hardware Concepts** **(3 lessons)**	By the end of the sub strand the learner should be able to: a) identify categories of hardware in a computer system b) relate categories of computer hardware to their functions c) select appropriate computer hardware for different situations d) use different elements of computer hardware in performing daily life activities e) appreciate examining the role of hardware elements in a computer	The learner is guided to: • visit a computer user environment and list the hardware devices in use, • engage actively in a discussion on the categories of computer hardware (*input devices, central processing unit, output devices and storage devices*), • search for the functions of computer hardware and make a presentation, • take turns to match categories of hardware to their functions, • in groups, assess user computing needs and select appropriate computer hardware for different situations, • in groups, use different elements of computer hardware to input data, store, and output information.	1. Why are computer hardware categorised? 2. How are different elements of computer hardware used?

Core competencies:

- Critical thinking: learner assesses user computing needs and select appropriate hardware for different situations.
- Communication and collaboration: learner engages actively in a discussion on the categories of a computer hardware.

Values:

- Integrity: learner appropriately assesses user computing needs and selects appropriate computer hardware for different situations.
- Unity: learner engages actively in a discussion on the categories of a computer hardware.

Pertinent and Contemporary Issues (PCIs):

- Financial literacy: learner assesses user computing needs and selects appropriate hardware for different situations.

Link to other subjects

- Life Skills Education: learner uses different hardware of a computer to input data, store, and output information.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify categories of hardware in a computer system	Correctly and predominantly identifies categories of hardware in a computer system	Correctly identifies categories of hardware in a computer system	Correctly identifies some categories of hardware in a computer system	Has challenges identifying categories of hardware in a computer system

Ability to relate categories of hardware to their functions	Appropriately and confidently relates categories of hardware to their functions.	Appropriately relates categories of hardware to their functions	Correctly relates some categories of hardware to their functions.	Has difficulty relating categories of hardware to their functions
Ability to select appropriate hardware for different situations	Appropriately and creatively selects appropriate hardware for different situations	Selects appropriate hardware for different situations	Sometimes selects appropriate hardware for different situations	Has difficulty in selecting appropriate hardware for different situations
Ability to use different elements of computer hardware in performing daily life activities	Appropriately and confidently uses different elements of computer hardware in performing daily life activities	Appropriately uses different elements of computer hardware in performing daily life activities	Appropriately uses some different elements of computer hardware in performing daily life activities	Has difficulty using different elements of computer hardware in performing daily life activities
Ability to examine the role of hardware elements in a computer	Correctly and keenly examines the role of hardware elements in a computer	Correctly examines the role of hardware elements in a computer	Correctly examines the role of hardware elements in a computer with help	Has difficulty examining the role of hardware elements in a computer

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.10 Input Devices** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify input devices in a computer system b) categorise input devices based on their functionality c) select appropriate input devices for different situations d) use input devices to perform tasks e) appreciate reusing input devices to minimise wastage	The learner is guided to: • identify and list input devices available in a computer user environment (*barcode scanner, digital camera, keyboard, microphone, optical mouse, touch screen (resistive, capacitive and infra-red), two-dimensional (2d) and three-dimensional (3d) scanners)*, • consult a computer resource person to demonstrate how different categories of input devices operate, • match input devices to their respective categories such as, *keying devices, pointing devices, scanning devices, voice input devices, touch screen, digitizer, digital cameras and other data capture devices,*	1. Why do computers have input devices? 2. How are input devices used?

			• in turns, discuss factors to consider when selecting an input device, • assess user computing needs and select appropriate input devices for different situations (*such as user on a fixed budget, a home user, business user, a gaming enthusiast, a photographer, a distance education user, a human resources manager, an accountant*), • use available input devices to perform tasks assigned by the facilitator, • share experience on how to reuse input devices which are still in good working condition to minimise wastage.	

Core competencies:

- Critical thinking and problem solving: learner assesses user computing needs and selects appropriate input devices for different situations.
- Communication and collaboration: learners listen keenly as they discuss on the factors considered when selecting input devices.

Values:

- Responsibility: learner uses available input devices to perform tasks.

Pertinent and Contemporary Issues (PCIs):

- Environmental education: learners practise reusing input devices to minimise wastage.

Link to other subjects:

- Integrated Science: learner categorises input devices based on their functionality.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify input devices in a computer system	Correctly and explicitly identifies various input devices in a computer system	Correctly identifies various input devices in a computer system	Correctly identifies some of the input devices in a computer system	Has difficulty identifying various input devices in a computer system
Ability to categorise input devices based on their functionality	Accurately and keenly relates input devices to their functions	Accurately relates input devices to their functions	Accurately relates some input devices to their functions	Has difficulty relating input devices to their functions

Ability to select input devices for different situations	Correctly and confidently selects input devices for different situations	Correctly selects input devices for different situations	Correctly selects some input devices for different situations	Has difficulty selecting input devices for different situations
Ability to use input devices to perform tasks	Appropriately and creatively uses input devices to perform tasks	Appropriately uses input devices to perform tasks	Appropriately uses some of the input devices to perform tasks	Has difficulty using input devices to perform tasks
Ability to reuse input devices to minimise wastage	Correctly and innovatively reuses input devices to minimise wastage	Correctly reuses input devices to minimise wastage	Correctly reuses some of the input devices to minimise wastage	Has difficulty reusing input devices to minimise wastage

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.11 Central Processing Unit (CPU)** **(4 Lessons)**	By the end of the sub strand the learner should be able to: a) locate the CPU in a computer system b) explain functional elements of the CPU in a computer system c) explore different types of processors used in computing devices d) use computers with different types of processors to perform tasks e) appreciate analysing the role of processors in computers	The learner is guided to: • search for the meaning of the term CPU and motherboard, • in groups, watch a video that shows the location of the CPU in a computer, • watch a video simulation of the functional organisation of the CPU, • consult a computer resource person to discuss the functional elements of a CPU (*arithmetic and logic unit, control unit and the special memory*), • in turns, navigate computer system specifications to determine the type of processor in a computer and list them,	1. How does a CPU function in a computer system? 2. Why do computers have processors?

			• use computers with different types of processors to perform tasks; *draw diagrams, type words, add numbers,* • In groups, discuss the role of processors in computers.	
Core competencies: • Self-efficacy: learner independently and confidently navigates through computer system specifications to determine the type of processor. • Creativity and imagination: learner creates illustrations showing the functional elements of the CPU and display in the learning environment.				
Values: • Unity: learners work together to achieve a common goal when searching for the technological trends in the development of the CPU.				
Pertinent and Contemporary Issues (PCIs): • Life skills: learner navigates through computer system specifications to determine the type of processor.				
Link to other subjects: • Life Skills Education: learner confidently navigates through computer system specifications to determine the type of processor.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to locate the CPU in a computer system	Accurately and creatively locates the CPU in a computer system	Accurately locates the CPU in a computer system	Sometimes locates the CPU in a computer system	Has challenges locating the CPU in a computer system
Ability to explain functional elements of CPU in a computer system	Correctly and explicitly explains functional units of CPU in a computer system	Correctly explains functional units of CPU in a computer system	Correctly explains some functional units of CPU in a computer system.	Has challenges explaining functional units of CPU in a computer system
Ability to explore different types of processors used in computing devices	Appropriately and creatively explores different types of processors used in computing devices	Appropriately explores different types of processors used in computing devices	Appropriately explores some of the different types of processors used in computing devices	Has challenges exploring different types of processors used in computing devices
Ability to use computers with different types of processors to perform tasks	Correctly and confidently uses computers with different types of processors to perform tasks	Correctly uses computers with different types of processors to perform tasks	Sometimes correctly uses computers with different types of processors to perform tasks	Has challenges using computers with different types of processors to perform tasks

Ability to analyse the role of processors in computers	Correctly and creatively analyses the role of processors in computers	Correctly analyses the role of processors in computers	Needs help to correctly analyse the role of processors in computers	Has challenges analysing the role of processors in computers

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.12 Output Devices** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify output devices of a computer system b) describe the functions of output devices in a computer system c) categorise computer output devices based on the output generated d) select appropriate output devices for different situations e) use output devices to perform daily life activities f) appreciate examining the technological trends in the development of output devices.	The learner is guided to: • observe and list available output devices in the computer user environment, such as (*printers, monitors, speakers, projectors, plotters, actuator),* • consult a computer resource person to discuss and demonstrate the various functions of output devices, • watch a video clip on categories of output devices and list them, • in turns, participate in matching output devices to their appropriate categories, • in groups, compare hardcopy output and softcopy output, outlining	1. Why are there different computer output devices? 2. How are output devices used in a computer?

			their advantages and disadvantages, • in turns, discuss the factors considered when selecting output devices, • take turns in selecting appropriate output devices for different situations, • share experiences on safe use and care of output devices, • in groups, perform a task assigned by the facilitator using available output device.	
Core competencies: • Critical thinking and problem polving: learner develops evaluation and decision making skills as they compare softcopy and hardcopy output. • Citizenship: learner participates engagingly in a discussion on the factors considered when selecting output devices.				
Values: • Responsibility: learner practises safe use and care of output devices. • Unity: learner participates engagingly in a discussion on the factors considered when selecting output devices.				
Pertinent and Contemporary Issues (PCIs): • Safety and security: learner practises safe use and care of output devices.				

Link to other subjects: • Health Education: learner practises safe use and care of output devices.				
Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify output devices of a computer system	Accurately and predominantly identifies output devices of a computer system	Accurately identifies output devices of a computer system	Accurately identifies some output devices of a computer system	Has challenges identifying output devices of a computer system
Ability to describe the functions of output devices in a computer system	Correctly and concisely describes the functions of output devices in a computer system	Correctly describes the functions of output devices in a computer system	Correctly describes some of the functions of output devices in a computer system	Has challenges describing the functions of output devices of a computer system
Ability to categorise computer output devices based on the output generated	Correctly and keenly categorises computer output devices based on the output generated	Correctly categorises computer output devices based on the output generated	Attempts to categorise computer output devices based on the output generated	Has difficulty in categorising computer output devices based on the output generated
Ability to select appropriate output devices for different situations	Accurately and predominantly selects appropriate output devices for different situations	Accurately selects appropriates output devices for different situations	Selects some of the appropriate output devices for different situations	Has difficulty selecting appropriate output devices for different situations

Ability to use output devices to perform daily life activities	Creatively and confidently uses output devices to perform daily life activities	Creatively uses output devices to perform daily life activities	Occasionally uses output devices to perform daily life activities creatively	Has difficulty using output devices to perform daily life activities
Ability to examine the technological trends in the development of output devices	Appropriately and precisely examines the technological trends in the development of output devices	Appropriately examines the technological trends in the development of output devices	Appropriately examines some technological trends in the development of output devices	Has difficulty examining the technological trends in the development of output devices

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.13 Ports and Cables** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify cables and ports in computer systems b) explain the types of cables used in computer systems c) relate cables to their corresponding ports in computer systems d) connect cables to ports in computer systems e) appreciate the use of cables and ports in computer systems.	**The learner is guided to:** • search for information on different cables and ports used in computer systems, • consult a computer resource person to discuss the types of cables and ports used in computer systems, • take turns to match ports to their corresponding cables, • participate actively in communal activities which deal with reusing or recycling the cables to minimise wastage, • consult a computer user to discuss and demonstrate how to use cables and ports appropriately, • in groups, connect cables to their corresponding ports in computer systems.	1. Why do computer systems have ports? 2. How are cables used in a computer user environment?

Core competencies:

- Self-efficacy: learner takes turns to match ports to their corresponding cables.
- Communication and collaboration: learner consults a computer specialist to discuss and demonstrate the types of cables and ports used in a computer.
- Citizenship: learner participates in communal activities which deal with reusing or recycling cables to minimise wastage.

Values:

- Patriotism: learner participates actively in communal activities which deal with reusing or recycling of cables to minimise wastage.

Pertinent and Contemporary Issues (PCIs):

- Learner support programmes: peer education is enhanced as learners, demonstrate how to use cables and ports appropriately during clubs.

Link to other subjects:

- Integrated Science: learner relates ports to their corresponding cables.

Assessment Rubric

Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify cables and ports in computer systems	Appropriately and accurately identifies cables and ports in computer systems	Appropriately identifies cables and ports in computer systems	Correctly identifies some cables and ports in computer systems	Has difficulty identifying cables and ports in computer systems

Ability to explain the types of cables used in computer systems	Correctly and expansively explains the types of cables used in computer systems	Correctly explains the types of cables used in computer systems	Correctly explains some types of cables used in computer systems.	Has challenges explaining the types of cables used in computer systems
Ability to relate ports to their corresponding cables in computer systems	Accurately and keenly relates ports to their corresponding cables in computer systems	Accurately relates the ports to their corresponding cables in computer systems	Relates some ports to their corresponding cables in computer systems	Has difficulty relating ports to their corresponding cables in computer systems
Ability to connect cables to ports in computer systems	Correctly and confidently connects cables to ports in computer systems	Correctly connects cables to ports in computer systems	Occasionally connects cables to ports in computer systems	Has difficulty connecting cables to ports in computer systems
Ability to use cables and ports in computer systems	Appropriately and creatively uses cables and ports in computer systems	Appropriately uses cables and ports in computer systems	Sometimes uses cables and ports in computer systems appropriately	Has difficulty using cables and ports in computer systems

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
1.0 Foundation of Computer Science	**1.14 Computer Setup (3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify problems experienced when setting up computers b) describe different ways of setting up computers c) apply appropriate instructions to set up computers d) set up computers for use e) explore ways to overcome the challenges experienced when setting up computers f) enjoy booting computers successfully for use.	The learner is guided to: • visit a computer user environment, discuss engagingly with the users and list the challenges they experience when setting up computers, • in groups, search for different ways of setting up computers, • share experiences on precautions to follow when setting up computers, • consult a computer resource person to guide on tools and requirements needed when setting up computers, and to demonstrate how to set up computers, • take part in setting up computers appropriately, • consult a computer resource person to assist in	1. How are computers set up in a user environment? 2. Why are safety precautions observed when setting up a computer?

			identification of computers which are not functioning, select the parts which are still in good working condition and are suitable to be reused or recycled, and make use of them when setting up computers. • take turns to share the benefits and challenges experienced when setting up computers, • in turns, devise ways to overcome the challenges experienced when setting up computers, • in turns, enjoy booting computers successfully for use, • in groups, participate actively in communal activities which involve setting up computers.	

Core competencies:

- Communication and collaboration: learner actively contributes to group discussions and participates in setting up computers
- Citizenship: learner discusses engagingly with the users in the community and list the challenges they experience when setting up computers.
- Creativity and imagination: learner creatively devises ways to overcome the challenges experienced when setting up computers.

Values:

- Unity: learner teams up with others in setting up computers.
- Respect: learner recognises the input of every member of the team when connecting the devices to the system unit.

Pertinent and Contemporary Issues (PCIs):

- Learner support programmes: learners share experiences on precautions to follow when setting up computers during society and clubs.

Link to other subjects:

- Life Skills Education: learner demonstrates ability to apply appropriate instructions when setting up computers.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify challenges experienced when setting up computers	Correctly and accurately identifies challenges experienced when setting up computers	Correctly identifies challenges experienced when setting up computers	Correctly identifies some of the challenges experienced when setting up computers	Has difficulty identifying challenges experienced when setting up computers

Ability to apply appropriate instructions to set up computers	Correctly and confidently applies appropriate instructions to set up computers	Applies appropriate instructions to set up computers	Sometimes applies appropriate instructions to set up computers	Has difficulty applying appropriate instructions to set up computers
Ability to set up computers for use	Confidently and appropriately sets up computers for use	Appropriately sets up computers for use	Partially sets up computers for use	Has difficulty setting up computers for use
Ability to explore ways to overcome the challenges experienced when setting up a computer	Creatively and intelligently explores ways to overcome the challenges experienced when setting up a computer	Creatively explores ways to overcome the challenges experienced when setting up a computer	Creatively explores some ways to overcome the challenges experienced when setting up a computer	Has difficulty exploring ways to overcome the challenges experienced when setting up a computer
Ability to boot computers successfully for use	Correctly and keenly boots computers successfully for use	Correctly boots computers successfully for use	Has few challenges booting computers successfully for use	Has many challenges booting computers successfully for use

STRAND 2.0: COMPUTER AND SOCIETY

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer and Society	**2.1 Physical Safety of Computers (2 Lessons)**	By the end of the sub strand the learner should be able to: a) identify physical threats to computers b) explore ways of mitigating physical threats to computers c) apply appropriate control measures to minimise physical threats to computers d) appreciate using computers in a physically secured computer user environment.	The learner is guided to: • engagingly discuss and list physical threats to computers (*theft, natural disasters, hardware failure)* in a computer user environment, • consult a computer a resource person to discuss ways of mitigating physical threats to computers in a computer user environment, • participate in using appropriate control measures to minimise physical threats to computers in a computer user environment,	1. What physical threats are likely to be encountered by computers? 2. How are computers secured against physical threats?

			• in groups, use computers in a physically secured user environment.	

Core competencies:

- Critical thinking and problem solving: learner explores ways of mitigating physical threats to computers in a computer user environment.

Values:

- Responsibility: learner participates in securing computers in a computer user environment.

Pertinent and Contemporary Issues (PCIs):

- Safety and security: learner applies physical mitigation measures to secure computers in a computer user environment.

Link to other subjects:

- Health Education: learner applies physical mitigation measures to secure a computer user environment.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify physical threats to computers	Correctly and specifically identifies physical threats to computers	Correctly identifies physical threats to computers	Correctly identifies some of the physical threats to computers	Has challenges identifying physical threats to computers

Ability to explore ways of mitigating physical threats to computers	Appropriately and intelligently explores ways of mitigating physical threats to computers	Appropriately explores ways of mitigating physical threats to computers	Appropriately explores some ways of mitigating physical threats to computers	Has difficulty exploring ways of mitigating physical threats to computers
Ability to apply appropriate control measures to minimise physical threats to computers	Correctly and confidently applies appropriate control measures to minimise physical threats to computers	Correctly applies appropriate control measures to minimise physical threats to computers	Sometimes applies appropriate control measures to minimise physical threats to computers	Has challenges applying appropriate control measures to minimise physical threats to computers
Ability to use computers in a physically secured computer user environment	Appropriately and creatively uses computers in a physically secured computer user environment	Appropriately uses computers in a physically secured computer user environment	Sometimes uses computers in a physically secured computer user environment appropriately	Has challenges using computers in a physically secured computer user environment

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer and Society	**2.2 Health and Safety** **(2 Lessons)**	By the end of the sub strand the learner should be able to: a) identify health complications associated with the use of computers b) apply appropriate techniques to mitigate health complications associated with the use of computers c) observe safe use and best practices when using computers d) appreciate organising workstation to minimise health complications when using computers.	The learner is guided to: • discuss, in groups, health complications associated with the use of computers, • in turns, discuss techniques to mitigate health complications associated with the use of computers, • independently use appropriate techniques to mitigate health complications • share experiences on the safety practices to be observed when using computers • always observe safety precautions and best practices when using computers, • take turns to organise workstation to minimise health complications when using computers.	1. What health risk are associated with the use of computers? 2. How are health complications associated with the use of computers minimised?

Core competencies:

- Critical Thinking and problem solving: learner explores techniques to mitigate health complications associated with the use of computers.
- Communication and collaboration: learner shares experiences on the safety practices to be observed when using a computer.

Values:

- Respect: learner accommodates others' opinions when discussing techniques to mitigate health complications associated with the use of computers in a computer user environment.

Pertinent and Contemporary Issues (PCIs):

- Health issues: learner observes safe use and best practices when using a computer in a computer user environment.

Links to other subjects:

- Health Education: learner observes safe use and best practice when using computers in a computer user environment.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify health complications associated with the use of computers	Appropriately and specifically identifies health complications associated with the use of computers	Appropriately identifies health complications associated with the use of computers	Appropriately identifies some of the health complications associated with the use of computers	Has challenges identifying health complications associated with the use of computers
Ability to apply appropriate	Accurately and confidently	Accurately applies appropriate	Accurately applies some of the	Has challenges applying appropriate

techniques to mitigate health complications associated with the use of computers	applies appropriate techniques to mitigate health complications associated with the use of computers	techniques to mitigate health complications associated with the use of computers	appropriate techniques to mitigate health complications associated with the use of computers	techniques to mitigate health complications associated with the use of computers
Ability to observe safe use and best practices when using computers	Correctly and carefully observes safe use and best practices when using computers	Correctly observes safe use and best practices when using computers	Sometimes observes safe use and best practices when using computers correctly	Has challenges observing safe use and best practices when using computers
Ability to organise workstation to minimise health complications when using computers	Appropriately and securely organises workstation to minimise health complications when using computers	Correctly organises workstation to minimise health complications when using computers	Occasionally organises workstation to minimise health complications when using computers correctly	Has challenges organising workstation to minimise health complications when using computers

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer and Society	**2.3 Repetitive Strain Injury (RSI)** **(2 Lessons)**	By the end of the sub strand the learner should be able to: a) identify the symptoms of repetitive strain injury for awareness b) explain the causes of repetitive strain injury for awareness c) apply appropriate strategies to prevent repetitive strain injury when using a computer d) appreciate using computers safely to minimising the repetitive strain injury.	The learner is guided to: • share experiences on common symptoms of repetitive strain injury (*upper limb disorders, eye strain, stress and fatigue*) for awareness, • consult a resource person and ask questions for clarity on the causes of repetitive strain injury, • watch a video about the causes of repetitive strain injury and list them, • in groups, discuss the strategies for preventing repetitive strain injury when using a computer, • use the appropriate strategies to prevent repetitive strain injury when using a computer • practise observing safe ways when using computers for a longer period.	1. What are the consequences of prolonged use of a computer? 2. How does repetitive strain injury affect health of a computer user?

Core competencies:

- Critical thinking and problem solving: learner asks questions for clarity on the causes of repetitive strain injury.
- Communication and collaboration: learner shares experiences on the symptoms of repetitive strain injury.

Values:

- Responsibility: learner observes safe use and best practices when using a computer for a longer period.

Pertinent and Contemporary Issues (PCIs):

- Health issues: learner observes safe use and best practices when using a computer for a longer period.

Link to other subjects:

- Health Education: learner observes safe use and best practice when using computers.

Assessment Rubric

Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to identify the symptoms of repetitive strain injury for awareness	Appropriately and consciously identifies the symptoms of repetitive strain injury for awareness	Appropriately identifies the symptoms of repetitive strain injury for awareness	Appropriately identifies some of the symptoms of repetitive strain injury for awareness	Has challenges identifying the symptoms of repetitive strain injury for awareness
Ability to explain the causes of repetitive strain injury for awareness	Correctly and systematically explains the causes of repetitive strain injury for awareness	Correctly explains the causes of repetitive strain injury for awareness	Correctly explains some of the causes of repetitive strain injury for awareness	Hardly able to explain the causes of repetitive strain injury for awareness

Ability to apply appropriate strategies to prevent repetitive strain injury when using a computer	Intelligently and frequently applies appropriate strategies to prevent repetitive strain injury when using a computer	Intelligently applies appropriate strategies to prevent repetitive strain injury when using a computer	Intelligently applies some of the appropriate strategies to prevent repetitive strain injury when using a computer	Has challenges applying appropriate strategies to prevent repetitive strain injury when using a computer
Ability to use computers safely to minimise repetitive strain injury	Correctly and confidently uses computers safely to minimise repetitive strain injury	Correctly uses computers safely to minimise repetitive strain injury	Sometimes uses computers safely to minimise repetitive strain injury	Has challenges minimising computers safely to minimise repetitive strain injury

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer And Society	**2.4 Data Safety in Computers** **(2 Lessons)**	By the end of the sub strand the learner should be able to: a) explain threats to data in a computer b) identify the control measures for securing data in a computer c) apply the control measures to secure data in a computer d) appreciate securing data in a computer.	The learner is guided to: • brainstorm on the meaning of the terms data safety, data privacy, and data threats, • consult a computer resource person to discuss data threats and their control measures, • in groups, watch a video on control measures for securing data in a computer, • in turns, discuss ways of securing data stored in a computer (*use of passwords, backup, anti-viruses, user access level, user logs*), • share ideas on how to secure data in a computer.	1. Why is data in a computer exposed to threats? 2. How is data secured in a computer?
Core competencies: • Communication and collaboration: learner discusses ways of securing data stored in a computer. • Critical thinking and problem solving: learner intelligently applies the control measures to secure data in a computer.				
Values: • Peace: learners remain calm as they watch a video on control measures for securing data in a computer.				

Pertinent and Contemporary Issues (PCIs): • Safety and security: learner uses data safety measures to secure data in a computer.				
Link to other subjects: • Life Skills Education: leaner uses appropriate data safety measures to secure data in a computer.				
Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to explain threats to data in a computer	Correctly and clearly explains threats to data in a computer	Correctly explains threats to data in a computer	Correctly explains some of the threats to data in a computer	Has difficulty explaining threats to data in a computer
Ability to identify the control measures for securing data in a computer	Appropriately and creatively identifies the control measures for securing data in a computer	Appropriately identifies the control measures for securing data in a computer	Appropriately identifies some of the control measures for securing data in a computer	Has challenges identifying the control measures for securing data in a computer
Ability to apply the control measures to secure data in a computer	Correctly and confidently applies the control measures to secure data in a computer	Correctly applies the control measures to secure data in a computer	Sometimes applies the control measures correctly to secure data in a computer	Has challenges applying the control measures to secure data in a computer
Ability to secure data in a computer	Appropriately and creatively secures data in a computer	Correctly secures data in a computer	Sometimes secures data in a computer	Has difficulty securing data in a computer

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer and Society	**2.5 Online Safety Concepts** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) explain online threats to a computer user b) identify online safety measures to observe when using a computer c) apply online safety measures when using a computer d) appreciate the importance of online safety when using a computer.	The learner is guided to: • brainstorm on the meaning of the terms online safety, and online safety risks, • take turns to share the online threats experienced when using a computer, • consult a computer resource person to discuss online threats *(such as cyber bullying, phishing, online fraud, friend requests from unknown people)* to a computer user, • watch a video on safety measures to observe when online *(not sharing pictures, location, securing profiles*), • engagingly discuss with a resource person how to solve online safety issues (*cyber bullying, phishing, online fraud, friend requests from unknown people)*,	1. What data is shared by computer users when online? 2. How do computer users safeguard themselves from online threats?

			• always practise observing online safety measures when using a computer, • share experiences about the importance of online safety when using a computer.	

Core competencies:

- Communication and collaboration: learner take turns to share the online threats experienced when using a computer
- Learning to Learn: learner shares experiences about online safety.

Values:

- Responsibility: learner applies safety measures when online.

Pertinent and Contemporary Issues (PCIs):

- Security issues: learner applies safety measures when online.

Link to other subjects:

- Life Skills Education: learner always practises observing online safety measures when using a computer.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to explain online threats to a computer user	Correctly and expansively explains online threats to a computer user	Correctly explains online threats to a computer user	Correctly explains some of the online threats to a computer user	Has difficulty explaining online threats to a computer user

Ability to identify online safety measures to observe when using a computer	Appropriately and creatively identifies online safety measures to observe when using a computer.	Appropriately identifies online safety measures to observe when using a computer	Appropriately identifies some online safety measures to observe when using a computer	Has difficulty identifying online safety measures to observe when using a computer
Ability to apply online safety measures when using a computer	Appropriately and confidently applies online safety measures when using a computer	Appropriately applies online safety measures when using a computer	Sometimes applies online safety measures appropriately when using a computer	Has challenges applying online safety measures when using a computer
Ability to examine the importance of online safety when using a computer	Correctly and keenly examines the importance of online safety when using a computer	Correctly examines the importance of online safety when using a computer	Attempts to correctly examine the importance of online safety when using a computer	Has difficulty examining the importance of online safety when using a computer

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
2.0 Computer and Society	**2.6 Online Identity Safety** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) analyse the characteristics of personal data for protection from online identity theft b) describe techniques that protect personal data from online disclosure c) apply appropriate methods to protect personal data from online disclosure d) adhere to rules associated with online etiquette when interacting with computers e) appreciate the use of computers responsibly	The learner is guided to: • share the online identity threats experienced when using a computer, • engagingly discuss the characteristics of personal and sensitive data (*personal name, address, family details, images, date of birth, a photograph in school uniform, medical history*), • take turns to share ideas and illustrations on how to keep personal and sensitive data from public when online, • consult a resource person to discuss the use of social media, including knowing how to block and report unwanted users, • discuss awareness of potential dangers of meeting an online contact face to face,	1. Why do computer users post personal information online? 2. How is online identity theft controlled?

		to safeguard digital footprint.	• Take turns to elaborate on rules associated with online etiquette (*avoid distribution of inappropriate images, avoid use of inappropriate language, respecting confidentiality of personal data of other people),* • share experiences on responsible use of computers when online to safeguard digital footprint.	
Core competencies: • Communication and collaboration: learner takes turns to elaborate on rules associated with online etiquette. • Learning to learn: Learner shares experiences on responsible use of computers to safeguard digital footprint.				
Values: • Integrity: learner uses computers responsibly to safeguard digital footprint. • Respect: learner takes turns to elaborate on rules associated with online etiquette. • Love: learner shares experiences on responsible use of computers to safeguard digital footprint.				
Pertinent and Contemporary Issues (PCIs): • Safety issues: learner shares experiences about online identity safety.				
Links to other subjects: • Social Studies: learner shares experiences on responsible use of computers to safeguard digital footprint.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to analyse the characteristics of personal and sensitive data for protection from online identity theft	Correctly and concisely analyses the characteristics of personal and sensitive data for protection from online identity theft	Correctly analyses the characteristics of personal and sensitive data for protection from online identity theft	Correctly analyses some characteristics of personal and sensitive data for protection from online identity theft	Has difficulty analysing the characteristics of personal and sensitive data for protection from online identity theft
Ability to describe the techniques of protecting personal data from online disclosure	Systematically and briefly describes the techniques of protecting personal data from online disclosure	Systematically describes the techniques of protecting personal data from online disclosure	Correctly describes some of the techniques of protecting personal data from online disclosure	Has challenges describing the techniques of protecting personal data from online disclosure
Ability to apply appropriate methods to protect personal data from online disclosure	Correctly and confidently applies appropriate methods to protect personal data from online disclosure	Correctly applies appropriate methods to protect personal data from online disclosure	Occasionally applies appropriate methods to protect personal data from online disclosure	Has challenges applying appropriate methods to protect personal data from online disclosure

Ability to adhere to rules associated with online etiquette when interacting with computers	Correctly and consistently adheres to rules associated with online etiquette when interacting with computers	Correctly adheres to rules associated with online etiquette when interacting with computers	Correctly adheres to some rules associated with online etiquette when interacting with computers	Has challenges adhering to rules associated with online etiquette when interacting with computers
Ability to use computers responsibly when online to safeguard digital footprint	Appropriately and confidently uses computers responsibly when online to safeguard digital footprint	Appropriately uses computers responsibly when online to safeguard digital footprint	Sometimes uses computers responsibly when online to safeguard digital footprint	Has challenges using computers responsibly when online to safeguard digital footprint

STRAND 3.0: COMPUTER NETWORKS

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 Computer Networks	**3.1 Computer Network Concepts (3 Lessons)**	By the end of the sub strand the learner should be able to: a) relate computer networks to other types of networks b) use locally available materials to model computer networks c) explain the benefits of computer networks in society identify the challenges of computer networks in society appreciate the purpose of computer networks in society.	The learner is guided to: • watch a video clip simulating a computer network, • brainstorm the definition of the term network and computer network, • share ideas on available networks in society such as road network and then relate them to computer networks, • in groups, use locally available materials to model computer networks, • debate on the benefits of computer networks in society, • share experiences on the challenges of computer networks in society,	1. Why are computer networks used? 2. How are computer networks formed?

			• in turns, discuss the purpose of computer networks in society.	

Core competencies:

- Self-efficacy: learner shares ideas on available networks in society.
- Creativity and imagination: learner creatively and innovatively uses locally available materials to model a computer network.
- Effective communication: learner debates on the benefits of computer networks in society.

Values:

- Respect: learner accommodates others' ideas on available networks in society.

Pertinent and Contemporary Issues (PCIs):

- Life skills: learner debates on the benefits of computer networks in society.

Link to other subjects:

- Visual Arts: learner uses locally available materials to model computer networks.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to relate computer networks to available types of networks	Correctly and intelligently relates computer networks to available types of networks	Correctly relates computer networks to available types of networks	Sometimes relates computer networks to available types of networks	Has challenges relating computer networks to available types of networks

Ability to use locally available materials to model computer networks	Creatively and innovatively uses locally available materials to model computer networks	Creatively uses locally available materials to model computer networks	Sometimes uses locally available materials to model computer networks	Has challenges using locally available materials to model computer networks
Ability to explain the benefits of computer networks in society	Correctly and clearly explains benefits of computer networks in society	Correctly explains the benefits of computer networks in society	Correctly explains some of the benefits of computer networks in society	Has difficulty explaining the benefits of computer networks in society
Ability to identify the challenges of computer networks in society	Appropriately and concisely identifies challenges of computer networks in society	Appropriately identifies the challenges of computer networks in society	Appropriately identifies some challenges of computer networks in society	Has difficulty identifying the challenges of computer networks in society
Ability to examine the purpose of computer networks in society	Correctly and keenly examines purpose of computer networks in society	Correctly examines the purpose of computer networks in society	Has few challenges examining the purpose of computer networks in society.	Has many challenges examining the purpose of computer networks in society

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 Computer Networks	**3.2 Connecting to Computer Network (3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify available computer networks in the immediate environment b) connect to the available computer networks in the immediate environment c) use the available computer network in the immediate environment d) appreciate sharing resources through computer networks in the immediate environment.	The learner is guided to: • visit a computer user environment and list the types of available computer networks *(wireless or cabled networks)*, • watch a video clip simulating how to connect to available computer network in the immediate environment *(wireless or cabled network)*, • in groups, connect to a computer network in the immediate environment, • use digital devices such a phones, tablets, computers to share a data files, photos with peers through computer networks in the immediate environment.	1. What is the purpose of connecting to a computer network? 2. How are computer networks used?

Core competencies:

- Digital literacy: learner connects to a computer network in the immediate environment.
- Self-efficacy: learner connects to computer networks in the immediate environment and shares resources with peers.

Values:

- Unity: learner shares resources with peers through computer networks in the immediate environment.

Pertinent and Contemporary Issues (PCIs):

- Life skills: learner connects to and uses available computer networks in the immediate environment to share resources with peers.

Link to other subjects:

- Social Studies: learner uses digital devices such as phones, tablets, computers to share data files, photos with peers through computer networks in the immediate environment

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify available computer networks in the immediate environment	Correctly and intelligently identifies available computer networks in the immediate environment	Correctly identifies available computer networks in the immediate environment	Correctly identifies some of the available computer networks in the immediate environment	Has difficulty identifying the available computer networks in the immediate environment

Ability to connect to the available computer networks in the immediate environment	Correctly and confidently connects to the available computer networks in the immediate environment	Correctly connects to the available computer networks in the immediate environment	Sometimes connects correctly to the available computer networks in the immediate environment	Has difficulty connecting to the available computer networks in the immediate environment
Ability to use the available computer network in the immediate environment	Consciously and creatively uses the available computer network in the immediate environment	Creatively uses the available computer network in the immediate environment	Occasionally uses creatively the available computer network in the immediate environment	Has challenges using the available computer network in the immediate environment
Ability to share resources through computer networks in the immediate environment	Appropriately and intelligently shares resources through computer networks in the immediate environment	Appropriately shares resources through computer networks in the immediate environment	Appropriately shares some resources through computer networks in the immediate environment	Has difficulty sharing resources through computer networks in the immediate environment

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 Computer Networks	**3.3 Internet Concepts** **(4 Lessons)**	By the end of the sub strand the learner should be able to: a) describe the internet as a resource that runs on a global network of computers b) explain the benefits and challenges of internet in the immediate environment c) explore ways of overcoming challenges of internet in the immediate environment d) identify basic requirements for internet connectivity e) connect to the internet to search for a topical issue f) appreciate the use of internet as a computer network resource.	The learner is guided to: • search for the meaning of the term internet and present to peers, • debate on the benefits and challenges of the internet, • in groups, discuss ways of overcoming the challenges of the internet in the immediate environment, • discuss the basic requirements for internet connectivity *(internet service provider (ISP), internet software, communication media, communication device),* • share experiences on interaction with the internet and list the services available, • in turns, select a service available in the internet and use it to search for a relevant topical issue, • use the internet to search for a topical issue.	1. How do computer users connect to the internet? 2. Why is the internet used in daily life?

Core competencies:
- Citizenship: learner connects and shares ideas worldwide through the internet.
- Digital literacy: learner accesses internet and searches for a relevant topical issue.

Values:
- Respect: learner accommodates others' views when debating on the benefits and challenges of internet.

Pertinent and Contemporary Issues (PCIs):
- Peer education: learner shares experience on the use of the internet to search for a topical issue.

Link to other subjects:
- Social Studies: learner connects to and uses the internet to search for a relevant topical issue.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to describe the internet as a resource that runs on a global network of computers	Correctly and concisely describes the internet as a resource that runs on a global network of computers	Correctly describes the internet as a resource that runs on a global network of computers	Sometimes describes correctly the internet as a resource that runs on a global network of computers	Has difficulty describing the internet as a resource that runs on a global network of computers
Ability to explain the benefits and challenges of internet in the immediate environment	Appropriately and comprehensively explains the benefits and challenges of internet in the immediate environment	Appropriately explains the benefits and challenges of internet in the immediate environment	Appropriately explains some of the benefits and challenges of internet in the immediate environment	Has difficulty explaining benefits and challenges of internet in the immediate environment

Ability to identify basic requirements for internet connectivity	Correctly and explicitly identifies basic requirements for internet connectivity	Correctly identifies basic requirements for internet connectivity	Correctly identifies some of the basic requirements for internet connectivity	Has difficulty identifying basic requirements for internet connectivity
Ability to explore ways of overcoming the challenges of internet in the immediate environment	Creatively and intelligently explores ways of overcoming the challenges of internet in the immediate environment	Creatively explores ways of overcoming the challenges of internet in the immediate environment	Creatively explores some of the ways of overcoming the challenges of internet in immediate environment	Has difficulty exploring ways of overcoming the challenges of internet in the immediate environment
Ability to connect to the internet to search for a topical issue	Correctly and creatively connects to the internet to search for a topical issue	Correctly connects to the internet to search for a topical issue	Sometimes connects to the internet correctly to search for a topical issue	Has difficulty connecting to the internet to search for a topical issue
Ability to use the internet as a computer network resource	Appropriately and intelligently uses the internet as a computer network resource	Appropriately uses the internet as a computer network resource	Sometimes uses the internet appropriately as a computer network resources	Has challenges using the internet as a computer network resources

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 Computer Networks	**3.4 World Wide Web (WWW)** **(5 Lessons)**	By the end of the sub strand the learner should be able to: a) explain the importance of WWW as used in computer networks b) identify the features of a web browser c) describe the components of a uniform resource locator (URL) used to access resources in the internet d) use a web browser to locate resources in the WWW e) appreciate the use of WWW as a repository of information.	The learner is guided to: • use available learning resources to search for the meaning of the terms World Wide Web (WWW), web browsers, uniform resource locator (URL), • in turns, discuss examples of web browsers (*Explorer, Firefox, Chrome, Netscape, Opera, Safari*) • launch and navigate a web browser to identify its features, • take turns to write URL format: protocol://hostname/other information • participate in giving examples of URL • type a web resource uniform resource locator	1. How are the internet resources accessed? 2. Why are web browsers used?

			(URL), and discuss its components, • take turns to demonstrate how web browsers work, • practise using a web browser to locate relevant internet resources.	

Core competencies to be developed:

- Learning to learn: learners take turns to demonstrate how web browsers work.
- Digital literacy: learner develops connecting skill when using a web browser to search for and share information.

Values

- Peace : learners take turns to demonstrate how web browsers work.

Pertinent and Contemporary Issues (PCIs):

- Citizenship: learner connects to the rest of the world through WWW.

Link to other subjects:

- Life Skills Education: learner uses a web browser to search for relevant topical issues.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to explain the importance of WWW as used in computer networks	Appropriately and clearly explains the importance of WWW as used in computer networks	Appropriately explains the importance of WWW as used in computer networks	Appropriately explains the importance of WWW as used in computer networks	Has difficulty explaining the importance of WWW as used in computer networks

Ability to identify the features of a web browser	Correctly and explicitly identifies the features of a web browser	Correctly identifies the features of a web browser	Correctly identifies some features of a web browser	Has difficulty identifying the features of a web browser
Ability to describe the components of a URL	Correctly and concisely describes the components of a URL	Correctly describes the components of a URL	Correctly describes some of the components of a URL	Has difficulty describing the components of a URL
Ability to use a web browser to locate resources in the WWW	Appropriately and confidently uses a web browser to locate resources in the WWW	Appropriately uses a web browser to locate resources in the WWW	Sometimes uses a web browser appropriately to locate resources in the WWW	Has difficulty using a web browser to locate resources in the WWW
Ability to the use WWW as a repository of information	Correctly and creatively uses the WWW as a repository of information	Correctly uses the WWW as a repository of information	Sometimes uses the WWW correctly as a repository of information	Has challenges using the WWW as a repository of information

STRAND 4.0: COMPUTER PROGRAMMING

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Computer Programming	**4.1 Computer Programming Concepts** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) explain the importance of programming as used in computing b) identify areas where computer programs are used in daily life c) launch and interact with a computer program for awareness d) appreciate using computer programs in performing daily life activities.	The learner is guided to: • use available learning resources to search for the meaning of the terms programming and programs, • in groups, discuss the importance of computer programs, • take turns to discuss areas where computer programs are used in daily life and list them, • share ideas on the use of programming in daily life activities, • in groups, start and interact with a computer program accessory such as, a computer game, calculator, paint, snipping tool, media player and notepad,	1. Why do computers have programs? 2. How are computer programs used in daily life?

			• share experience on performing daily life activities (*playing computer games, listening to music, performing mathematical operations, drawing objects, type text*) using available computer program accessories.	
Core competencies to be developed: • Learning to learn: learner launches and interacts with a computer program for exposure to programming. • Communication and collaboration: learner engagingly shares ideas on the use of programming in daily life activities.				
Values: • Unity: learner shares ideas on the use of programming in daily life.				
Pertinent and Contemporary Issues (PCIs): • Self-esteem: learner launches and interacts with computer programs.				
Link to other subjects: • Integrated Science: learner interacts with computer programs. • Visual Arts: learner plays computer games and draws objects using computer program accessories.				

Assessment Rubric				
Indicators	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
Ability to explain the importance of programming as used in computing	Appropriately and systematically explains the importance of programming as used in computing	Appropriately explains the importance of programming as used in computing	Appropriately explains to some extent the importance of programming as used in computing	Has challenges explaining the importance of programming as used in computing
Ability to identify areas where computer programs are used in daily life	Correctly and explicitly identifies areas where computer programs are used in daily life	Correctly identifies areas where computer programs are used in daily life	Correctly identifies some areas where computer programs are used in daily life	Has challenges identifying areas where computer programs are used in daily life
Ability to launch and interact with a computer program for exposure to programming	Appropriately and confidently launches and interacts with a computer program for exposure to programming	Appropriately launches and interacts with a computer program for exposure to programming	Occasionally launches and interacts with a computer program for exposure to programming	Has challenges launching and interacting with a computer program for exposure to programming
Ability to use computer programs to perform daily life activities	Confidently and intelligently uses computer programs to perform daily life activities	Confidently uses computer programs to perform daily life activities	Sometimes uses computer programs confidently to perform daily life activities	Has challenge using computer programs to perform daily life activities

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Computer Programming	**4.2 Visual Programming Concepts** **(3 Lessons)**	By the end of the sub strand the learner should be able to: a) identify types of visual programming applications for use b) explain the procedure of launching a visual programming application c) launch a visual programming application in a computer d) appreciate navigating a visual programming application interface.	The learner is guided to: • use available resources to search for the meaning of the term visual programming, • discuss and list examples of visual programming applications used in computer programming, • in groups, discuss the procedure of launching a visual programming application, • consult a computer resource person to demonstrate how to launch visual programming applications used in computer programming, • in groups, launch a visual programming application such as Microsoft MakeCode, Scratch, Code.org, Sprite box, • share experiences on navigating the visual programming application interface with peers.	1. Why are visual programming applications used in computing? 2. How are visual programming applications launched ?

Core competencies:

- Self-efficacy: learner navigates a visual programming application interface.
- Learning to learn: learner launches and interacts with a visual programming application.

Values:

- Peace: learners remain calm as they shares experiences on navigating the visual programming application interface with peers.

Pertinent and Contemporary Issues (PCIs):

- Peer education: learner consults peers to demonstrate how to launch visual programming applications used in computer programming.

Link to other subjects:

- Integrated Science: learners follow instructions when launching visual programming applications used in computer programming

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify types of visual programming applications for use	Appropriately and exactly identifies types of visual programming applications for use	Appropriately identifies types of visual programming applications for use	Occasionally identifies types of visual programming applications for use	Has challenges identifying types of visual programming applications for use

Ability to explain the procedure of launching a visual programming application	Correctly and clearly explains the procedure of launching a visual programming application	Correctly explains the procedure of launching a visual programming application	Sometimes explains the procedure of launching a visual programming application	Has challenges explaining the procedure of launching a visual programming application
Ability to launch a visual programming application in a computer	Correctly and perfectly launches a visual programming application in a computer	Correctly launches a visual programming application in a computer	Sometimes launches a visual programming application in a computer	Has difficulty launching a visual programming application in a computer
Ability to navigate a visual programming application interface	Appropriately and confidently navigates a visual programming application interface	Appropriately navigates a visual programming application interface	Attempts to navigate a visual programming application interface	Has difficulty in navigating a visual programming application interface

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
4.0 Computer Programming	**4.3 Visual Programming Features** **(9 Lessons)**	By the end of the sub strand the learner should be able to: a) explore the features of a visual programming application b) relate the features of a visual programming application to their function c) describe terminologies used in a visual programming application d) use the features of a visual programming application to create a sequence of instructions e) appreciate the application of the features of a visual programming	The learner is guided to: • in groups, discuss the features of a visual programming application • discuss the functions of the features of a visual programming application • match the functions of the features of a visual programming application to their functions • in turns, discuss and demonstrate the use of visual programming terms *(reserved words, syntax, variables, input output statements, control structures, variable declarations)*. • in groups, create a sequence of actions using the features of a visual programming application *(animations, sound)*	1. Why is visual programming popular in introducing computer programming? 2. How are visual programming application features used?

		application to create a sequence of instructions	• share experience on the use of the features of a visual programming application	

Core competencies:

- Learning to learn: learner shares experience on the use of the features of a visual programming application.
- Creativity and imagination: learner creates animations and sounds using the features of a visual programming application.

Values:

- Unity: learner discusses the features of the visual programming application with peers.

Pertinent and Contemporary Issues (PCIs):

- Peer learning: learner uses features of a visual programming application to create animations and sound.

Link to other subjects:

- Life Skills Education: learner uses the features of visual programming applications to create animations and sounds.

Assessment Rubric

Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to explore the features of a visual programming application	Correctly and confidently explores the features of a visual programming application	Correctly explores the features of a visual programming application	Correctly explores some features of a visual programming application	Has challenges exploring the features of a visual programming application

Ability to relate the features of a visual programming application to their function	Appropriately and accurately relates the features of a visual programming application to their function	Appropriately relates the features of a visual programming application to their function	Appropriately relates some features of a visual programming application to their function	Has challenges relating the features of a visual programming application to their function even with assistance
Ability to describe terminologies used in a visual programming application	Appropriately and clearly describes terminologies used in a visual programming application	Appropriately describes terminologies used in a visual programming application	Appropriately describes some terminologies used in a visual programming application	Has challenges describing terminologies used in a visual programming application
Ability to use the features of a visual programming application to create a sequence of instructions	Correctly and creatively uses the features of a visual programming application to create a sequence of instructions	Correctly uses the features of a visual programming application to create a sequence of instructions	Correctly uses some features of a visual programming application to create a sequence of instructions	Has challenges using the features of a visual programming application to create a sequence of instructions
Ability to apply the features of a visual programming application to create a sequence of instructions	Appropriately and confidently applies the features of a visual programming application to create a sequence of instructions	Appropriately applies the features of a visual programming application to create a sequence of instructions	Applies some of the features of a visual programming application to create a sequence of instructions	Has challenges applying the features of a visual programming application to create a sequence of instructions

GUIDELINES ON COMMUNITY SERVICE LEARNING CLASS ACTIVITY

Community Service Learning (CSL) is an experiential learning strategy that integrates classroom learning and community service to enable learners reflect, experience and learn from the community. CSL is expected to benefit the learner, the school and local community. Knowledge and skills on how to carry out a CSL project have been covered in Life Skills Education (LSE).

All learners in Grade 7 will be expected to participate in only one CSL class activity. The activity will give learners an opportunity to practise the CSL project skills covered under LSE. This activity will be undertaken in groups for purposes of learning. Learners will be expected to apply knowledge and skills on steps of the CSL project to carry out an activity of their choice as per the guidelines provided in the template. The learning will take the form of a whole school approach, where the entire school community will be engaged in the learning process. Teachers will guide learners to execute a simple school based integrated CSL class activity. This activity can be done in 4 to 6 weeks outside the classroom time.

CSL Skills to be covered:

i) **Research :** Learners will develop research skills as they investigate PCIs to address the activity, ways and tools to use in collecting the data, manner in which they will analyse information and present their findings.
ii) **Communication:**Learners will develop effective communication skills as they engage with peers and school community members. These will include listening actively, asking questions, presentation using varied modes, etc.
iii) **Citizenship: :** Learners will be able to explore opportunities for engagement as members of the school community and providing a service for the common good.
iv) **Leadership**: Learners develop leadership skills as they take up various roles within the CSL activity.
v) **Financial Literacy Skills:** Learners consider how they can undertake the project as well as sourcing and utilising resources effectively and efficiently.
vi) **Entrepreneurship**: Learners consider ways of generating income through innovation for the CSL class activity.

Suggested PCIs	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
The learners will be guided to consider the various PCIs provided in the various subjects in Grade 7 and choose one suitable to their context and reality	By the end of the CSL class activity, the learner should be able to: a) identify a problem in the school community through research, b) plan to solve the identified problem in the community, c) design solutions to the identified problem, d) implement solution to the identified problem, e) share the findings with relevant actors, f) reflect on own learning and relevance of the project, g) appreciate the need to belong to a community	The learner is guided to: ● brainstorm on issues/pertinent and contemporary issues in their school that need attention ● choose a PCI that needs immediate attention and explain why ● discuss possible solutions to the identified issue ● propose the most appropriate solution to the problem ● discuss ways and tools they can use to collect information on a problem (questionnaires, interviews, observation) ● develop tools for collecting the information/data ● identify resources they need for the activity ● collect information/data using various means ● develop various reporting documents on their findings	1. How does one determine community needs? 2. Why is it necessary to be part of a community? 3. What can one do to demonstrate a sense of belonging?

		● use the developed tools to report on their findings ● implement the project ● collect feedback from peers and school community regarding the CSL activity ● share the report on activity through various media to peers and school community ● discuss the strengths and weaknesses of implemented project and lessons learnt ● reflect on how the project enhanced own learning while at the same time facilitated service on an issue in the school community	

Assessment Rubric				
Indicator	**Exceeds Expectations**	**Meets Expectations**	**Approaches Expectations**	**Below Expectations**
The ability to identify and analyse a pertinent issue in society to be addressed	Learner critically defines and elaborately discusses a pertinent issue to be addressed.	Learner defines and discusses a pertinent issue to be addressed.	Learner defines and discusses a pertinent issue to be addressed with minimal support.	Learner requires support to critically examine and select the appropriate issue.
The ability to plan to solve the identified problem	Learner correctly and systematically establishes resources needed, develops plans, assigns responsibilities, and generates data on the CSL project.	Learner correctly establishes resources needed, develops plans, assigns responsibilities, and generates data on the CSL project.	Learner sometimes establishes resources needed, develops plans, assigns responsibilities, and generates data on the CSL project.	Learner has difficulty establishing resources needed, developing plans, assigning responsibilities and generating data on the CSL project.
The ability to design solutions to the identified problem and implement them	Learner constantly applies the knowledge and skills gained in subjects to address the identified issue.	Learner applies the knowledge and skills gained in subjects to address the identified issue.	Learner applies the knowledge and skills gained in subjects to address the identified issue with some support.	Learner requires a lot of prompting to apply the knowledge and skills gained in subjects to address the identified issue.

Ability to share findings with relevant actors	Learner comprehensively and confidently shares findings of the issue addressed in the activity.	Learner confidently shares findings of the issue addressed in the activity.	Learner shares some of the findings of the issue addressed in the activity.	Learner briefly shares findings of the issue addressed in the activity, lacks necessary details.
The ability to reflect on own learning and relevance of the activity	Learner distinctively and clearly outlines the benefits of the CSL activity on the target community and own learning.	Learner clearly outlines the benefits of the CSL activity on the target community and own learning.	Learner outlines the benefits of the CSL activity on the target community and own learning, a few unclear.	Learner struggles to outline the benefits of the CSL activity on the target community and own learning.

APPENDIX 1: LIST OF ASSESSMENT METHODS, LEARNING RESOURCES AND NON-FORMAL ACTIVITIES

Strand	Sub Strand	Suggested Assessment Methods	Suggested Learning Resources	Suggested Non-Formal Activities
1.0 Foundation of Computer Science	1.1 Computer concepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, computer hardware, manilla papers, Internet,video, audio clips, models, checklists	Assist members in the community how to use computers in various areas such as (*education, business, banking, government, home, marketing, healthcare, engineering design, manufacturing*).
	1.2 Evolution of computers	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records,	Digital devices, reference materials, productivity tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips	Discuss the development of computers in respect to contemporary technology during clubs

		observation schedules, checklists		
	1.3 Generations of computers	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips	Discuss trends in the development of computers during club activities. Prepare charts showing comparisons of technologies used in different computer generations and display in a learning environment
	1.4 Classification of computers	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video	Demonstrate how to use embedded computers (*ATM machines, MP3 players, DVD players, Drones, Anti-lock braking system, Digital watches, Microwaves)* during clubs

	1.5 Computer user environment	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, , learner's profile, written tests, anecdotal records, observation schedules, checklists	reference materials, computer software (*OS, Utility software and Application programs*), computer hardware, Internet,video, adaptable locally available materials, models	Sensitise community members on how to observe safety precautions using computers
	1.6 Physical parts of a computer	rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	Visit community computer centres and assist in connecting physical parts of newly purchased computers
	1.7 Hands-on skills	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview	Digital devices, reference materials, productivity tools, computer software (*OS, Utility software and Application*	Assist in typing programs to be used during community activities. Participate in a competition involving

		schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	*programs*), computer hardware, manilla papers, Internet,video, audio clips, checklists	the use of computer keyboard and pointing devices: *typing a simple text, multiplying numbers, drawing diagrams*
	1.8 Computer systems overview	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules	Digital devices, reference materials, productivity tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video	Debate on the importance of computer systems in society during clubs
	1.9 Hardware concepts	portfolios, oral questions, aural questions, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, computer hardware, manilla papers	Sensitise community members on the uses of computer hardware
	1.10 Input devices	rubrics, questionnaires,	Digital devices, reference materials,	Deliberate on the factors to consider

		portfolios, oral questions, learner's profile, written tests, anecdotal records, observation schedules, checklists	computer hardware, manilla papers, Internet,video, audio clips	when selecting an input device with different forums
	1.11Central Processing Unit (CPU)	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests	Digital devices, reference materials, computer hardware, manilla papers, Internet,video, audio clips	Share a video simulation of the functional organisation of the CPU during computer club activities
	1.12 Output devices	rubrics, questionnaires, portfolios, oral questions, aural questions, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, checklists	During social gatherings, share ideas on how to assess user computing needs and select appropriate input devices for different situations
	1.13 Ports and Cables	Rating scales, rubrics, questionnaires,	Digital devices, reference materials,	Demonstrate to community members

		projects, journals, portfolios, oral questions, aural questions, learner's profile, written tests, anecdotal records, observation schedules, checklists	computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	how to connect cables to their respective ports
	1.14 Computer Setup	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, Internet,video, audio clips, adaptable locally available materials, models, checklists	Educate community members on how to set up computers
2.0 Computer and Society	2.1 Physical Safety of Computers	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral	Digital devices, reference materials, productivity tools, visual programming	Demonstrate in a community forum how to organise workstation

		questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	to minimise health complications when using computers
	2.2 Health and Safety	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	Participate actively in communal activities which educate society on health and safety of computer use

	2.3 Repetitive Strain Injury (RSI)	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	Sensitise peers on the appropriate strategies of preventing repetitive strain injury when using a computer
	2.4 Data Safety in Computers	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio	Sensitise community members on data safety best practices that ensure security of data in a computer

			clips, adaptable locally available materials, models, checklists	
	2.5 Online Safety Concepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet,video, audio clips, adaptable locally available materials, models, checklists	Discuss in a forum safety measures to observe when online *(not sharing, pictures, location, securing profiles*)
	2.6 Online Identity Safety	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests,	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*),	Sensitise community members on the importance of safeguarding personal and sensitive data when online

		anecdotal records, observation schedules, checklists	computer hardware, manilla papers, Internet, video, audio clips, adaptable locally available materials, models, checklists	
3.0 Computer Networks	3.1 Computer Network Concepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio clips, adaptable locally available materials, models, checklists	Sensitise community members on the benefits of computer networks in society
	3.2 Connecting to Computer Network	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural	Digital devices, reference materials, productivity tools, visual programming tools, computer	Demonstrate to social gatherings how to connect to computer network

		questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio clips, adaptable locally available materials, models, checklists	
	3.3 Internet Concepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio clips, adaptable locally available materials, models, checklists	Debate on the uses of internet during clubs

	3.4 World Wide Web (WWW)	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio clips, adaptable locally available materials, models, checklists	Demonstrate how web browsers work to congregations of community members
4.0 Computer Programming	4.1 Computer Programming Concepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), computer hardware, manilla papers, Internet, video, audio	Share experience with the community members on how to perform daily life activities (*playing computer games, listening to music, performing mathematical operations, drawing objects, type text*)

			clips, adaptable locally available materials, models, checklists	using available computer program accessories
	4.2 Visual ProgrammingConcepts	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, interview schedules, learner's profile, written tests, anecdotal records, observation schedules, checklists	Digital devices, reference materials, productivity tools, visual programming tools, computer software (*OS, Utility software and Application programs*), Internet, video, audio clips, adaptable locally available materials	Demonstrate to community members how to navigate the visual programming application interface
	4.3 Visual Programming Features	Rating scales, rubrics, questionnaires, projects, journals, portfolios, oral questions, aural questions, learner's profile, written tests, anecdotal records, observation schedules, checklists	Reference materials, productivity tools, visual programming tools, computer software computer hardware, Internet,video, audio clips, adaptable locally available materials, models, checklists	Create a sequence of actions using the features of a visual programming application *(animations, sound)* during club activities