

ACCELERATED EDUCATION PROGRAMME

ICT

SYLLABUS

REVISED LOWER SECONDARY (Level 1 and 2)



MINISTRY OF
EDUCATION
AND SPORTS

REPUBLIC OF UGANDA



NCDC

NATIONAL CURRICULUM
DEVELOPMENT CENTRE

ACCELERATED EDUCATION PROGRAMME

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REVISED LOWER SECONDARY (Level 1 and 2)



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AND SPORTS





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Foreword

Education is a fundamental tool for the protection of conflict- and disaster-affected children and youth from harm and exploitation. This is a crucial part of UNESCO's advocacy messages. Under appropriate conditions of security, the provision of education can help protect children and youth from recruitment into fighting forces, forced labour, prostitution, drug abuse and other criminal activities. In post-conflict settings, education contributes to the reintegration into society of former soldiers and other children and youth associated with fighting forces.

Uganda's Education Act of 2008, in Part IX, Miscellaneous Provisions 49, clearly states that "there shall be non-formal education centres" for purposes of providing non-formal education.

Examples of non-formal education programmes include Accelerated Education Programmes (AEPs) for the conflict areas at both primary and secondary levels, Alternative Basic Education for Karamoja (ABEK), Basic Education for Urban Poverty Areas (BEUPA), Complementary Opportunity for Primary Education (COPE) and Child-Centred Alternative Non-Formal Community Based Education (CHANCE), among others.

The National Curriculum Development Centre (NCDC), in collaboration with War Child Canada, embraced the Accelerated Education Programme (AEP) and has condensed the lower secondary curriculum to come up with the Lower Secondary Accelerated Education Programme appropriate to learners in refugee camps and the host communities of secondary school age (ages 16–45+).

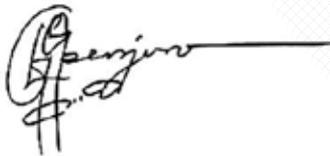
The AEP at lower secondary school level focuses on completing learning in a shorter period of time, i.e., two years. The AEP is complementary both in providing an alternative route and in matching its curriculum to the 'official' curriculum, thus allowing learners to return to formal schooling at an opportune stage.

The programme intends to promote access to education in an accelerated timeframe for disadvantaged groups, out-of-school and over-age children, and youth who missed out or had their education interrupted owing to poverty, violence, conflict or any calamity.

The goal of this programme is to provide learners with competencies equivalent to those in the formal system in an accelerated time frame, with learners either transitioning back into the mainstream education or exiting with some of the competencies required for work.

It is my hope that AEP will register considerable success in meeting the educational needs of these underserved populations not only in terms of access and equity, but also in helping them return to school and complete the education cycle, and especially in getting measurable learning outcomes.

I recommend the AEP and trust that the materials will be valuable in your endeavour to meet the educational needs of the refugee learners and other beneficiaries from the host communities.



Prof. George Openjuru
CHAIRPERSON
NCDC Governing Council

Acknowledgement

National Curriculum Development Centre (NCDC) would like to express gratitude to all those who, in one way or another contributed and worked tirelessly towards the development of this Accelerated Education Programme (AEP) syllabus. Special thanks go to War Child Canada – Uganda for the financial support, their guidance in overseeing and taking timely decisions whenever necessary during the development and production of this AEP ICT syllabus.

We also express our gratitude to NCDC ICT subject specialist and panel members for their professional guidance and technical assistance. Their efforts are invaluable towards having this curriculum and for improved quality of AEP in Uganda.

NCDC takes responsibility for any shortcomings that may be identified in this syllabus and welcomes suggestions for addressing the inadequacies. Such comments and suggestions may be communicated to NCDC through; P.O. Box 7002, Kampala, E-mail Address: admin@ncdc.go.ug or NCDC website: www.ncdc.go.ug



Dr. Grace K. Baguma

Director

National Curriculum Development Centre

LIST OF ABBREVIATIONS

CD	Compact Disc	LAN	Local area network
CD-R	Compact Disc Recordable	LCD	Liquid Crystal Display
CD-ROM	Compact Disc Read Only Memory	LED	Light Emitting Diode
CD-RW	Compact Disc Re- Writable	MAN	Metropolitan Area Network
CPU	Central Processing Unit	MICR	Magnetic Ink Character Recognition
CRT	Cathode Ray Tube	MP3	MPEG Layer 3
DBMS	Database Management System	MySQL	My Structured Query Language
DSL	Digital Subscriber Line	NIC	Network Interface Card
DTP	Desktop publishing	NOS	Network Operating System
DVD	Digital Versatile Disc	OCR	Optical Character Recognition
GIF	Graphic Interchange Format	OMR	Optical Mark Recognition
GIGO-	Garbage in Garbage Out	OMR	Optical Mark Reader
GPS	Global Positioning System	OOP	Object Oriented Programming

GUI	Graphical User Interface	OSI	Open Systems Interconnection
GW	Gateway	PCI	Peripheral Component Interconnect
HCI	Human Computer Interaction	PDA	Personal Digital Assistant
HTML	Hypertext Mark-up Language	POS	Point of Sale
HTTP	Hypertext Transfer Protocol	PPM	Pages Per Minute
ICT	Information and Communication Technology	RAM	Random Accesses Memory
IP	Internet Protocol	ROM	Read Only Memory
IRC	Internet Relay Chat	SQL	Structured Query Language
ISDN	Integrated Services Digital Network	TCP	Transmission Control Protocol
ISP	Internet Service Provider	URL	Uniform Resource Locator
JPEG	Joint Photographic Experts Group	USB	Universal Serial Bus
KB	Kilobyte	VGA	Video Graphics Array
KUSVA	Knowledge Understanding Skills Values Attitude	WAN	Wide Area Network
MHz	Mega Hertz	WAP	Wireless Application Protocol

Introduction

The UNESCO Education Strategy (2014 – 2021) advocates for a humanistic and holistic vision of education as a fundamental human right that is essential to personal and socio-economic development. UNESCO further recommends societies that are just, inclusive, peaceful and sustainable by 2030. Vision 2040 of Uganda aims to transform Uganda into a modern and prosperous country, while the National Development Plan III (NDPIII) recognises the existing weaknesses in education, including the low efficiency and variable quality at the Secondary level. Furthermore, NDPIII focuses on enhancement of human capital, development, strengthening mechanisms for quality, effective and efficient service delivery as well as improvement of quality and relevance of skills development.

The Sustainable Development Goal 4 advocates for inclusive and quality education. The NRM Manifesto (2016-2021), emphasises continuous assessment examination systems, strengthening soft skills, which promote self-esteem, conscientiousness and a generally positive attitude to work, promoting e-learning and computer literacy in order to enhance learning outcomes.

The above aspects are lacking and where they exist, it is at a minimum level in implementation of the curriculum.

In alignment with the above policies, the Education and Sports Sector Strategic Plan (2017/20) advocates for delivery of equitable, relevant and quality education for all. The current Secondary school curriculum for Uganda, although highly regarded, has focused on the needs of a small academically oriented elite leaving out the needs of the majority of learners. The Ministry of Education and Sports (MoES) through the National Curriculum Development Centre (NCDC) therefore, undertook a review of the Lower Secondary Curriculum, aimed at providing a learning environment, opportunities, interactions, tasks and instructions that foster deep learning by putting the learner at the centre of the learning experience. This is in line with the following aims of secondary education in Uganda:

The aims of Secondary education in Uganda are to:

- Instil and promote national unity, an understanding of the social and civic responsibilities, strong love and care for others and respect for public property, as well as an appreciation of international relations and beneficial international co-operation;
- Promote an appreciation and understanding of the cultural heritage of Uganda including its languages;
- Impart and promote a sense of self discipline, ethical and spiritual values, personal and collective responsibility and initiative;
- Enable individuals to acquire and develop knowledge and an understanding of emerging needs of society and the economy;
- Provide up-date and comprehensive knowledge in theoretical and practical aspects of innovative production, modern management methods in the field of commerce and industry and their application in the context of socio-economic development of Uganda;
- Enable individuals to develop basic scientific, technological, technical, agricultural and commercial skills required for self-employment;
- Enable individuals to develop personal skills of problem solving, information gathering and interpretation, independent reading and writing, self-improvement through learning and development of social, physical and leadership skills such as are obtained through games, sports, societies and clubs;
- Lay the foundation for further education;
- Enable the individual to apply acquired skills in solving problems of community, and to develop a strong sense of constructive and beneficial belonging to that community;
- Instil positive attitudes towards productive work and strong respect for the dignity of labour and those who engage in productive labour activities;
- Develop a positive attitude towards learning as a lifelong process.

The Rationale of AEP ICT syllabus

The Accelerated Education Programme (AEP) intends to promote access to education in an accelerated timeframe for disadvantaged groups, out of school and over-age children, and youths who missed out or had their childhood interrupted due to poverty, violence, conflict, and crisis.

Therefore, this syllabus is to provide the learners with competencies equivalent to those in the mainstream **Competency-based Curriculum** in an accelerated timeframe, with the option available for the learners to either transit back into the mainstream education or exist with some competencies required for the world of work.

The Competency Based Curriculum

In the competency-based approach, the “student” becomes a “learner”. The Learning Outcomes can only be achieved through active engagement in the learning process rather than simply absorbing knowledge given by the teacher. The teacher needs to build on the learners’ own knowledge and experience and create learning activities through which learners can explore the meaning of what is being learned and understand how it is applied in practical situations. Teaching and learning becomes a two-way process of dialogue between the teacher and learners. Learners also learn from one another through discussions. Assessment also becomes a two-way process of formative and summative assessment; not just to give grades but to find out problems the learners may be having and help to solve them.

Rationale for Teaching Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is a critical and topical issue in the modern times and a key requirement for learning in the 21st Century.

The syllabus is designed to help the learner to:

- a) Acquire basic ICT literacy skills
- b) Use ICT as a tool for learning in other subjects
- c) Acquire the appropriate knowledge and skills for applying ICT skills in other areas like education, business and peace building
- d) Use the technology to communicate effectively
- e) Access and share information through the use of technology
- f) Follow basic ethics in the use of ICT tools
- g) Use ICT devices and technologies such as social media platforms to promote peace and friendship, and resolve injustice in nonviolent ways.

For effective learning, the learner is encouraged to:

- a) Be responsible for their own learning
- b) Think for themselves and form their own ideas and opinions
- c) Become critical thinkers, ready to face new challenges and situations for themselves

The Revised AEP Curriculum

This curriculum focuses on four “Key Learning Outcomes” of: self – assured individuals; responsible and patriotic citizens; lifelong learners; positive contributors to society.

The curriculum emphasises knowledge, application, and behavioural change. It is based on a clear set of values which must be imparted to learners during the learning process.

At the heart of every subject, there are generic skills that allow development into life-long learners. Besides, there are also cross-cutting challenges that are embedded across subjects to enable learners understand the connections between the subjects and complexities of life.

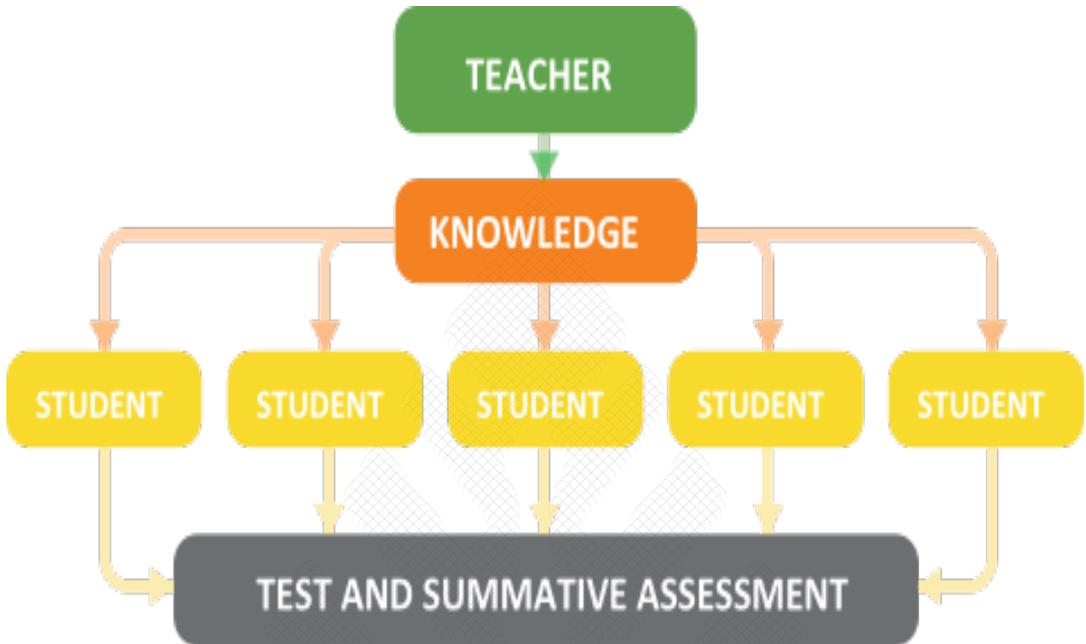
Key Changes

The key change in the new curriculum is a move from a knowledge-based curriculum to a competence and skill- based curriculum. It is no longer sufficient to accumulate large amounts of knowledge. Young people need to develop the ability to apply their learning with confidence in a range of situations. They need to be able to use knowledge creatively. A level of competence is the ability to use knowledge rather than just to acquire it. This requires an active, learner-centred rather than passive, teacher-centred approach.

This approach to teaching and learning is in support of the Sustainable Development Goals (SDG’s), otherwise known as the Global Goals. These are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The key changes in the curriculum will ensure that Uganda is making good progress towards SDG 4 in particular which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

The change can be summarised in the following diagrams.

The previous Knowledge-based Curriculum



Knowledge-based teaching was based on transferring knowledge from the teacher to the students.

The teacher had knowledge and transferred this knowledge to the students by lecturing, talking, asking them to read the textbook or writing notes on the board for the students to copy and learn. Students acquired the knowledge, often without fully understanding it, and were tested at the end of a unit, term, or school course to see if they had remembered it.

The knowledge was based mainly on the knowledge in the subjects traditionally taught at university, and little attempt was made to make it relevant to young people's own lives.

The whole education system was seen by many people as a preparation for university, but many learners do not reach university. The new curriculum will cater for this majority as well as those who later go on to university.

The New Competency-based curriculum



In the new competence-based approach, the “student” becomes a “learner”. The new Learning Outcomes can only be achieved through active engagement in the learning process rather than simply absorbing knowledge given by the teacher.

The teacher needs to build on the learners’ own knowledge and experience and create Learning Activities through which learners can explore the meaning of what is being learned and understand how it is applied in practical situations. Teaching and learning becomes a two-way process of dialogue between the teacher and learners. Learners also learn from each other through discussion. Assessment also becomes a two-way process of formative and summative assessment; not just to give grades but to find out problems the learners may be having and help to solve them.

Key Learning Outcomes

This curriculum sets out Key Learning Outcomes that sum up the expectations of the curriculum as a whole and sets out clearly the qualities that young people will develop.

By the end of the educational process, young people will become:

1) **Self-assured individuals who:**

- a) Demonstrate self- motivation, self-management, and self-esteem.
- b) Know their own preferences, strengths, and limitations.
- c) Adjust their behaviour and language appropriately to different social situations.
- d) Relate well to a range of personality types.

2) **Responsible and patriotic citizens who:**

- a) Cherish the values promoted in the curriculum.
- b) Promote the development of indigenous cultures and languages and appreciate diversity, equity, and inclusiveness.
- c) Apply environmental and health awareness when making decisions for themselves and their community.
- d) Are positive in their own identity as individuals and global citizens.
- e) Are motivated to contribute to the well-being of themselves, their community, and the nation.

3) **Lifelong learners who:**

- a) Can plan, reflect, and direct their own learning.
- b) Actively seek lifelong learning opportunities for personal and professional development.

4) **Positive contributors to society who:**

- a) Have acquired and can apply the Generic Skills.
- b) Demonstrate knowledge and understanding of the emerging needs of society and the economy.
- c) Understand how to design, make, and critically evaluate products and processes to address needs.
- d) Appreciate the physical, biological, and technological world and make informed decisions about sustainable development and its impact on people and the environment.

Values

This curriculum is based on a clear set of values. These values underpin the whole curriculum and the work of schools. They are also the values on which learners need to base their lives as citizens of Uganda. The values are derived from The Uganda National Ethics and Values Policy of 2013. They are:

- a) Respect for humanity and environment
- b) Honesty; always uphold and defend the truth.
- c) Justice and fairness in dealing with others.
- d) Hard work for self-reliance
- e) Integrity; moral uprightness and sound character
- f) Creativity and innovativeness
- g) Social Responsibility
- h) Social Harmony
- i) National Unity
- j) National Consciousness and patriotism

These values are not taught directly in lessons, nor will they be assessed, but they will inform and shape all teaching and learning.

Generic Skills

The generic skills also known by several other names, including key skills, core skills, essential skills, key competencies, necessary skills, transferable skills, and employability skills are versatile skills that have wide applicability across various jobs, education, and life situations, contributing to personal and professional success and societal well-being.

Changes in the modern workplace brought about by technology, management innovations, and increased competition in the global marketplace, have led to many concerns about the adequacy of workforce skills. In response to calls to reform education to better prepare young people for the future workforce, changes to the curriculum have emphasised the teaching of general skills (e.g. problem solving, creativity, critical thinking, communication, collaboration).

For this reason, generic skills lie at the heart of every subject. Apart from enabling learners to access and deepen learning across the curriculum, generic skills allow young people to develop into lifelong learners who can adapt to change and cope with the challenges of life in the 21st Century.

Young people need to be able to think critically and solve problems at school, work, and home. They need to be creative and innovative in their approach to learning and life. They must be able to communicate well in all forms, cooperate with others and work independently. They must also be able to use functional mathematics and ICT effectively.

01 Critical thinking and problem-solving skills

- a) Plan and carry out investigations
- b) Sort and analyse information
- c) Identify problems and ways forward
- d) Predict outcomes and make reasonable decisions
- e) Evaluate different solutions

03 Co-operation and self-directed learning

- a) Work effectively in diverse teams
- b) Interact effectively with others
- c) Take responsibility for own learning
- d) Work independently with persistence
- e) Manage goals and time

02 Creativity and innovation

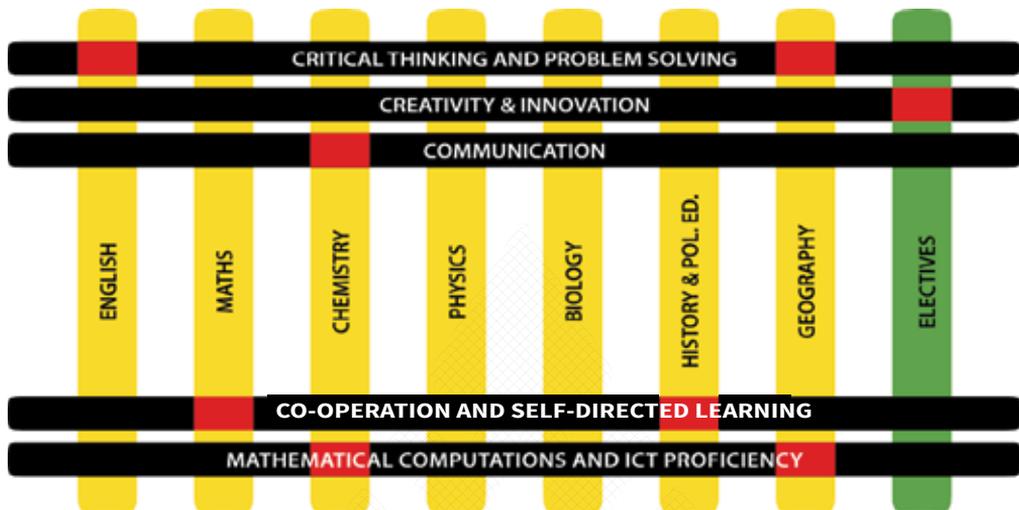
- a) Use the imagination to explore possibilities
- b) Work with others to generate ideas
- c) Suggest and develop new solutions
- d) Try out innovative alternatives
- e) Look for patterns and make generalisations

04 Communication

- a) Listen attentively and with comprehension
- b) Talk confidently and explain opinions/ideas clearly
- c) Read accurately and fluently
- d) Write and present ideas coherently
- e) Use a range of media to communicate ideas

05 Mathematical computation and ICT proficiency

- a) Use numbers and measurements accurately
- b) Interpret and interrogate mathematical data
- c) Use mathematics to justify and support decisions
- d) Use technology to create, manipulate and process information
- e) Use technology to collaborate, communicate and refine one's work



Generic skills within ICT

These skills are not separate subjects in themselves; they are developed within the subjects of the curriculum. They also help learning within those subjects. It is when these generic skills are deployed that learning is most effective.

The generic skills are a key part of the curriculum. They have been built into the syllabuses for each of the Subjects, and these Subjects provide the context for the skill development. ICT provides a rich context for learners to communicate, co-operate, and to think critically, calculate and solve problems.

The Subjects also provide the contexts for progression within the skills. The same skill definitions apply to all year groups, and skills progression is provided by the increasing complexity of the subject matter within each Subject.

For example, within ‘critical thinking’, learners begin thinking critically about the relatively simple subject matter in level 1 and then progress to thinking about the much more complex matters in level 2. Thus, the progression is in the increasing complexity of the matters being thought about.

There are some issues that young people need to learn about, but which are not confined to one Subject. These are the ‘Cross-cutting Issues’ and they need to be studied across the Subjects. These issues develop learners’ understanding of the connections between the Subjects, and the complexities of life.

The Cross-cutting Issues identified in the curriculum are:

- 1) Environmental awareness
- 2) Health awareness
- 3) Life skills
- 4) Mixed abilities and involvement
- 5) Socioeconomic issues
- 6) Citizenship and patriotism

Cross-cutting issues have also been built into the syllabuses of each Subject. The way in which they operate within the Subject is very similar to the generic skills. ICT provides a very good context for considering life skills and all forms of awareness, and to understand the complex and diverse world in which we live.

ICT Integration

ICT is embedded as a learning/teaching tool. ICT integration framework is summarized below and cuts across all the subjects on the curriculum.

CATEGORY OF A TASK IN THE SYLLABUS	ICT APPLICATION (HOW ICT WILL BE INTEGRATED FOR THE TASK CATEGORY)
Field works	Use of cameras to take photos and record videos
Presentations in class	Use presentation application
Key words and meanings	Use online dictionary or search online
Drawing/graphics	Use publishing software, Word processor
Role play, narrations	Use audio and video recordings
Demonstrations	Use audio and video recordings and simulations
Locating and putting marks on an area	Use digital/online mapping
Present findings in graphic and written format	Use desktop publishing software or word processor
Showing data charts	Use spreadsheet software
Group discussions	Mind-mapping software
Search for extra reading materials	Download files on Internet or by sharing
Writing equations and formulas	Use equation editors
Carrying out academic research	Using the Internet and other academic applications like “Encarta”, “Britannica,” etc.
Sharing or learning with people across the world	Forming learning networks, formation of blogs, social media, emails, etc.

Duration of the Programme

The syllabus has been designed to cater for two years which are called levels I and II. ICT is allocated 3 hours per week for 12 weeks. Out of these, at least 2 hours are for normal class lessons per week while 10 hours (about 1 hour per week) are reserved for the project in the term. Learners shall do 1 project per term. A sample timetable is provided below.

SAMPLE AEP TIMETABLE

Time/Day	MON	TUE	WED	THUR	FRI
8:00 – 9:00	Eng	Math	Bio	Psche	Chem
9:00 – 10:00	Phy	Chem	ICT	Eng	Hist
10:00 – 11:00	Hist	Ent	Math	Bio	Phy
11:00 – 11:30	BREAK				
11:30 – 12:30	Re	ICT	Geo	Mtc	Eng
12:30 – 1:30	Bio	Phy	Ent	Geo	RE
1:30 – 2:30	LUNCH				
2:30 -3:30	Research	Projects	Co-curricular	Extra-curricular	

N.B This is a proposed timetable. School Management may adjust the activities. within 2:30 - 3:30pm depending on the school and community schedules.

Suggested teaching/learning methods for AEP Syllabus

The suggested teaching/learning methods below are general for delivering the AEP ICT syllabus. The teacher / facilitator chooses the appropriate method (s) for a particular topic.

- 1) Reading Sessions
- 2) Brainstorming
- 3) Learning contracts
- 4) Think-pair
- 5) Teacher exposition
- 6) Guided discovery
- 7) Watching of videos
- 8) Project-based learning
- 9) Listening to audios and Presentations

Learning and Assessing through Projects

Projects are meant to empower development of learners' innovativeness and creativity to address societal challenges and to appreciate learned competencies for advancement of life. ICT for contributing to the prevention of violence in community and homes. They are done either individually or in groups depending on the nature of the project. However, at school level the project ideas shall be identified and developed by the learners in alignment with the themes under the guidance of the teacher in consultation with resource persons (for example. job-related practitioners/experts). Projects shall be based on themes provided in the programme planner. The themes shall be reflecting national concerns. For instance, from the theme (Publication) a learner or a group of learners may choose a project to design a school's digital (online or offline) and physical school magazine. Throughout the project lifetime, the teacher is expected to:

- 1) Make observations.
- 2) Hold conversations
- 3) Provide guidance and support the learner
- 4) Keep records
- 5) Receive a product and report.

Integration of Special Needs Education (SNE)

In education system, learners of different abilities study together in the same class and in some developed countries, they are taught separately. In whatever case, the following methods are important when handling the SNE learners.

Category of impairments	SNE Teaching Methods
Blind learners: Learners who cannot see totally	<ul style="list-style-type: none"> • Through touching • Use of brails • Recorded / audio materials
Low vision learners: Learners who cannot see properly	<ul style="list-style-type: none"> • Use of large print materials • Use of bold teaching materials • Right placement of learners
Deaf learners: Learners who do not hear at all	<ul style="list-style-type: none"> • Use sign language • Total communication • Use of illustrations
Hard of hearing learners: Learners who fairly hear	<ul style="list-style-type: none"> • Total communication • Speak loudly • Right placement of learners • Use of illustrations • Being more practical
Dyslexic learners: Learners with reading difficulties	<ul style="list-style-type: none"> • Use less written content • Talk more than writing • Breaking tasks into simple steps • Repetition in teaching • Use of audio recordings
Time takers	<ul style="list-style-type: none"> • Give extra time • Use remedial classes
Hyper learners: Learners with attention deficit	<ul style="list-style-type: none"> • Use of timely breaks in teaching.
Gifted learners:	<ul style="list-style-type: none"> • Involve them in extra work • Use of suitable challenging tasks
Physically handicapped	<ul style="list-style-type: none"> • Use of head pointers • Training to use available limbs • Creating special sitting arrangements in class

SYLLABUS PROGRAMME PLANNER

The syllabus consists of 12 topics distributed across 4 thematic areas for the two-year (level) programme, with a project to be done in each term. Each level (year) in the Accelerated Education programme is equivalent to two years in the standard school curriculum.

The programme planner presents the order in which the topics are sequenced for each term of the year for the entire two-year (level) programme of study. It also shows the number of hours allocated to each topic.

LEVEL ONE	Theme	Topic	Time (Hours)
Term 1	Computer Systems	Introduction to ICT	8
	Computer Systems	Computer Hardware and System Start-up	6
	Data Management and Sharing	Word Processing	12
		Project	10
Total			36
Term 2	Data Management and Sharing	Spreadsheets	18
	Data Management and Sharing	Electronic Presentation	8
		Project	10
Total			36
Term 3	Data Management and Sharing	Information Access and Sharing	9
	Publications	Electronic Publication	9
	Data Management and Sharing	Database Management Systems	8

LEVEL ONE	Theme	Topic	Time (Hours)
		Project	10
Total			36
LEVEL ONE TOTAL			108
LEVEL TWO	Theme	Topic	Time (Hours)
Term 1	Data Management and Sharing	Database Management Systems	16
	Publications	Web designing	10
		Project	10
Total			36
Term 2	ICT Safety and Environment	E-waste Management	8
	Computer Systems	Basic Software Management	18
		Project	10
Total			36
Term 3	Computer Systems	System and Data Security	12
		Project	10
Total			22
LEVEL TWO TOTAL			94

Features of this new AEP Syllabus

This AEP ICT teaching syllabus has the following features:

1) **Competency**

This is a general statement of what a learner can exhibit or do because of learning all the concepts within each sub-topic. It is stated at the top of the table for each sub-topic in the detailed syllabus. It shows how the content will be applied in different situations.

2) **Learning outcomes**

These are the expected behaviour which a learner will exhibit after the study of the sub-topic. ***The teacher must ensure that all the outcomes are achieved.*** They have been provided to help the teacher clarify content and scope. Where a higher outcome is stated, lower outcomes are implied. The teacher should use learning outcomes to plan his/her teaching strategies. Learning outcomes also guide in evaluation at the end of the learning process.

The learning outcomes are classified as knowledge (k), understanding (u), skill (s), generic skill (gs), values/attitudes (v/a), which are indicated in front of each learning outcome. They are meant to guide the teacher on how to approach the learning outcomes.

3) **Duration**

This has been provided for each sub-topic. It is meant to guide the teacher in planning to cover all the content appropriately. However, the allocated time should allow for flexibility to cater for remedial teaching and carrying out practical activities where possible.

4) **Suggested learning activities**

These provide the teacher with guidance, for example, on the tasks which the learners must accomplish to acquire the learning outcomes. However, these are not the only activities since other tasks as may be suggested by the teacher must be used. The teacher should use an appropriate strategy, e.g., individual or group work, for learners to carry out the activities effectively. Teachers should also encourage learners to use a variety of resources such as the library and ICT.

5) **Sample assessment strategy**

These are meant to test the level of understanding for each sub-topic. However, other assessment strategies as suggested by the teacher and textbooks that are appropriate to the sub-topic should be used to assess the learners' achievement. The sample assessment strategies are not meant to be a spot work for end-of-cycle examinations but rather to assist the teacher in formative assessment. Some of this assessment is done by observation and can be used to assess attributes like teamwork, confidence, scientific literacy, communication, leadership and organisational skills of learners.

6) **Hint to the teacher**

These further clarify the scope and depth of coverage for some sub-topics. They should be taken seriously to avoid leaving out content or giving content beyond the scope of the learners.

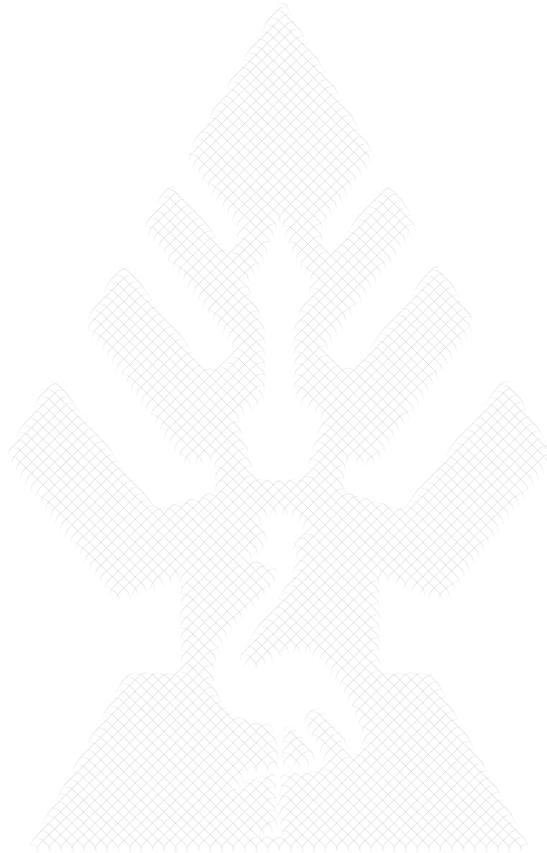
7) **ICT support**

This shows the ICT resources that the teacher should use to further the understanding of the different concepts. The teacher should note that these are optional and only applied where they are available.

The syllabus details for all subjects are set out in three columns:

LEARNING OUTCOMES	SUGGESTED LEARNING ACTIVITIES	SAMPLE ASSESSMENT STRATEGY
The knowledge, understanding, skills, generic skills, values and attitudes expected to be learned by the end of the topic	The sorts of learning activities which include the generic skills that will help learners achieve the Learning Outcomes.	Opportunities for assessment within the learning situation

N.B Teachers should base their lesson plans on the Learning Outcomes using the Suggested Learning Activities as a guide. These are not the only possible learning activities, and teachers are encouraged to extend these and devise their own that are appropriate to the needs of their class.



LEVEL ONE

Term one

TOPIC 1: Introduction to Information Communication Technology (ICT)

Duration: 8 hours

Competency: The learner understands: the concept of ICT, the related terminologies, its benefits and the required safety precautions.

Learning outcome	Teaching learning activities	Assessment Strategies								
<p>The learner:</p> <p>a) Describes the different ICTs in his/her immediate community (u, k)</p> <p>b) Uses various ICT tools (s,v)</p> <p>c) Explains the Safety precautions of the different ICT tools. (u,v)</p>	<p>Guide learners to;</p> <ul style="list-style-type: none"> Brainstorm on the term “Information and Communication Technology (ICT)” Name and present the list of ICTs and explain how they are used in everyday life. Work in pairs or groups, ask learners to: <ul style="list-style-type: none"> Identify and name each of the ICT tools, and describe how they are used. Explain various ICT tools which can be used and how they can be used in promoting peace and reconciliation in various communities Research on specialized applications of ICTs in various fields; health, industry, transport, banks, communication, education, security and peace building allow them to discuss. 	<ul style="list-style-type: none"> Listen and observe as learners interact with, name and state the use(s) of ICT tools, including those shown in the images below; <div data-bbox="944 1138 1202 1462" style="border: 1px solid black; padding: 5px; text-align: center;"> <table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; text-align: center;">A</td> <td style="width: 50%; text-align: center;">B</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> </table> </div> <p>to ascertain their levels of understanding.</p> <ul style="list-style-type: none"> Listen as learners as they 	A	B			C	D		
A	B									
										
C	D									
										

Learning outcome	Teaching learning activities	Assessment Strategies
	<ul style="list-style-type: none"> ● Work in pairs, and study user manuals for a variety of ICT tools, summarize and present the safety precautions in the plenary ● Work in groups and use available ICT tools to produce a product that is to say using a camera to take a photograph, using a phone to type and send a text message, connecting and using a projector. ● Work in groups, to discover and describe the information processing cycle using a simple diagram to illustrate how data is processed into information and stored for future use. ● Work in a guided discussion for learners to identify possible threats to ICTs and computers ● Work in groups, to prepare and present rules to govern the use of the computer Laboratory. ● Identify some security, health and safety precautions related to use of ICTs. ● Research and report on mitigation measures to the health problems associated with computer use. 	<p>state the necessary safety precautions they would take while using each of the tools above and probe them to explain their ideas further.</p> <ul style="list-style-type: none"> ● Observe learners as they use various ICT tools and probe them to establish their skills gaps.

Teaching and learning resources

- A set of working computer system
- Network/ Internet
- Computer peripheral devices like printers, scanners, speakers, projectors etc
- ICT Tools like Digital cameras, Smartphone, TV set, etc
- Multimedia resources

TOPIC 2: Computer Hardware and System Startup

Duration: 6 Hours.

Competency: The learner understands the importance of the physical devices of a computer system and uses them in everyday life.

Learning Outcomes	Suggested learning activities	Suggested Assessment Strategies
<p>The learner:</p> <p>a) Identifies and names the physical devices of a computer system. (k,u)</p> <p>b) Assembles a computer system (u, s).</p> <p>c) Uses computer peripheral tools (k,u,s,v).</p>	<p>Guide learners to;</p> <ul style="list-style-type: none"> Identify by name and function, the different physical parts of a computer system. Work in pairs, to follow a given step-by-step procedure to properly assemble the parts of a computer system. Safely power-up and shut-down a computer system. Individually connect and manage peripheral tools such as printer, scanner and projector to get an output. 	<ul style="list-style-type: none"> Observe learners as they assemble the different parts into a working computer system. Observe learners as they connect and use peripheral tools such as printer, scanner and projector appropriately. Listen to learners as they discuss and explain the importance of each of these hardware tools (like Mouse, Keyboard, Monitor, Speakers) to clear any misconceptions. Evaluate learner's connected set of peripherals and confirm whether the connections are proper.

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Sample Computer peripheral devices like printers, scanners, speakers, projectors etc.
- ICT Tools like Digital cameras, Smart phone, TV set, etc.
- Multimedia resources

TOPIC 3: Word Processing

Duration: 12 Hours

Competency: The learner uses a Word processing software (such as MS Word) to create, format, edit, save and print documents.

Learning Outcomes	Suggested learning activities	Suggested Assessment Strategies
<p>The learner:</p> <p>a) Creates and saves a word document (k, u, s, v)</p> <p>b) Formats a word document. (k, u, s, v)</p> <p>c) Inserts and manages objects in a word document (k, u, s, v)</p> <p>d) Edits and finalizes a word document. (k, u, s, v)</p>	<p>Guide learners to;</p> <ul style="list-style-type: none"> ● Open a word processor, create and save a simple document in various locations. ● Format a Word document (page orientation, margins, size, fonts, paragraphing, etc.). ● Insert objects in a word document (tables, images, shapes, header and footer). ● Work in groups to choose a topic or topics and write about it in the form of a school magazine (about 4 pages). ● Ensure that the article has the following characteristics: ● Images at different points with text wrapping around them in different ways. ● Some of the information in tabular form 	<ul style="list-style-type: none"> ● Observe learners as they launch word processing software and as they perform the tasks, prompt them to ensure that they understand and have developed the required skills. ● Observe learners making a peer review of each other's work and prompt them to share further as you take note of the required skills developed. ● Evaluate learners' progress by assessing their products like magazines, merged letters and reports.

Learning Outcomes	Suggested learning activities	Suggested Assessment Strategies
	<ul style="list-style-type: none"> ● Use footnotes and endnotes ● Some text in multiple column layouts. ● A watermark ● The document is secured with a password ● Page numbers in both Arabic and Roman numerals within the same document. ● a list of figures and table of contents for the entire document. ● Work in pairs, learners typeset a letter. ● Send a personalized letter to the family members of 10 (fictional) selected students informing them of their children's performance (use mail merge) 	

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Word processors
- Multimedia resources

Term Two

Topic 4: Spreadsheets

Duration: 18 HOURS

Competency: The learner uses spreadsheet software such as Ms Excel to create, manipulate, edit, save and present data.

Learning Outcomes	Suggested learning activities	Suggested Assessment Strategies
<p>The learner;</p> <p>a) Enters data in a spreadsheet (k, u, s, v)</p> <p>b) Uses formulae and functions to manipulate data. (k, u, s, v)</p> <p>c) Generates charts for different data. (k, u, s, v)</p>	<p>Guide learners to;</p> <ul style="list-style-type: none"> ● Study the spreadsheet interface and try out the various features on data. ● Enter data in a spreadsheet. ● Format cells to receive different data types ● Use simple spreadsheet formulas and functions to manipulate data. ● Present data in form of charts and graphs (Bar, Line, Pie and Column). ● Format charts and graphs; title adjustment, positioning, legend, axes and data labels. ● Load a mark sheet with at least 20 (fictional) students and 3 subjects, such as Math, English, history populated with marks out of 100. 	<ul style="list-style-type: none"> ● Observe and communicate to learners as they open the spreadsheet application and interact with its features, intervening to ensure they understand and develop required skills. ● Check for the product for correctness of the formulas used based on the computations and procedures. ● Observe learners as they perform the tasks, intervening to ensure they

Learning Outcomes	Suggested learning activities	Suggested Assessment Strategies
	<ul style="list-style-type: none"> ● Sort and Filter the data in various ways, forexample Students who scored more than 30% in Maths, between 25 and 50 in English. ● Work with the functions of AVERAGE, MEDIAN, COUNT, MAX, MIN, IF, SUMIF, COUNTIF, RANK, VLOOKUP and HLOOKUP (up to 4 outcomes for nested functions). ● Reference using absolute/relative/mixed referencing. ● Toggle between formula and value views. ● Set print area. ● Deliberately create and fix the following errors: #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME?, or #NULL!, ####. 	<p>understand and develop the required skills.</p> <ul style="list-style-type: none"> ● Listen to discussion, correcting any misconceptions and guiding learners towards expected outcomes. ● Use tools like scoresheets to evaluate learner products of each task

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Spreadsheet applications
- Multimedia resources

TOPIC 5: Electronic Presentation

Duration: 8 hours.

Competency: The learner uses presentation software for example. MS PowerPoint) to prepare, deliver and print presentations.

Learning Outcomes	Suggested Learning Activities	Suggested Assessment Strategy
The learner: a) Uses the presentation application functions and tools to prepare interactive presentations. (u, s, v, k) b) Delivers a presentation to an audience (s, v)	Guide learners to: <ul style="list-style-type: none"> Plan for a professional presentation - Conduct a research from the surrounding community using a field visit guideline to gather information including taking pictures and prepare a presentation. Play/Run a slide show of an already designed presentation on a screen Load and open presentation software. Enter information in a presentation application about peace and reconciliation in our communities. Prepare a presentation formatted with themes, animations, backgrounds, images, Transitions, hyperlinks. Setup show and deliver a presentation Discuss their presentation with the audience, evaluating strengths and inviting suggestions for improvement Print a presentation or part of a presentation to specified print settings. 	<ul style="list-style-type: none"> Observe learners perform the activity, intervening to help them improve their skills and develop their understanding so they can all achieve learning outcomes Listen and ask probing questions to the learners as they discuss in order to deepen their learning. Watch learners' presentations and suggest changes to their work so as to improve the quality of the presentation produced.

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Spreadsheet applications
- Multimedia resources

Term Three

TOPIC 6: Information Access and Sharing

Duration: 9 HOURS

Competency: The learner uses a computer and internet to access and share information.

Learning Outcomes	Suggested Activities	Learning	Suggested Assessment Strategy
<p>The learner:</p> <p>a) Uses online and offline platforms to search for information (k, s)</p> <p>b) Explains the safety and best practices while using the internet (k, u, v)</p>	<p>Guide learners to;</p> <ul style="list-style-type: none"> Individually use online or offline platforms like Encarta, Encyclopedia to search for information. Research and present on the possible risks and safety practices associated with Internet use. 	<p>use offline like to for</p>	<ul style="list-style-type: none"> Observe pairs as they carry out the steps involved in the activity, intervening to steer learning towards achievement of the learning outcomes. Listen and ask probing questions to learners as they discuss the tasks so as to promote deeper learning. This will be encouraged by encouraging them to think critically about the process.

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Offline Digital platforms like Encarta
- Multimedia resources

TOPIC 7: Electronic Publication

Duration: 9 HOURS

Competency: The learner uses desktop publishing software such as. MS Publisher) to design and produce simple publications for instance business cards, flyers, calendars, invitation cards, letterheads and certificates.

Learning Outcomes	Suggested Learning Activities	Suggested Assessment Strategy
<p>The learner:</p> <p>a) Explains the concept of electronic publications and publishing (u, s)</p> <p>b) Plans for an electronic publication (k, s, v)</p> <p>c) Uses the electronic publishing application</p>	<p>Guide learners to:</p> <ul style="list-style-type: none"> ● In groups discuss and, share in a plenary the meaning and principles of professional electronic publications and publishing. ● Identification of sample publications. ● In groups Research and, share in a plenary the different examples of electronic publishing and select a Desktop Publishing (DTP) software to use. ● Load/open your publication software. ● Plan for a publication ● Study and share in a plenary the various features and tools of the publication software interface of your choice. ● Choose an appropriate template in order to create a professional publication. ● Customise a template by using shapes, images and text boxes to produce a publication. 	<ul style="list-style-type: none"> ● Listen to learners discussing Electronic Publication tasks and intervene as appropriate, asking probing questions to deepen learning and guide thinking. ● Observe as groups or pairs carry out their publication activities, offering support and guidance to ensure that intended learning outcomes are achieved. ● Evaluate the quality of learning through learners' reports and products

Learning Outcomes	Suggested Learning Activities	Suggested Assessment Strategy
	<ul style="list-style-type: none"> ● Adjust measurements to various units. ● Create and save a publication. ● Format/edit the publication appropriately. ● Do “gallery walks” to learn from one another. ● Adjusting the shapes, sizes, colour of graphics, objects and text, applying borders to the publication or parts of the publication and adjusting the publication background. Effectively make use of the spaces in a publication. ● Design a publication for example about promoting peace in our communities and make a presentation. 	developed in each Task

Suggested Learning Resources

- A set of working personal computer
- Network/ Internet
- Publishing software
- Sample publications business cards, flyers, calendars, invitation cards
- Multimedia resources

LEVEL TWO

Term one

TOPIC 8: Database Management Systems

Duration: 24 Hours (*8 Hours under level 1 and 16 hours under level 2)

Competency: The learner uses a Database Management System (DBMS) program such as MS Access) to manage data.

Learning Outcomes	Suggested Activities	Learning	Suggested Assessment Strategy
The learner: a) Explains the concept of databases and DBMS (k, u) b) Plans for database. (k,u,s) c) Creates and save a database (k,u,s) d)Creates DBMS objects (k,u,s) e) Uses DBMS tools and features to enter and manipulate data (k,u,s).	Guide learners to: <ul style="list-style-type: none"> Research and share in plenaries about: -The concepts of databases, database management software, and their application in daily life. -Explore commonly used database management software. These include MS Access, Oracle, MySql - Plan for database structures and database management system objects for instance identify records and fields in the database of class list, address book, library catalogue. Determine an appropriate data type for each of the fields identified and respective field properties. Create a table taking note of data types and field properties. 		<ul style="list-style-type: none"> Listen as pairs discuss the tasks involved in the activity, asking questions to develop understanding and ensuring skills are learned. Observe learners carrying out the tasks, noting good practice and providing guidance to help them achieve expected learning outcomes. Evaluate learning through the quality of reports and databases produced by the learners. <ul style="list-style-type: none"> Four corners strategy End of lesson quizzes Summarising

Learning Outcomes	Suggested Activities	Learning	Suggested Assessment Strategy
	<ul style="list-style-type: none"> ● Create forms for populating their related tables. ● Create other database objects like queries and reports. ● Use the following operators in a query: = (Equal), <> (Not equal to), < (Less than), <= (Less than or equal to), > (Greater than), >= (Greater than or equal to) IS NULL and NOT NULL. ● Practice generating reports using various approaches: design views, report view and ● generate automatic calculations in various database objects. ● Create a relational database of up to two tables. ● Print objects to required layouts and formats. 		<ul style="list-style-type: none"> ● Four corners method

Suggested Learning Resources

- Manual and Electronic Sample Database
- A set of working personal computer
- Database Management software
- Multimedia resources

TOPIC 9: Web Design

Duration: 10 hours

Competency: The learner uses a web authoring software such as HTML Editor, Dreamweaver, FrontPage, Expression web Designer, WordPress) to design and publish personal, family and company websites.

Learning Outcomes	Suggested Learning Activities	Suggested Assessment Strategy
<p>The Learner:</p> <p>a) Explains the concept of web designing (k, u, v)</p> <p>b) Creates a Website. (u, v, s)</p>	<p>Guide learners to:</p> <ul style="list-style-type: none"> ● Navigate through a website to understand the terms: website, static and a dynamic, webpage, hyperlink, websites, using local sites for Ugandan companies as examples. ● Research about common website authoring software available and choose the best designing software. ● Develop a plan for a simple website (not more than 3 pages) including identifying the necessary media elements such as images, videos, audios, animations, text, design the page layout for the planned website and add content. ● Run the website, testing its functionality, improving it as necessary. ● Save the website as a web page & print the ● web page. 	<ul style="list-style-type: none"> ● Listen and observe as pairs discuss and carry out the tasks involved in the activity. Intervene to help learners improve their skills and deepen their understanding. This promotes the values of collaboration, cooperation and teamwork. ● Evaluate learning through the quality of the websites created.

Suggested Learning Resources

- A set of working personal computer installed with browsers
- Internet/ Network
- Web Authoring software
- Sample graphic
- Multimedia resources
- Writing materials

Term Two

TOPIC 10: Electronic Waste Management

Duration: 8 HOURS

Competency: The learner appreciates the importance of proper e-waste management and the roles of different stakeholders.

Learning Outcomes	Suggested Activities	Learning	Suggested Strategy	Assessment
<p>The learner:</p> <p>a) Explains the meaning of Electronic Waste management. (k, u)</p> <p>b) Applies different approaches in managing electronic waste. (u, s, v)</p> <p>c) Identifies key stakeholders and their roles in e-waste management. (k, u, s, v).</p>	<p>Guide learners to:</p> <ul style="list-style-type: none"> Research and present in groups about the meaning of electronic waste management and good practices in management of electronic waste (donations, electronics recycling, and take-back programs). Explain the importance of proper E-Waste management. Develop; - a public awareness campaign (Using ICT skills) to inform the school community about e-waste management. Develop guidelines for management of e-waste around their school, taking account of different approaches used in school and in the locality. 		<ul style="list-style-type: none"> Observe as learners perform the tasks and intervene to ensure all engage and make progress. Listen and ask probing questions to the learners as they discuss in order to steer them towards achieving the learning outcomes. Evaluate the products through: <ul style="list-style-type: none"> Mind maps/spider diagrams, campaigns Guidelines, Reports, Role plays Snapshot method Misconception checks Reflection – task learners to give: Any new things they have learnt, the most challenging things and the most interesting things learnt 	

Learning Outcomes	Suggested Activities	Learning	Suggested Strategy	Assessment
	<ul style="list-style-type: none"> In groups, organize and perform a role play on the roles of government, industry and citizens towards proper management of e-waste. 			

Suggested Learning Resources

- Writing materials such as manilla, flip charts, markers, etc
- Personal Protective Equipment like gloves, masks.
- First Aid Tool kit
- A set of working personal computer
- Network/ Internet
- School electronic waste
- Multimedia resources

TOPIC 11: Basic Software Management

Duration: 18 HOURS

Competency: The learner manages software that enables a computer to function properly.

Learning Outcomes	Suggested Learning Activities	Suggested Assessment Strategy
<p>The learner;</p> <p>a) Explains the various categories of software. (k, u, v)</p> <p>b) Describes the functions of software on a computer system. (k, u)</p> <p>c) Manages (Installs /Uninstalls) various software categories on a computer system. (k, s, u, v)</p>	<p>Guide learners to:</p> <ul style="list-style-type: none"> ● Identify and diagrammatically represent the categories of computer software. ● Research about the functions of an operating system and the difference between the operating system and application system and discuss conclusions with the class. ● Make a demo to the class members on how to install, uninstall and troubleshoot an operating system and system software and produce flow charts to explain the processes. ● Use utility programs to enhance computer performance and report on their impact for example disc defragmentation. 	<p>Observe as pairs;</p> <ul style="list-style-type: none"> ● Discuss the tasks, intervening to ensure misconceptions are addressed and to deepen learning. ● Observe and take notes as learners perform tasks and offer guidance to ensure all develop their understanding and skills. ● Observe the quality of products: diagrams, flow-charts reports.

Suggested Learning Resources

- A set of working personal computer
- Software Installation Media (CDs, DVDs, Flash Drives)
- Network/ Internet
- DVD/CD drives
- Computer lab Tool Kit
- Multimedia resources

Term Three

TOPIC 12: System and Data Security

Duration: 12 HOURS

Competency: The learner uses security applications to safeguard computer systems.

Learning outcomes	Suggested Activities	Learning	Suggested Assessment Strategy
<p>The learner:</p> <p>a) Explains the concept of computer security, (k, u, v).</p> <p>b) Secures computer systems against attacks, (s, v).</p> <p>c) Describes ethical practices while using ICTs, (k, u).</p>	<p>Guide learners to:</p> <ul style="list-style-type: none"> ● Research, discuss and present in groups about computer security risks and their potential impact. ● Research and present about actions or events that could cause loss or damage of a computer or its information. ● Identify and present in groups the symptoms of a computer that has been infected with malware. ● Identify technologies for securing computer systems. ● Research about different types of computer security risks and attacks. <p>Research and produce a report on approaches for securing a computer system (hardware and software) using passwords, biometrics, firewalls, antivirus software,</p>		<ul style="list-style-type: none"> ● Listen as groups and pairs discuss the tasks, asking probing questions to promote critical thinking and to deepen learning. ● Observe as learners perform tasks, providing advice and guidance to boost progress and accelerate skill development. ● Assess of quality of products: diagrams, oral and written reports, summaries, charts, practical demonstrations, codes of conduct.

Learning outcomes	Suggested Activities	Learning	Suggested Assessment Strategy
	<p>honey pots, intrusion detection programs.</p> <ul style="list-style-type: none"> Secure a computer system on the network and off the network. <p>Develop a set of moral principles (code of conduct) to regulate the use of ICTs for a given community.</p>		

Suggested Teaching and learning resources

- Functional personal computer
- Anti-virus software
- (ICT Security policy)
- Uganda data protection and privacy ac

Learning through Projects

These are assignments given to the learners to be done over a period of time. They are done either individually or in groups depending on the nature of the project. The teacher should monitor the progress of the learners. Learners should document the developmental stages of their project and they should have presented it to the teacher for guidance and as evidence of the work done. At the end of the specified time, the learners are required to present a product or an output and evidence of the progress. The evidence should be presented in a portfolio. A portfolio is a collection of learner's evidence of achievements on an implemented project. It is important to note that:

- 1) Learners should be in the know of the parameters to be used to evaluate the project.
- 2) At every stage of the project learners will present their project to the teacher for guidance.
- 3) For group projects the teacher should assess individual learners for their participation and contribution towards the project. For such projects all group members earn the same score.

Materials to be used for the projects

Schools are advised to guide the learners to identify projects which can be done using materials which are locally available and affordable. Schools are encouraged to use materials which are in line with “Buy Uganda Build Uganda” (BUBU). By doing so, the project work will be promoting industrialization for employment, inclusive growth and wealth creation.

Assessment in the AEP ICT Syllabus

The new AEP curriculum sets new expectations for learning, with a shift from Learning Outcomes that focus mainly on knowledge to those that focus on skills and deeper understanding. These new Learning Outcomes require a different approach to assessment.

The “Learning Outcomes” in the syllabuses are set out in terms of Knowledge, Understanding, Skills, generic skills, Values and Attitudes. This is what is referred to by the letters k, u, s, v/a and gs.

It is not possible to assess values and attitudes in the same way as knowledge, understanding and skills because they are more personal and variable and are long-term aspirations. This does not mean that values and attitudes are not important. It means that we must value things that we cannot easily assess.

So this guidance section focuses on knowledge, skills and understanding. Each has its own implications for learning and assessment.

Knowledge	The retention of information.
Understanding	Putting knowledge into a framework of meaning – the development of a ‘concept’.
Skills	The ability to perform a physical or mental act or operation.
Values	The inherent or acquired behaviours or actions that form a character of an individual.
Attitudes	A set of emotions, beliefs or behaviours toward a particular object, person, thing, or event.
Generic skills	A set of skills that enable the learner to access and deepen learning across the whole curriculum

We need to look for different things to assess knowledge, skills and understanding.

Knowledge can be assessed based on written tests such as multiple-choice questions, fill-in-the-blanks, or other forms of recall-based assessments; understanding may be assessed based on short-answer questions, essays, or other forms of application-based assessments, but the assessment of skills may use the following strategies: performance-based assessments in which learners demonstrate their skills by performing a task or activity, observation of learners as they perform a task or activity to assess skills, such as communication skills, respect of each other's opinions, time management and teamwork, and peer assessments where learners evaluate each other's skills and providing feedback especially for promoting collaboration and communication skills.

The assessment of k, u, s, v/a is elaborated in the following graphic.

<p>Knowledge</p> <p>Knowledge is the easiest to assess because it is fairly straightforward to find out whether or not a learner has retained some information: a simple question can usually find this out. We ask them to name something, or state something, or label a diagram.</p>	<p>Skills</p> <p>Skills are the ability to perform a mental or physical operation, so we have to observe the skill being performed or look at the product, or outcome, of the skill; for example, a piece of writing, a picture or diagram. Some skills, such as speaking or a physical education skill do not have a product so need to be observed.</p>
<p>Understanding</p> <p>Assessing deeper understanding is much more difficult, so we usually ask learners to explain, compare or outline a process. This can be done orally (in conversation) or in writing, and will give us some idea of the extent of their understanding.</p>	<p>Values and Attitudes</p> <p>Values and Attitudes determine how we interact with others, working in a team, meeting deadlines, being self-driven, holding democratic values, and having respect for democracy, race, gender, disability, human dignity, culture, nation, life and social justice.</p>

Assessments are used for various purposes in schools and education systems. Just as academic lessons have different functions, assessments are typically designed to measure specific elements of learning, e.g., the level of knowledge a student already has about the concept or skill the teacher is planning to teach or the ability to comprehend and analyse different types of texts and readings. This section focuses on the evaluation of progressive day-to-day classroom learning (formative assessment) and how summative assessment will be done both at school and at the national level.

Formative Assessment

Formative assessment refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs and academic progress during a lesson, unit or activity.

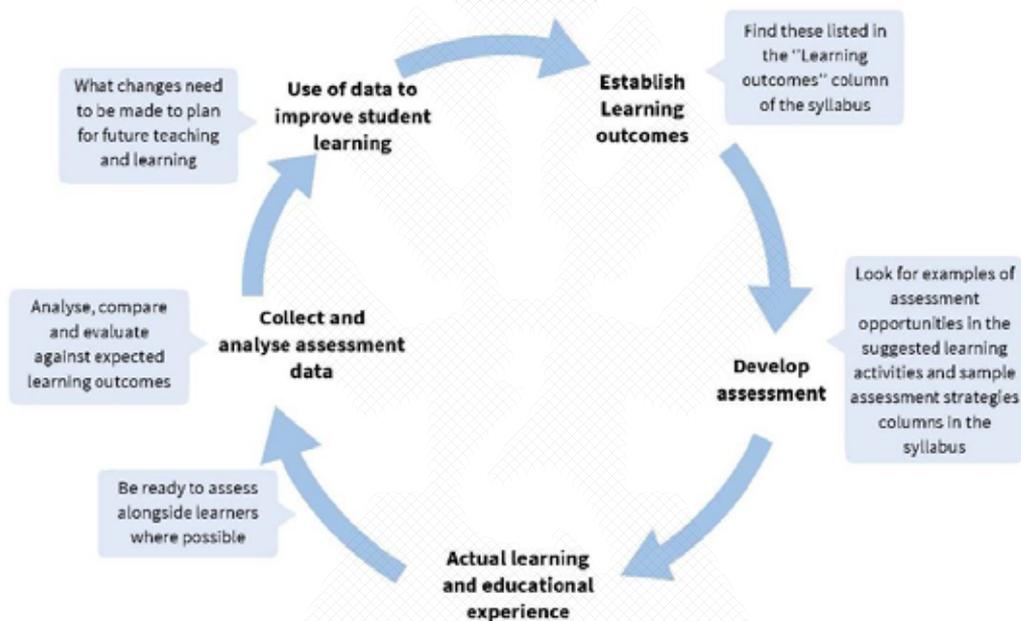
The general purpose of formative assessment is to improve learning and achievement and give educators in-process feedback about what learners are learning or not learning so that instructional approaches, teaching materials, and academic support can be modified accordingly. Formative assessments are usually not scored or graded, and they may take various forms, from more formal quizzes and assignments to informal questioning techniques and in-class discussions with learners.

The general goal of formative assessment is to collect detailed information that can be used to improve instruction and learning while it is happening. What makes an assessment “formative” is not the design of a test, technique or self-evaluation per se, but the way it is used, that is, to inform in-process teaching and learning modifications.

If assessment is to make a difference in teaching and learning, teachers must use the information they gain from assessment to make **some changes** to the teaching and learning process.

The changes that can be made include decisions about:

- i) What needs to be learnt next.
- ii) Whether an element of the syllabus needs to be taught again differently.
- iii) Changing teaching approaches if necessary.
- iv) Identifying learners needing more support or making exceptional progress.
- v) Enabling learners to understand what they have to do to improve.



How do we find the opportunity to make a formative assessment?

In the AEP curriculum, the teacher’s assessment role is not to write tests for learners but to make professional judgments about learner’s learning during the normal teaching and learning process. Professional judgment is about how far the learner meets the learning outcomes set out in this syllabus. To make these judgments, the teacher needs to look at how well the learners are performing in terms of each learning outcome.

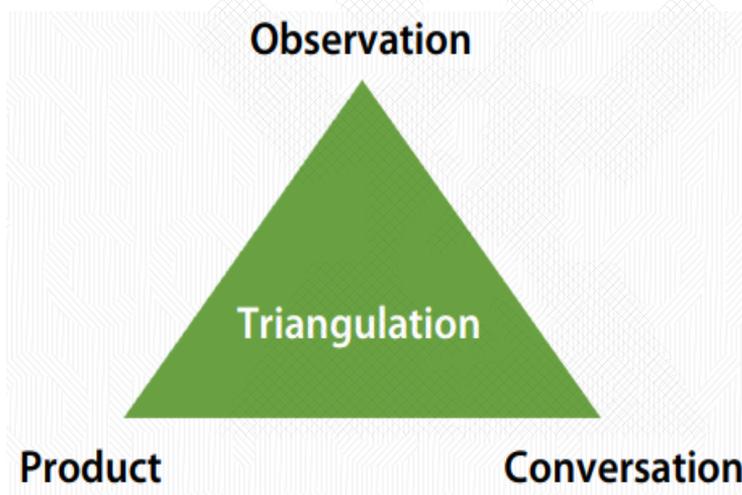
School-based formative assessment is a part of the normal teaching and learning process, so assessment opportunities will also occur during this process.

It is not something that needs to be added after learning; it is an integral part.

These assessments occur in three forms and are often called:

- **Observation** – watching learners working (good for assessing skills and values).
- **Conversation** – asking and talking to learners (good for assessing knowledge and understanding).
- **Product** – appraising the learner’s work (writing, report, translation, calculation, presentation, map, diagram, model, drawing, graphs, painting, etc.). In this context, a “product” is seen as something physical and permanent that the teacher can keep and look at, not something the learner says.

When all three are used, the information from anyone can be checked against the other two forms of assessment opportunity (e.g., evidence from “observation” can be checked against evidence from “conversation” and “product”). This is often referred to as “triangulation”.



Triangulation of assessment opportunities

To find these opportunities, look at the detailed syllabus for each topic. These set out the expected learning and give a ‘Sample Assessment strategy’ and in doing so, they contain a range of opportunities for the three forms of assessment.

Generic Skills

The Generic Skills have been built into the syllabuses and are part of the Learning Outcomes. It is, therefore, not necessary to assess them separately. It is the increasingly complex context of the subject content that provides progression in the Generic Skills, and so they are assessed as part of the subject Learning Outcomes

Values and Attitudes

It is not possible to assess attitudes in the same way as knowledge, understanding, and skills because they are more personal and variable and are long-term aspirations. This does not mean that attitudes are not important. It means that we must value things that we cannot easily assess.

Summative Assessment

This will be done in two ways:

1) **School-based summative assessment**

This will be done by teachers assessing learners through integration activities at the end of every topic or sub-topic and project work. This will cumulatively be collected at school and submitted to the national assessment body (Uganda National Examinations Board [UNEB]) to contribute 20% of the final score.

2) **Examinations**

There will be examinations at the end of Level One to test the suitability of the learners for promotion to Level Two. There will also be national examinations at the end of Level Two or the end of S.4 if learners' transit to the regular school.

Record keeping

Keeping detailed records of learners' progress is always tricky with vast numbers of learners. For school-based formative assessment, it is not always necessary to keep such detailed records anyway. If feedback is given immediately and action is taken, learning is changed, and the record will soon become outdated and redundant.

Most formative class-based assessments are dynamic because they feed directly into the teaching and learning process. Therefore, detailed records of these are not appropriate.

What is needed is a record of assessments of learners' learning made in terms of each topic or unit. This means recording the ongoing summative assessments of each unit. There is no need to separate records of each Learning Outcome because this would be time-consuming and unnecessary. Assessing whether each learner met the Learning Outcomes for each topic is much more helpful.

Each topic is made up of several Learning Outcomes. Therefore, teachers need to consider all the Learning Outcomes when making an overall judgement about the topic.

It is not always necessary for every individual Learning Outcome to be achieved or for the topic to be achieved.

This will vary with the subject and topic.

By looking at the Learning Outcomes (LOs) within each topic, it is possible to identify four broad groups of learners in terms of their achievements:

Descriptor
Some LOs achieved, but not sufficient for overall achievement
Most LOs achieved, enough for overall achievement
All LOs achieved – achievement with ease

These overall assessments should be made on the basis of the many formative assessments that the teacher has made during the course of teaching the topic. If teachers have been working with the learners over the course of the topic, they will be able to make a broad judgement about which learners have achieved or have failed to achieve the topic's overall Learning Expectation. These "Authentic Assessments" will be more valid and valuable than a test set by the school.

Recording these overall assessments will be simple, manageable and yet valuable, and can be recorded on a sheet such as the one below in which the categories are indicated with a number.

Although a very simple process, these four categories will give rich data when a comparison is made between the learners in each category for different subjects and units. They will also easily identify those learners who need extra support or who may not be ready to move on to the next grade at the end of a year.

If records are kept of the learning outcomes of each syllabus unit through the year, then there will be no need for an end-of-year test. Teachers will already have a record of those learners who have met the Learning Outcomes, and those who have not done so. Therefore, teachers will know if there were any learners not ready to progress to the next grade.

An overall record should be made of the individual unit assessments by subject in terms of the three descriptors. If numbers (1–3) are used as identifiers, then it will be possible to arrive at an overall number for a year by aggregating the identifiers for each topic.

Descriptor	Identifier
Some LOs achieved, but not sufficient for overall achievement	1
Most LOs achieved, enough for overall achievement	2
All LOs achieved – achievement with ease	3

In the example below, the table shows the end-of-unit assessment for six learners.

ICT										
	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Learner A	3	3	2	3	3	3	3	2	3	3
Learner B	2	2	3	2	3	2	2	2	3	2
Learner C	1	1	2	1	1	2	2	3	2	3
Learner D	1	1	2	1	1	2	1	1	2	1

This method will give much more information than using a tick. For example, briefly, learners A and B are achieving much higher than learners C and D. Learner C has improved during the year. All of this is very valuable assessment information and can be used to improve learning.

This summative teacher assessment will contribute 20% to the school's final grade, together with project work.

Suggested teaching/learning methods

Most stakeholders of the AEP Programme are highly susceptible to the effects of conflicts and violence. Additionally, we are aware cyber-phobia is often more associated with older people who either missed the technology revolution or who have struggled to adapt to using computers. Such learners are likely to dominate the learning environment. As therapy therefore, facilitators need to guarantee stress free ICT curriculum implementation.

The suggested teaching/learning methods below are general for delivering the AEP ICT syllabus. The teacher / facilitator chooses the appropriate method (s) for a particular topic using one of the following methods.

Reading Sessions

- 1) Brainstorming
- 2) Learning contracts
- 3) Think-Pair.
- 4) Teacher exposition
- 5) Listening to audios and Presentations
- 6) Guided discovery
- 7) Watching of video

Suggested Requirements for Syllabus Implementation

ICT is a practical subject. It therefore requires both the student and teacher to have all the necessary equipment in order to have proper implementation of the syllabus. For students to attain and achieve the expected skills and competences as stipulated in the syllabus, the following **requirements** need to be in place.

- 1) Computers and mobile learning devices; laptops, cameras, scanners, projectors, printers accessible to both learners and teachers.
- 2) Offline and online learning resources.
- 3) Internet connectivity
- 4) Safe electrical installation (Provide a socket for each computer set)
- 5) Power stabilizer or Uninterruptible Power Supply (UPS) unit.
- 6) A closed and simple Computer Network with at least one Network hub.

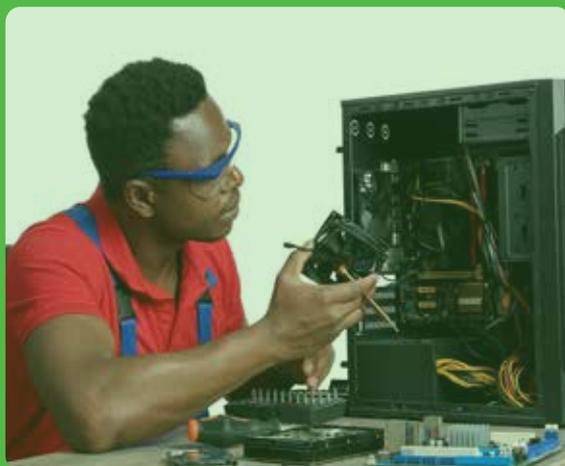
Note: Recommended computer to student ratio is 1:2.

GLOSSARY

TERM	DEFINITION
Accelerated Learning	Accelerated learning is a learning format that allows students to complete courses in a shorter period of time compared to a traditional time planner.
Competency Based Curriculum	One in which learners develop the ability to apply their learning with confidence in a range of situations.
Formative Assessment	The process of judging a learner's performance, by interpreting the responses to tasks, in order to gauge progress and inform subsequent learning steps.
Generic skills	Skills which are deployed in all subjects, and which enhance the learning of those subjects. These skills also equip young people for work and for life.
Learning Outcome	A statement which specifies what the learner should know, understand, or be able to do within a particular aspect of a subject.
Suggested Learning Activity	An aspect of the normal teaching and learning process that will enable a formative assessment to be made.

ICT Reference Books

- 1) ECDL/ICDL Syllabus V5.0 IBO (2006), Information Technology in a Global Society, Diploma Guide, Cardiff
- 2) Wales UK IBO (2003), Information Technology in a Global Society: HL Curriculum Development Report: Cardiff, Wales UK
- 3) IBO (2004), Diploma Programme Guide: Information Technology in a Global Society, Cardiff, and Wales UK
- 4) McGrath M. (2008), Visual Basic in Easy Steps, Second Edition, Southam, United Kingdom
- 5) University of Cambridge International Examinations (2008), Cambridge International A & AS Level Computing 1991, Cambridge, CB1 2EU, United Kingdom.
- 6) NCDC (2019): ICT Syllabus, Kampala-Uganda.
- 7) NCDC (2020): NCDC Curriculum Framework, Kampala-Uganda



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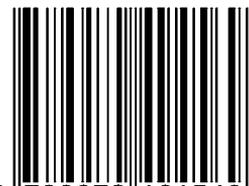
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