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REPUBLIC OF RWANDA

ICT

Essentials for Teachers

Based on the UNESCO ICT Competency
Framework for Teachers



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INTRODUCTION

Rwanda's Vision 2020 aims to transform the country into a knowledge-based, technology-led and middle income society by the year 2020. Information and Communication Technology (ICT) is considered a ubiquitous tool that will energize the country's socio-economic development. Enhancing teacher capabilities in and through ICT is one of the strategies used by the Government of Rwanda to develop a high quality skills and knowledge base, leveraging ICT across various socio-economic sectors of the country. Training teachers in ICT will increase the resource base and improve education delivery at all levels, hence the need to institutionalize ICT usage and training for all teachers.

The Rwanda ICT Essentials for Teachers course provides benefits for both educators and students. These include improved teaching and learning processes; better learner outcomes, increased learner engagement; seamless communication providing robust opportunities that ICT offers for the social development of knowledge based-economies for education.

The Rwanda ICT Essentials for Teachers course is based on the UNESCO ICT Competency Framework for Teachers (ICT CFT). This Framework outlines the competencies that teachers need to integrate ICT into their professional practice. The ICT CFT is a result of a partnership between UNESCO, CISCO, INTEL, International Society for Technology in Education (ISTE) and Microsoft. The Rwanda ICT Essentials for Teachers course draws from a set of competencies clustered around six major education focus areas and focuses on the Technology Literacy growth phase of knowledge acquisition:

Area of educational focus	Modules – Phases of knowledge acquisition		
	Technology Literacy	Knowledge Deepening	Knowledge Creation
Understanding ICT in Education	Policy Awareness	Policy Understanding	Policy Innovation
Curriculum and Assessment	Basic Knowledge	Knowledge Application	Knowledge Society Skills
Pedagogy	Integrate Technology	Complex Problem Solving	Self Management
ICT	Basic Tools	Complex Tools	Pervasive Tools
Organization and Administration	Standard Classroom	Collaborative Groups	Learning Organizations
Teacher Professional Learning	Digital Literacy	Manage and Guide	Teacher as Model Learner

On completing the Technology Literacy phase, the teachers will:

- **Outcome 1:** have good basic ICT skills (Office suite, learning management system and internet environments)
- **Outcome 2:** be able to integrate ICT into teaching and learning, school administration and use ICT for continuous professional development
- **Outcome 3:** use ICT skills to attain curriculum learning objectives
- **Outcome 4:** use ICT to access learning resources and promote research
- **Outcome 5:** use technology-based learning project and problem solving learning skills
- **Outcome 6:** be ICT literate and use ICT pedagogy in teaching and learning for promoting creativity and innovation.

The Rwanda ICT Essentials for Teachers course is a blended learning course. There are five days (42 hours) face-to-face training and a further 40 hours are conducted online for a total of 82 notional hours. During the face-to-face training, teachers are exposed to the content and tools on the learning management system (LMS), and have an opportunity to work through some of the course content (units 1–6) with a mentor.

The Rwanda ICT Essentials for Teachers course material is composed of local course material and international Open Educational Resources (OER). OER are teaching, learning or research materials that are in the public domain or released with an intellectual property licence that allows for free use, adaptation and distribution of the content. The OER have been adapted to support the Rwandan context. The list below demonstrates how the Rwanda ICT Essentials for Teachers course units align with the UNESCO ICT CFT aspects.

UNESCO ICT CFT aspects	Rwanda ICT Essentials for Teachers key competencies	Unit
Understanding ICT in Education	Explain how existing and planned national policies impact classroom practices and how their classroom practices correspond to and support policies related to ICT	Unit 08
Curriculum and Assessment	Demonstrate how various ICT can be used in the curriculum	Unit 09
	Demonstrate how various ICT tools can be used to improve assessment	Unit 12
Pedagogy	Explain the importance of ICT tools to support students' acquisition of school subject matters knowledge and use presentation software and digital resources to support instruction and problem solving in the classroom	Unit 10
	Manage student project-based learning activities in a technology-enhanced environment to support collaboration, communication and critical thinking	Unit 11
ICT	Explain basic ICT concepts, use and demonstrate the use of common hardware	Unit 01
	Demonstrate ability to perform basic maintenance and repair on hardware and assist in software troubleshooting	Unit 02
	Explain basic ICT concepts, use and demonstrate the use of software applications (particularly word processor)	Unit 04
	Explain basic ICT concepts, use and demonstrate the use of graphics software	Unit 07
	Describe the functions and purposes of internet in the classroom and demonstrate the capability of using internet	Unit 03
	Describe the functions and purposes of internet in the classroom and demonstrate the capability of using internet including e-mail, and social media functions in classwork	Unit 03 & 04
Organization and Administration	Organise ICT to suit learning needs in either a computer lab or classroom setting	Unit 13
	Use in the administration of the classroom and school spreadsheet in school management	Unit 05
Teacher Professional Learning	Locate necessary resources that help to acquire additional subject matter and pedagogical knowledge for professional development	Unit 14

Delivery model

The course uses a blended learning methodology incorporating a five-day face-to-face workshop and online study options. Currently the orientation unit and the first six units are covered during the face-to-face workshop. The remaining eight units and the final examination are subsequently completed online. Each unit is facilitated online over a week, so a further eight to nine weeks are required to complete the course.

Subject: ICT Essentials for Teachers	Unit 00: Orientation to blended learning	Time: 4 hours
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Key unit competency

Study effectively using a blended learning methodology that links face-to-face sessions with online access to content and activities using an LMS.

Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Know and understand how a blended learning study programme is designed to support the acquisition of ICT in education competencies	<ul style="list-style-type: none"> Log into the ICT Essentials LMS (Moodle Server) Access the appropriate online units and materials Use the LMS communication tools including chat, forums and e-mail Use the LMS assessment tools to complete quizzes and submit assignments 	Demonstrate a determination to master the skills required to study effectively using a blended learning methodology	<ol style="list-style-type: none"> What is a blended learning methodology? What is an LMS? What LMS tools will be used to support the online component of the course? 	<ol style="list-style-type: none"> Register for the course, get password and login details, access the course's online materials and activities Use the LMS communication and assessment tools Prepare and submit an assignment using the LMS tools

Assessment criteria: Demonstrate proficiency at using LMS tools.

Materials

Free resources:

1. How to Moodle. (2014). What is Moodle? Available online at <https://vimeo.com/117526873>

OER:

Wikipedia. (2015). Moodle. Available online at <https://en.wikipedia.org/wiki/Moodle> (CC BY-SA)

Moodle. (2017). User Quick Guide. Available online at https://docs.moodle.org/33/en/User_quick_guide (GNU General Publication License)

Facilitation Guide

This unit is conducted face to face but uses the ICT Essentials LMS extensively to model good practice. LMS link to activities and resources: <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=18>

Activity 1 (15 minutes): Registration and accounts/logging in

All teachers will be expected to bring the digital device they will be using to access the online components of the ICT Essentials course to the orientation session. At this session you will issue login and password details to each of the teachers and they will ensure that they have the correct URL and permissions to access the ICT Essentials online materials and activities. The LMS administrator should be available to adjust permissions or add new accounts. At the end of the session all teachers must have access to their LMS accounts.

Activity 2 (30 minutes): Profiles

Each teacher spends half an hour customising their online LMS profiles, providing a head and shoulder photograph and a short biography of themselves.

Activity 3 (15 minutes): Baseline survey

Each teacher completes the baseline survey by accessing the link to the survey in the LMS.

Activity 4 (20 minutes): ICT Essentials course overview

Take teachers through the course units and explain the blended methodology where all course materials are accessed through the LMS but instruction and interactions can be either face to face or online.

Activity 5 (15 minutes): Meet the facilitation team

Teachers are introduced to the facilitation team who will provide support during both the face-to-face and online components of the course.

Activity 6 (45 minutes): LMS (Moodle) orientation – Communication tools

Ask the class to access the chat room in the LMS and answer the questions: 'Where are you from?', 'How do you access the internet?', and 'What are your apprehensions about studying a component of your course online?' Once students demonstrate proficiency at communication using a chat room, the class moves to using the forum tool where they are asked to respond to the following questions: 'What experience have you had using online study tools in the past?', 'What are the advantages and what are the disadvantages of studying online?', and 'What are your expectations of the course?'

Activity 7 (45 minutes): LMS (Moodle) orientation – Quizzes and assignments

Each teacher accesses an LMS quiz and completes the multiple choice questions. The questions ask the teachers about hardware. Immediate feedback is provided by the LMS. Ask teachers to use a graphics package such as Paint and attempt to draw a plan of their school clearly showing where the computer room is situated. These files are then saved and uploaded into the LMS using the assignment tool. You will need to provide support on these steps as not all teachers will be familiar with the process.

Activity 8 (20 minutes): Optimal use of mobile devices Explain how the Moodle mobile app and the WhatsApp course group will provide improved access to the platform and online support.

Subject: Technology Literacy		Unit 01: Hardware		Time: 4 hours	
<p>Key unit competency</p> <p>Explain basic ICT concepts, use and demonstrate the use of hardware</p>					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Know and understand basic ICT concepts Identify computer parts and its peripherals Describe the function of computer parts and peripherals 	<ul style="list-style-type: none"> Use ICT related concepts applied in learning environment Operate computers and peripherals and know how to connect them 	<p>Confident to use ICT hardware for teaching and learning processes</p>	<ol style="list-style-type: none"> Definition of basic hardware Identify different kinds of computer and ICT devices Advantages and disadvantages of ICT devices Types and functions of different ICT device parts 	<ol style="list-style-type: none"> Facilitator explains different kinds of computer and ICT devices' parts and how to connect them Teachers complete two to three online tutorials Teachers share knowledge with peers LMS quiz on hardware knowledge 	
<p>Assessment criteria: Demonstrate the use of computers through practical exercise and complete a final online quiz.</p>					
<p>Materials</p>					
<p>Free resources:</p> <ol style="list-style-type: none"> GCF LearnFree: Computer Basics http://www.gcflearnfree.org/computers/computerbasics/1 GCF LearnFree: Basic Parts of a Desktop Computer https://www.gcflearnfree.org/computerbasics/basic-parts-of-a-computer/1/ GCF LearnFree: Buttons and Ports on a Computer https://www.gcflearnfree.org/computerbasics/buttons-and-ports-on-a-computer/1/ GCF LearnFree: What is a Laptop Computer? https://www.gcflearnfree.org/computerbasics/laptop-computers/1/ GCF LearnFree: What is a Mobile device? https://www.gcflearnfree.org/computerbasics/mobile-devices/1/ GCF LearnFree: Setting up a Computer https://www.gcflearnfree.org/computerbasics/setting-up-a-computer/1/ 					

Facilitation Guide

This unit is a blended learning unit. The unit will be facilitated face to face as part of the ICT Essentials workshop but all resources are accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=5>.

The GCF LearnFree tutorials used throughout are particularly good but there is a lot of material that needs to be covered. One strategy is to cluster the teachers into groups of five. Within each group identify an individual who must complete both the introductory tutorial, 'Computer basics', and one other. Make sure all the tutorials are covered within each group. You could also present to the class. This would allow you to use the computers the teachers are using rather than the generic versions that appear in the tutorials.

Activity 1 (20 minutes): Introduce the topic and explain what will be covered.

Activity 2 (120 minutes): Teachers study and prepare presentations on 'Computer basics', 'Basic parts of a desktop PC', 'Buttons and ports', 'What is a laptop computer?', 'What is a mobile device?' and 'Setting up a computer'.

Teachers can give definitions or the facilitator can present. Facilitator can show them how to use the snipping tool to allow the learner to take screen shots for their presentation (See <http://www.gcflearnfree.org/techsavvy/taking-screenshots/print>).

Activity 3 (70 minutes): Within each group all teacher groups present their findings to the class and effectively teach each other.

Activity 4 (30 minutes): Class does a 25 minute test using the quiz tool on the LMS.

Subject:
Technology Literacy

Unit 02: Troubleshooting ICT problems

Time: 4 hours

Key unit competency

Demonstrate ability to perform basic maintenance and repair on hardware and assist in software troubleshooting.

Learning Objectives

Knowledge and understanding	Skills	Attitudes and values	Content	Learning activities
Identify common failure on hardware and software resources that require maintenance	<ul style="list-style-type: none"> Diagnose hardware and software failures Apply hardware and software troubleshooting principles Document maintenance and repair problems 	<ul style="list-style-type: none"> Be confident in computer safety and maintenance Be comfortable with troubleshooting techniques on hardware and software and connecting devices 	<ol style="list-style-type: none"> Basic troubleshooting: <ol style="list-style-type: none"> Power cables Network cables Port connections Rebooting Printer-related problems Connectivity related problems Preventive maintenance: <ol style="list-style-type: none"> Disk clean up Defragmentation Virus checkers Peripheral installation (printers, screens, external drives, etc.) Installation of new software 	<ol style="list-style-type: none"> Facilitator explains and demonstrates the purpose of preventive, corrective, adaptive and perfective maintenance Facilitator demonstrates different steps of troubleshooting process to the teachers who will recreate the process on demonstration computers; test to see if teachers can correctly diagnose ICT problems and select the correct solution Facilitator demonstrates the installation of new software and the updating of virus signatures and provides teachers with time to practice what has been learnt in the demonstration.

Assessment criteria: Teachers must explain and demonstrate the purpose of preventive, corrective, adaptive and perfective maintenance; installing/upgrading software; demonstrate different steps of troubleshooting.

Materials

Free resources:

1. GCFlearnfree.org Computer Basics, Computer Safety and Maintenance
<https://www.gcflearnfree.org/computerbasics/keeping-your-computer-clean/1/>
2. GCFlearnfree.org Computer Basics, Protecting your computer
<https://www.gcflearnfree.org/computerbasics/protecting-your-computer/1/>
GCFlearnfree.org Computer Basics, Unit 15: Basic Troubleshooting Techniques
<https://www.gcflearnfree.org/computerbasics/basic-troubleshooting-techniques/1/>

Facilitation Guide

This unit will be facilitated face to face during the ICT Essentials workshop. Access to the resources, tutorials, quiz and blog will be from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=6>

Activity 1 (90 minutes): Use the GCFlearnfree.org tutorials to structure a demonstration of the issues and techniques. Project the tutorials on the screen but then do the routines on a demonstration computer in front of the teachers. Ideally if the group is small and there are sufficient computers, allow them to perform some of the routines.

Activity 2 (60 minutes): Demonstrate the installation of new software and updating virus checkers and encourage the teachers to perform similar installations and updates on the demonstration computers.

Activity 3 (90 minutes): Task the teachers with this portfolio task:

The most powerful trouble-shooting technique is to isolate the problem to a specific computer component by trial-and-error. Use any programme you feel comfortable with such as Microsoft Word, PowerPoint etc. to create a presentation to suggest potential solutions to maintenance issues in your school. Make sure you cover the following aspects in your presentation:

- Identify common computer problems faced at your school.
- What preventive, corrective, adaptive and perfective maintenance needs to be performed routinely at your school?
- Outline what you consider to be potential safety hazards at your school and what you think should be done to protect both users and equipment.

Encourage the teachers to use the LMS assignment upload tool, entitled 'Portfolio Item #02: "Troubleshooting ICT problems' to submit their documents.

Subject: Technology Literacy	Unit 03: The educational internet	Time: 4 hours
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Key unit competency

Describe the functions and purposes of the internet in the classroom and demonstrate the capacity of using the internet.

Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
<ul style="list-style-type: none"> Know and understand different internet applications Identify different areas where internet functions are applicable in the classroom Identify the threats to students of using the internet 	<ul style="list-style-type: none"> Use internet activities Make competent use of the internet in different classroom activities 	<ul style="list-style-type: none"> Recognize the value of internet in facilitating understanding, communication, creativity and the change in the classroom Teachers should want to protect their students from internet threats 	<ol style="list-style-type: none"> The internet: <ol style="list-style-type: none"> What is the internet? Browsers Understanding URL Navigating the internet Function and characteristics of internet Searching on the web: <ol style="list-style-type: none"> Search engine tools Downloading/ uploading materials Internet safety in the classroom 	<ol style="list-style-type: none"> Teachers complete web tutorial on 'The internet' Teachers complete web tutorial on 'Search Skills' Teachers view a video on internet safety and complete a web tutorial Teachers develop draft school internet safety policy document for their schools to consider

Assessment criteria: Teachers will develop a school internet safety policy

Materials

OER:

COL/Guyana MoE. (2012). What is the Internet? Available online at <http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module01/Unit01/01.html>

COL/Guyana MoE. (2012). Internet Search Engines-Advanced Searching. Available online at <http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module02/Unit02/01.html>

MoEST Kenya ICT CFT. (2016). Internet Safety. Available online at <http://kictcft.or.ke/course/view.php?id=14>

Free resources:

- GCF LearnFree: Internet Basics
<https://www.gcflearnfree.org/internetbasics/>
- GCF LearnFree: Edge Browser
<https://www.gcflearnfree.org/edge/>
- GCF LearnFree: Using Search Engines
<https://www.gcflearnfree.org/internetbasics/using-search-engines/1/>
- GCF LearnFree: Internet Safety
<https://www.gcflearnfree.org/internetsafety/>

Facilitation Guide

In this unit the activities will be facilitated face to face but the materials, resources and activities will be accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=7>

The teachers will access resources using their own devices and connecting to the LMS.

Activity 1 (60 minutes): The teachers are introduced to the concept of the internet, its origin and components by completing the GFC LearnFree Internet Basics tutorial.

Activity 2 (60 minutes): The teachers are introduced to search engines using the GFC LearnFree Using Search Engines tutorial. Move around the room providing support but let the teachers get used to studying using the online tutorials.

Activity 3 (60 minutes): The teachers will complete the GFC LearnFree Internet Safety tutorial that outlines the issues we need to think about to protect their students. Teachers will discuss this issue using a forum on the LMS.

Activity 4 (60 minutes): Discuss developing a school internet safety policy with the group. What should be in it? What is its purpose? Then task the teachers to create a one-page Word document that outlines rules and procedures to protect students when using the internet. This document needs to be uploaded into the LMS using the assignment tool in unit 4. This is essential practice for when they need to do this remotely after the workshop. Here are the instructions:

Step 1

Work through the various readings and tutorials provided in this unit. This will provide you with a good overview of the many online threats that your students could be exposed to. Next, you can complete the GFC Learn Free Internet Safety tutorial below. This tutorial outlines the issues you need to think about to protect your students.

Step 2

Use the forum below to discuss with the group what you believe should be in a school Internet Safety Policy. Share with the group what you think the challenges are around developing a school Internet Safety Policy.

Step 3

Use a search engine to locate a school Internet Safety Policy template/example online that can be adapted in your school. Finalize a one-page document where you outline rules and procedures to protect students at your school. This is effectively a proposal for school administrators to consider as they start to adopt computers and the internet usage.

Step 4

Use the assignment tool to submit your draft policy.

Subject: Technology Literacy		Unit 04: Word processing		Time: 6 hours	
Key unit competency					
Use and demonstrate the use of software applications, particularly a word processor.					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Know and understand the difference between system and application software Know and understand word processing concepts Describe the function and purpose of a word processor Identify basic word processing tools 	<ul style="list-style-type: none"> Use computer basic software applications such as the word processor Use ICT related concepts applied in learning environment Use output devices such as a printer 	Confident in using ICT hardware and software for teaching and learning processes	<ol style="list-style-type: none"> Introduction to system vs. application i.e. an application like a word processor Basic understanding of the operating system environment Introduction to word processing <ol style="list-style-type: none"> Starting, creating and closing a word processor document Toolbars and menu system Rule, document view, text area Saving and retrieving a document Typing, inserting, editing and formatting text Page margins, page size and orientation Error proofing tools (check spelling and grammatical errors) Printing a word processor document 	<ol style="list-style-type: none"> Introduction and orientation to the operating system and how to access the word processor Web tutorials cover opening, saving and exiting word processor files, formatting, fonts and paragraphs, editing documents and manipulating graphics and objects Teachers use skills to create teaching aids and submit a document as evidence of proficiency 	
Assessment criteria: Word processor practical exercises					
Materials					
OER:					
1. COL/Guyana MoE (2012). What is the Purpose of Word Processing Software? http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module01/Unit03/01.html					
Free Resources:					
1. GCF LearnFree: Getting started with Windows 10 https://www.gcflearnfree.org/windows10/getting-started-with-windows-10/1/					
2. GCF LearnFree: Getting to know Word 2016 https://www.gcflearnfree.org/word2016/getting-started-with-word/1/					
3. GCF LearnFree: Word 2016 Creating and Opening Documents https://www.gcflearnfree.org/word2016/creating-and-opening-documents/1/					
4. GCF LearnFree: Word 2016 Text Basics https://www.gcflearnfree.org/word2016/text-basics/1/					
5. GCF LearnFree: Word 2016 Formatting Text https://www.gcflearnfree.org/word2016/formatting-text/1/					

6. GCF LearnFree: Word 2016 Printing Documents
<https://www.gcflearnfree.org/word2016/printing-documents/1/>
7. GCF LearnFree: Word 2016 Indents and Tabs
<https://www.gcflearnfree.org/word2016/indents-and-tabs/1/>
8. GCF LearnFree: Word 2016 Lists
<https://www.gcflearnfree.org/word2016/lists/1/>
9. GCF LearnFree: Word 2016 Headers, Footers and Page Numbers
<https://www.gcflearnfree.org/word2016/headers-and-footers/1/>
10. GCF LearnFree: Word 2016 Tables
<https://www.gcflearnfree.org/word2016/tables/1/>

Textbook/Manual

Fishel, S. (2016). Word 2016. Bookboon. Available online at <http://bookboon.com/en/word-2016-ebook>

Facilitation Guide

This is a blended learning unit. Activities will be facilitated face-to face but the materials, resources and activities will be accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=8>. Teachers will access the tutorials and forum from the LMS as well as submit their word processing assignment using the assignment tool. It is important that teachers distinguish between system software, particularly the operating system (OS), and application software, such as MS Word. Do not spend too much time on the OS. Merely point out that the OS supports all application software.

Activity 1 (30 minutes): Teachers will complete the GCF LearnFree tutorial, 'Getting Started with Windows 10' that illustrates the role of the OS and distinguishes between system and application software.

Activity 2 (4 hours): Teachers work at their own pace using the nine GCF LearnFree tutorials or with the BookBoon Word 2016 free textbook accessed from within the LMS. A forum has been set up after each tutorial where they can discuss issues raised by the tutorial. This is a very long session, so move around and handle individual queries. Make sure you provide support to those feeling lost or wanting to query aspects of the skill. If you want you can interrupt every now and then and demonstrate some extra features to the group. This will break the monotony of tutorial work.

Activity 3 (60 minutes): Task the teachers to create a handout that they can use in their classes. Encourage them to take time to make their handout look as professional as possible. Ask the class to print their class notes both using the venue printer but also as a PDF. The PDF method means they need to go through the process of printing but end up with a digital document. This is the document they need to submit using the LMS assignment tool. By now they should have had plenty of practice uploading documents but be on hand online to support the process.

Activity 4 (30 minutes): Identify an exemplary set of notes from those submitted and provide positive criticism as to what is good and what could be improved. Encourage debate about what constitute a good set of notes or hand-outs.

Subject: Technology Literacy		Unit 05: Record keeping (spreadsheets)		Time: 4 hours	
<p>Key unit competency</p> <p>Use in the administration of the classroom and school spreadsheet in school management.</p>					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
Identify and understand different ICT tools used in schools to support administration	Apply different application software to increase efficiency and cost effectiveness in school and class management	Increase efficiency, access, equity, quality and relevance in school and class management	<ol style="list-style-type: none"> 1. The Importance of ICT in school and class administration: <ol style="list-style-type: none"> a. Information management b. Recording and processing data c. Storing and sharing information d. Capture and store data for informing data-driven decision making e. Improve methods of accountability and reporting 2. Spreadsheet skills: <ol style="list-style-type: none"> f. Introduction to Excel g. Interface h. Functions and formulas 	<ol style="list-style-type: none"> 1. Demonstration on various ICT tools used for school and class administration 2. Practical sessions on using spreadsheets applications 3. Tutorials on setting up a class mark book using a spreadsheet 	
<p>Assessment criteria: Assessment will focus on the ability to identify different school management software applications and use a spreadsheet package to support class record keeping.</p>					

Materials

OER:

1. COL/Guyana MoE. (2012). School Records. Available online
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module02/Unit04/01.html>
2. COL/Guyana MoE. (2012). Classroom Records
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module02/Unit05/01.html>
3. MoE Kenya KICTCFT. (2016). ICT to Keep School Records
<http://kictcft.or.ke/course/view.php?id=11>

Free resources:

1. GFC LearnFree: Excel 2016 Tutorials
<https://www.gcflernfree.org/excel2016/>
2. GFC LearnFree: Intro to Formulas
<https://www.gcflernfree.org/excel2016/intro-to-formulas/1/>

Facilitation Guide

This is a blended learning unit. Activities will be facilitated face to face but the materials, resources and activities will be accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=11>. Teachers will access the tutorials and forum from the LMS and submit their assignment using the assignment tool.

Activity 1 (60 minutes): Teachers will be access readings from the LMS on different school administration packages that outline the merits of such systems. They will be encouraged to investigate a few open source platforms that can be used free of charge. Towards the end of the session, discuss the merits of such software with the group.

Activity 2 (90 minutes): Teachers will be encouraged to do the GFC LearnFree tutorials on spreadsheets accessed from the LMS. Work around the room providing individualised support.

Activity 3 (90 minutes): Teachers will be asked to follow a step-by-step process to set up a class mark book using a spreadsheet package. The completed mark book will need to upload to the LMS using the assignment tool in unit 8.

Subject: Technology Literacy		Unit 06: E-mail and social media		Time: 4 hours	
Key unit competency					
Describe the functions and purposes of internet in the classroom and demonstrate the capability of using internet including e-mail and social media functions in classwork.					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Know and understand different e-mail services and social media applications Identify different areas where internet functions are applicable in the classroom particularly e-mail and social media 	<ul style="list-style-type: none"> Use e-mail and social media activities Make competent (use of e-mail and social networking) in different classroom settings 	Recognize the value of internet in facilitating, understanding, communication, creativity and change in the classroom	<ol style="list-style-type: none"> e-Mail Communication: <ol style="list-style-type: none"> Reading, composing, sending, forwarding, replying and deleting messages Attaching documents or files to a message Group mails Social media apps: <ol style="list-style-type: none"> Facebook Twitter WhatsApp Skype LinkedIn 	<ol style="list-style-type: none"> Teachers create and use web based e-mail accounts Teachers use social media applications for collaboration and support Teachers are made aware of the ethical implications of the use of social media 	
Assessment criteria: Assessment will be made on peer-to-peer interaction using electronic tools.					

Materials

Free resources:

GCF LearnFree: Facebook 101 <https://www.gcflearnfree.org/facebook101/>

GCF LearnFree: Twitter 101 <https://www.gcflearnfree.org/twitter/>

GCF LearnFree: WhatsApp <https://www.gcflearnfree.org/whatsapp/>

GCF LearnFree: eMail 101 <http://www.gcflearnfree.org/emailbasics/email101>

GCF LearnFree: eMail Basics <https://www.gcflearnfree.org/email101/>

GCF LearnFree: Gmail <https://www.gcflearnfree.org/gmail/>

WordPress. (2017). Getting Started with WordPress <https://learn.wordpress.com/quick-start-guide/>

Facilitation Guide

This is a blended learning unit. Activities will be facilitated face to face but the materials, resources and activities will be accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=9>

Activity 1 (90 minutes): Teachers will complete two GFC Learn Free e-mail tutorials, 'e-Mail 101' and 'e-Mail Basics', that include reading, composing, sending, forwarding, replying and deleting messages as well as attaching documents or files to a message.

Activity 2 (100 minutes): Teachers will work through the GFC Learn Free web tutorials on Twitter, view the Ministry of Education's Twitter guidelines and then be encouraged to set up a Twitter and/or WhatsApp account and create a connected group.

Activity 3 (90 minutes): Teachers will work through the WordPress Quick Start tutorial then be encouraged to set up a blog account and design class activities that use this tool.

There is a portfolio assignment for the teachers to complete:

You now need to report on the three mini tutorials we covered in this unit. Provide evidence that you can read, compose, send, forward, reply and delete e-mail messages, attach documents, such as class notes, lesson plans for your class as well as set up a WhatsApp account. In your blog, reflect on your own use of social media platform in the classroom. How might social media and e-mail enhance your collaboration with peers, students, parents and community?

Subject: Technology Literacy		Unit 07: Graphics software		Time: 3 hours	
Key unit competency					
Explain basic ICT concepts, use and demonstrate the use of graphic software.					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Identify basic graphic functions Describe the functions and purpose of graphics software 	<ul style="list-style-type: none"> Use computer basic software applications such as the MS Paint or Fresh Paint Use ICT production tools such as printers 	Confident using graphics software for teaching and learning processes	<ol style="list-style-type: none"> Introduction: <ol style="list-style-type: none"> Paint/Fresh Paint Software interface layout Functions and tools Saving Graphic development: <ol style="list-style-type: none"> Drawing of different shapes Filling of different shapes with colours Changing the colours using the palette and making new colours to add to the palette Adding text to a drawing 	<ol style="list-style-type: none"> Teachers develop and save a fun graphic, an expressive face, as an initial product of their exploration of the software programme Teachers develop graphics to support a component of their syllabus and insert it into a word processor document developed previously Teachers create a set of graphics to insert into the class notes/hand-outs 	
Assessment criteria: Practical exercises using a graphics package.					

Materials

Free resources:

Blaga, M. (2015): How to work with paint in Windows. Available online at <https://www.digitalcitizen.life/how-work-new-paint>

RichDragon. (2013). What Can Fresh Paint Do On Windows 8? Available online at <https://www.youtube.com/watch?v=pEGEbt3Tdp0>

OldGuyGeek (2013). Fresh Paint for Windows 8. Available online at <https://www.youtube.com/watch?v=3ctfzImB82c>

Facilitation Guide

This unit is an online unit. Resources and activities will be accessed from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=10>. Teachers will access the tutorials and forum from the LMS as well as submit their graphics assignment using the assignment tool.

Activity 1 (30 minutes): Through the LMS, teacher can access Paint/Fresh Paint tutorials and they must choose the programme according to their OS. Encourage a cursory investigation of these tutorials. Provide support through the WhatsApp group to support those struggling to activate the programme and access the tutorials.

Activity 2 (60 minutes): Encourage the teachers to develop graphics to support a component of their syllabus and insert it into a MS Word document. Make sure they can do the following:

- erase lines and shapes
- blend colours with the airbrush
- add text to an image
- save an image
- compress an image
- insert an image from Paint to another application and vice versa
- print an image.

Activity 3 (90 minutes): Support the teachers complete the following portfolio activity:

Read the article on how graphics can be created to support teaching and learning. Identify where in your teaching you could use a graphic to add value to your lesson. Create a graphic using Paint or Fresh Paint. Insert your image into a MS Word document, save it onto your computer and submit your document using the assignment tool.

Subject: Knowledge Deepening		Unit 08: Effects of ICT related policy on the classroom and vice versa		Time: 4 hours
Key unit competency				
Explain how existing and planned national policies impact classroom practices and how their classroom practices correspond to and support policies related to ICT.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Know and understand existing and planned national policies related to ICT in Education	Identify how classroom practices correspond to and support national policies	Demonstrate a determination to play a positive role in nation building	<ol style="list-style-type: none"> 1. Overview of National policies related to ICT (Vision 2020, EDPRS2, Smart Rwanda Master Plan (SRMP), ESSP, ICT in Education Policy, Rwanda E-waste policy) 2. Introduction to Rwanda ICT in Education Policy 3. Impact of ICT in Education Policy to teaching and learning 4. Key issues and challenges in the education sector as per the SWOC analysis in the Rwanda ICT in Education Policy 	<ol style="list-style-type: none"> 1. Read the policy statements, visions, goals and objectives 2. Discuss the policies and suggest what to do to implement the ICT in Education policy at the national level (all schools) and how to implement the policy in the classroom 3. Discuss in the key issues and challenges in implementing ICT in Education policy 4. Individuals prepare a presentation for class discussion
Assessment criteria: Practical exercises				

Materials

Government policies and frameworks:

1. Rwanda ICT in Education Policy and Strategic Implementation Plan
2. Economic Development and Poverty Reduction Strategy (EDPRS2)
3. Education Sector Strategic Plan (ESSP 2)
4. National ICT Strategy and Plan (NICI I, NICI II, NICI III)
5. Rwanda Vision 2020
6. Rwanda E-waste policy
7. Smart Education, Education Technology Plan (SRMP)

(These documents are available on the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=3>)

OER:

COL & Guyana MoE. (2012). Advancing Policy through Classroom Action and Technology <http://colccti.colfinder.org/sites/default/files/guyana/pages/KD/Module01/Unit01/01.html>

MoEST Kenya. (2016). Policy Understanding <http://kictcft.or.ke/course/view.php?id=2>

Facilitation Guide

This unit is accessed and completed online. All documents will be accessed from the LMS and portfolio submissions will be made online at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=3>.

Activity 1 (90 minutes): As there are six policy documents, it is impossible for one individual to read all the documentation in the time available. To speed up the processing of these documents, divide the class into groups of five. Create these groups using the Whatsapp group. Each individual within a group needs to read only one document and then summarize or read out to the other group members the pertinent points of that policy or strategy. This can be done in the Moodle forum entitled 'Policy Summaries'. The documents and the suggested page references are available on the LMS. It would help if you asked the group to consider the documents in a particular order.

1. Vision 2020, particularly p13, 16 & 19
2. Economic Development And Poverty Reduction Strategy 2, particularly p14-16, 62, 65, 79
3. National ICT Policy 2015, particularly p13, 15, 19, 22, 30, 31 & 54-55
4. Education Sector Strategic Plan 2014-2018, particularly p37-40, 58
5. ICT in Education Policy (2008), particularly p19 & 22-24
6. Rwanda E-waste policy

Activity 2 (30 minutes): Once the group has an overview of the policy environment it is important for them to start thinking about what this means at two levels: national (all schools) and at the level of classroom practice. Forewarn the class that they will then need to develop a presentation of their discussion using an Office Suite programme of their choice.

Instruct teachers to:

Read what others have said in the discussion forum threads. Feel free to reply to your peers or the facilitator's postings to either expand on what has been written there or to request additional information. Consider what each policy suggests you do to implement policy first at the national level (all schools) and then consider how to implement the policy in your own classroom.

Activity 3 (120 minutes): The portfolio assignment is as follows:

1. Create a presentation that has the following structure;
 - a. What do the policies tell us about classroom practice?
 - b. How would we implement the policies at a national level?
 - c. How would we implement the policies at classroom level?
 - d. What are the challenges of implementing the policies?

Once complete, the teacher needs to upload their presentation to the Moodle server using the assignment tool available.

Subject: Technology Literacy		Unit 09: ICT to support teaching the curriculum		Time: 4 hours	
Key unit competency					
Demonstrate how ICT can be used in the curriculum.					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
Identify and understand the use of ICT to support the curriculum and improve assessment	<ul style="list-style-type: none"> Select digital resources to support curriculum and assessment Evaluate digital resources to support curriculum and assessment Develop ICT-based learning activities/exercises 	Appreciate the support of digital resources and ICT based learning activities/exercises in curriculum and assessment	<ol style="list-style-type: none"> Understanding how ICT digital content supports teaching and learning Finding the right digital resources for the subject matter Selecting the best ICTs for the learning outcomes Using productivity suite software that provides students with tools to solve real world problems Barriers to ICT classroom integration including ICT and students living with disabilities Development of ICT-based learning activities in a specific subject 	<ol style="list-style-type: none"> Lecture and demonstration to show examples of how ICT tools can support various syllabi (visualization in Science, data analysis tools in Mathematics and role play simulations in Social Studies) Individual assignment for teachers to develop a learning activity to improve learning in a specific curriculum area using digital content Individual assignment for teachers to develop a lesson plan that illustrates how technology has been used to support the curriculum and then present to peers Teachers write a blog to reflect on the relationship between resources and curriculum goals Teachers write a blog to reflect on the barriers to ICT classroom integration with a specific focus on students living with disabilities 	
Assessment criteria: Demonstrate how ICT can be used in the curriculum.					

Materials

OER:

COL/Guyana MoE. (2012). Selecting ICT Resources to Support Curriculum Outcomes

<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module02/Unit01/01.html>

Kenya MoEST. (2016). ICT Supporting Curriculum Goals <http://kictcft.or.ke/course/view.php?id=3>

University Cambridge/OER4Schools: Unit 1 - Introduction to interactive teaching and the use of ICT

http://oer.educ.cam.ac.uk/wiki/OER4Schools/Introduction_to_interactive_teaching_and_the_use_of_ICT

SchoolNetSA. (2010). Web Evaluation Template. <http://kictcft.or.ke/mod/resource/view.php?id=423>

Facilitation Guide

This as an online learning unit. Resources can be accessed from the LMS at [http https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=15](http://https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=15). You will need to facilitate from a distance.

Activity 1 (45 minutes): Using an online video (<https://channel9.msdn.com/Series/Teaching-with-Technology/Selecting-ICT-Resources-to-Support-Curriculum-Outcome>), teachers will get an overview of how and where ICT can contribute to the teaching of the curriculum. If you need to prepare look at the OER4Schools link above which summarizes the main points. Encourage debate in the LMS forum and ask the class to volunteer how ICT is adding value to their subjects.

Activity 2 (75 minutes): Teachers are encouraged to select a component or topic within the curriculum they teach and identify a particular syllabus specific objective they would like to address. They should then search for resources and tools to support the objective. The REB Curriculum documents are on the LMS. Teachers will then access the web resources evaluation template referenced in the materials section above to help them assess the quality of the resource they might encounter when searching for resources to support curriculum objectives.

Activity 3 (60 minutes): Task teachers with adding an entry into their blogs about what they learnt. If the teachers ask for clarity ask them to get used to using the blog facility in the Moodle LMS. There is a link to their blogs in a block on the left-hand side of the screen in Unit 09. Ensure that they can return to it and fill out new journal entries later as we will use this facility again. The task is as follows:

In your blog, insert an entry that captures your thoughts on the marriage of ICT and the competence-based curriculum. Also include in your post your understanding of the following statement from the Rwandan competence-based curriculum: 'The curriculum must enable educators and learners to use ICT as a tool to improve the quality of education in all subjects at all levels in teaching and learning practices. ICT must support the emergence of teaching and pedagogical learner-centred approaches as well as encourage research, communication and collaborative learning.'

Activity 4 (60 minutes): Once the teachers have identified a set of digital resources, they will need to write up a lesson plan that explains how these resources and tools help their students achieve the specific objectives as identified in the official syllabus. Encourage debate on the topic in the LMS forum: 'Does the application of these tools and resources really add value to the lesson or could we have done the same without them? Are we teaching in the old way but with new technology?' Make sure you summarize the discussion and post it in the forum at the end of the week. The teachers will submit their completed lesson plans using the LMS assignment tool located in unit 09.

Subject: Technology Literacy		Unit 10: ICT to support traditional pedagogy		Time: 4 hours	
Key unit competency					
Explain the importance of ICT tools to support students' acquisition of school subject matters knowledge and use presentation software and digital resources to support instruction and problem solving in the classroom.					
Learning Objectives			Content	Learning activities	
Knowledge and understanding	Skills	Attitudes and values			
<ul style="list-style-type: none"> Know and understand ICT tools Identify where ICT-based activities would be appropriate Identify relevant ICT problem solving tools 	<ul style="list-style-type: none"> Use ICT tools to support students' acquisition of school subject matters Apply facilitation methods including presentation software Design lesson aids that make use of ICT tools and digital resources to support instruction and problem solving in the classroom 	<p>Recognize the value of ICT in promoting creativity, change, problem solving and collaborative learning</p>	<ol style="list-style-type: none"> The importance of using ICT in teaching and learning ICT Tools and systems in learning: <ol style="list-style-type: none"> Mobile devices Computer with accessories Projector Internet Relevant digital tools & resources: <ol style="list-style-type: none"> Digital instructional materials Presentation software application 	<ol style="list-style-type: none"> Individuals research and brainstorming about the importance of ICT in teaching and learning and present it Facilitator-led demonstration on ICT tools and its usage in subject matters Individual exercises with presentation package Group discussion on good presentation design to encourage learning Upload presentation on LMS 	
<p>Assessment criteria: Teachers should be able to integrate ICT into didactic materials, create learning activities that use ICT resources to meet outcomes and design presentations that appropriately incorporate ICT resources.</p>					

Materials

OER:

Cambridge University. (2013). OER4Schools - Introduction to interactive teaching and the use of ICT

http://oer.educ.cam.ac.uk/wiki/OER4Schools/Introduction_to_interactive_teaching_and_the_use_of_ICT

COL/Guyana MoE. (2012). Unit 1: Integrating ICT into Didactic Teaching Methodologies

<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module03/Unit01/01.html>

1. Cambridge University. (2014). Unit 4: Assessment for learning and lesson pacing
http://oer.educ.cam.ac.uk/wiki/OER4Schools/Assessment_for_learning_and_lesson_pacing
2. COL/Guyana MoE. (2012). Unit 3: Strategies for Integrating ICT into Learning
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module03/Unit03/01.html>

Facilitation Guide

This is an online lesson. Resources and tools will be available from the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=14> It will be facilitated online.

Activity 1 (60 minutes over a week): Using the LMS forum, ask the teachers to consider how they would use technology to improve or enhance their teaching. Ask them to brainstorm and compile lists on the following:

- How ICT might be used to improve your teaching?
- How might you use a presentation package specifically in what you are already doing?
- How might ICT be used to help student learning?
- How could ICT be used to help students solve problems?
- How might you use ICT tools to create digital materials to support student acquisition of school subject matters?

Ask teachers to post their lists using the forum. Once they have posted encourage them to discuss each other's contributions. At the end of the week, create a summary of the group findings and post to the forum. Then ask teachers to consider these questions:

- How might the internet be used to find existing lesson plans?
- How might you use productivity software to create professional-looking teaching aids?
- How can a tablet and apps provide digital tools to help teach the curriculum?
- What other apps are you aware of that could help teach the curriculum?

Teachers can discuss using an LMS forum.

Activity 2 (135 minutes): This LMS activity requires each teacher to select a component of the syllabus that they think would lend itself to presentation software. The teachers are required to follow a tutorial where they are taught to create simple PowerPoint presentation. Teachers who are familiar with the package can go ahead and create the teaching aid without waiting for the tutorial. Provide support by tracking what the teachers have accessed. Contact teachers that have not accessed the system at the end of the week via e-mail or telephone. Encourage teachers to look at the section called 'Death by PowerPoint' to find out how not to create a presentation!

Activity 3 (45 minutes): Teachers revise their designs based on the lessons about good design practices. Teachers will use the assignment upload tool to submit their presentations. Access these submissions and identify some good examples of PowerPoint being used well to support teaching. Using the forum highlight the exemplars and provide the designers an opportunity to explain their thinking and approach to the class.

Subject: Knowledge Deepening		Unit 11: Manage ICT for project-based learning		Time: 4 hours
Key unit competency				
Manage student project-based learning activities in a technology-enhanced environment to support collaboration, communication and critical thinking.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Know and understand how to facilitate project-based learning using ICTs	Manage project based learning activities in a technology environment	Appreciate a flexible classroom learning environment that promotes student-centred activities and flexible technologies to support collaboration	<ol style="list-style-type: none"> 1. Introduction to project-based learning 2. Designing a project-based learning lesson 3. Facilitating project-based learning in a safe technological environment 	<ol style="list-style-type: none"> 1. Facilitator presentation on the Project Based Learning (PBL) project management cycle and project-based learning management and physical environment factors for creating a safe environment 2. Group work: Practical exercise to develop a project-based lesson plan 3. Presentation of individual teacher PBL lesson plans 4. Discussion on PBL facilitation techniques 5. Teachers submit finalized lesson plans to LMS
Assessment criteria: Teachers develop a PBL lesson plan.				
Materials				
OER:				
Cambridge University. (2013). OER4Schools - Unit 3: Group Work. http://oer.educ.cam.ac.uk/wiki/OER4Schools/Group_work				
SchoolNet SA. (nd). CCTI – Learning through Projects. http://cctionline.org/courses/planning-learning-through-projects/				
Cambridge University. (2013). OER4Schools.org - Unit 5: Enquiry-based learning and project work. http://oer.educ.cam.ac.uk/wiki/OER4Schools/Enquiry-based_learning_and_project_work				
Study Guides & Strategies. (nd). Problem Based Learning. http://www.studygs.net/pbl.htm				
COL/Guyana MoE. (2012). Unit 3: Introduction to PBL. http://colccti.colfinder.org/sites/default/files/guyana/pages/KD/Module03/Unit01/01.html				
MoEST Kenya (2016). ICT Tools to Support PBL. http://kictcft.nba.co.za/course/view.php?id=6				

Facilitation Guide

This unit is a blended learning unit. It will be facilitated face to face at the ICT Essentials workshop as part of the final day's programme, however, the resources and tools required to complete the activities will be accessed from the LMS: <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=12>. You need to provide teachers with an awareness of what PBL is, how to manage and facilitate a PBL lesson. A good resource to get up to speed is at <http://cctionline.org/courses/planning-learning-through-projects/>.

Activity 1 (45 minutes): Provide teachers with an overview of the PBL methodology, particularly the different phases of PBL activity. Also see if you can show them an example of the products from a completed project. Let them ask many questions. Resources are available on the LMS.

Activity 2 (90 minutes): Ask the teachers to work in groups of two, but each produce a PBL lesson plan using the template lesson planner available from the LMS unit.

Activity 3 (60 minutes): Ask a few teachers to present their plans to the class and encourage debate as to whether it follows the guide as shown in the diagram on the LMS unit page. Encourage the teachers to provide constructive feedback.

Activity 4 (15 minutes): Ask the teachers to consider the peer role in a PBL project. Ask them to read the article on peer interaction. What do both teachers and students need to do that is different from the way they normally interact? Encourage debate.

Activity 5 (30 minutes): Teachers need to complete this portfolio assignment and upload their PBL lesson plans using the LMS assignment tool:

It is time to pull your PBL lesson plan together. We have done our initial planning so let us review the plan and start to build this lesson. Note: This assignment is a recommended Portfolio Task and should be submitted on completion of this course. Your first consideration is to reassess the effectiveness of your questions. Remember that PBL is investigative by nature and the questions you pose must engage the class and inspire action. The question is the engine behind the PBL strategy but questioning is essential to the teaching process whether you are using PBL or not.

1. Reflect on the quality of the questions you have posed for the project. Are they real world questions? Do they tie your subject or teaching area to the students' experiences? Research has shown that if you link your curriculum content to the local context, students are more likely to see the relevance in your subject and be more engaged in the activities you set for them. Another consideration is, have you posed an open or closed question?
2. Now consider your role as facilitator. Can you construct the structure of the lesson? For example, what resources will you need to help the students investigate your questions? Are there sufficient books in the library? If so, which ones are worthwhile? Identify them. Can you book time in the library for the students? Will the children have access to the internet? Do you need to book the computer lab? If so, can you focus the students on a number of quality sites? Which ones? Are you going to encourage them to look for information at home? If so, should you alert the parents to their needs? Are you going to encourage them to create their own evidence using digital cameras, video or cell phones to document their environment? Again are you going to alert parents to this requirement?
3. Once students have collected data, you will need to facilitate the reporting of their findings and helping them draw conclusions. Do the students have a range of tools to help them organize their data? Do they have a range of choices on how to report to the class? What is acceptable? How will you organize them so that they have opportunities to work together to organize their reports? Are the students required to present their findings?
4. In light of all the arrangements required above, do not forget that the assessment strategy you designed must also be satisfied. Were the students made aware of the assessment strategy early in the process? Were there opportunities for formative assessment so that they could feed what they had learned back into the learning process? Does the final reporting and summative assessment work cohesively?

Using the PBL planning template provided, or alternatively adjust the version you have been working on in previous activities, finalize a PBL lesson plan and upload the document using the assignment submission tool below as part of your portfolio.

Subject: Technology Literacy		Unit 12: ICT to support assessment		Time: 4 hours
Key unit competency				
Demonstrate how various ICT tools can be used to improve assessment.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Identify and understand the use of ICT to improve assessment	Select digital resources and tools to support assessment	Appreciate the support of digital tools to support assessment	<ol style="list-style-type: none"> 1. Introduction to online ICT assessment tools 2. Evaluating ICT assessment resources 3. Optimizing assessment tools 	<ol style="list-style-type: none"> 1. Reading of internet resources on assessment tools 2. Class discussion using a forum on different online assessment tools available and potential benefits 3. Demonstration of an assessment tools 4. Teachers write short paragraphs in their blog as to what potential benefits can be derived from using digital assessment tools
Assessment criteria: Demonstrate how various ICT tools can be used for assessment.				

Materials

Free resources:

Department Education & Training, Victoria. (2006). Assessment Tools. Available online at <http://www.education.vic.gov.au/school/teachers/support/Pages/advice.aspx>

OER:

California State University. (2007). Choosing Appropriate Assessments. Available online at <http://teachingcommons.cdl.edu/cdip/facultyteaching/Choosingappropriateassessment.html> (CC BY-NC-SA)

Facilitation Guide

This is an online unit. Access to the content and the assessment tools will be on the LMS at <http://elearning.reb.rw/course/view.php?id=47>. Teachers will also have an opportunity to familiarize themselves with the LMS Quiz, Forum and Blog tools during this unit.

Activity 1 (120 minutes): Teachers will be asked to investigate the following assessment tools as identified by the Australian Victoria Department of Education:

- graphic organizers
- rubrics
- review and reflection tools
- familiarization and discussion tools
- feedback tools.

Activity 2 (25 minutes): Let the teachers try out the LMS (Moodle) quiz to experience what is possible in virtual classrooms.

Activity 3 (95 minutes): Portfolio assignment:

Reflect on how ICT-based assessment tools add value to your teaching. In either a word processor or presentation package, demonstrate how an assessment strategy for your subject or grade could incorporate both formative and summative assessment. Identify where you would use each and what tools you would use to support each.

1. Create a document that outlines a revised assessment strategy for a section of the syllabus.
2. Identify where formative assessment will be used.
3. Identify which assessment tools you will use.
4. Upload your revised assessment strategy using the assignment upload tool.

Subject: Technology Literacy		Unit 13: ICT and the physical environment		Time: 4 hours
Key unit competency				
Organize ICT to suit learning needs in either a computer lab or classroom setting.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Identify and understand different ways to organise ICT in the school, lab/ classroom	Reorganize ICT environment to suit curriculum objectives and learning needs, i.e. labs, classrooms or in the community	Maximize the potential of ICT to suit learning needs	<ol style="list-style-type: none"> 1. Definition of computer laboratory: <ol style="list-style-type: none"> a. Human computer interaction b. Design c. Electricity/ ceiling, etc. 2. How to manage a computer lab: <ol style="list-style-type: none"> a. Seating habits b. Code of ethics c. Cleaning of equipment 3. How to use the classroom as an environment for ICT use 4. Mobile usage to support curriculum 	<ol style="list-style-type: none"> 1. Group discussion on the use of computer labs to enhance learning; teachers develop a school plan for an IT lab 2. Group discussion on the use of computers to enhance learning in a classroom setting; teachers develop a lesson plan demonstrating how to use computers effectively 3. Group discussion on the use of mobiles to enhance learning 4. Teachers develop a lesson plan demonstrating how to use mobiles effectively
Assessment criteria: Assessment will focus on the use of ICT deployed in a computer lab or in a classroom setting.				

Materials

OER:

1. COL/Guyana MoE. (2012). Unit 2: ICT in the Laboratory
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module04/Unit01/01.html>
2. COL/Guyana MoE. (2012). Unit 2: ICT in the Classroom
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module04/Unit02/01.html>

Facilitation Guide

This is an online unit. It will occur after the ICT Essentials workshop is completed. Your role as facilitator has changed to that of an online facilitator. The teachers will access unit 13 using their own devices and connecting to the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=13>. Teachers will access the tutorials and forum from the LMS as well as submit their graphics assignment using the assignment tool. You will need to provide online support in the various forums.

Activity 1 (60 minutes): This activity examines the pros and cons of ICT in a laboratory. Teachers will read three articles from the internet, one in praise of ICT labs, suggesting optimal layout options, one rather negative article about labs, and a third offering pros and cons of each. Teachers will then discuss in a forum whether they have a lab at school, are planning to create one or have decided not to go this route. Teachers will discuss the issues in the forum and you must support the conversation.

Activity 2 (60 minutes): This activity examines the pros and cons of ICT in a classroom. Teachers will read a few articles about how best to use ICT in a classroom. Teachers will discuss the issues in the forum and you must support the conversation.

Activity 3 (60 minutes): This activity the use of mobile phones for learning. Teachers will read online articles that identify the pros and cons of using mobile phones for learning. Teachers will discuss the issues in the forum and you must support the conversation. Teachers will then be tasked to create a lesson plan that uses ICT appropriately in this setting. The lesson plan will be uploaded to the LMS using the assignment tool.

Activity 4 (60 minutes): The portfolio assignment is:

Create a presentation aimed at the school management of your school that outlines the following issues;

1. How to layout a computer room in your school. How many computers and in what configuration? Include diagrams.
2. What computer access should be organized for classrooms? How many computers and how might these be used in a typical lesson?
3. Why should mobile phones be incorporated into teaching and learning? Describe a lesson where mobile phones add value.

Use the assignment submission tool to upload your presentation.

Subject: Technology Literacy		Unit 14: ICT resources for professional development		Time: 4 hours
Key unit competency				
Locate necessary resources that help to acquire additional subject matter and pedagogical knowledge for professional development.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
Identify relevant resources for professional development	Access online learning materials and communities in supporting professional learning	Appreciate available and appropriate resources for professional development	Professional development goals 1. ICT supporting teacher professional development through e-learning 2. Access to outside experts and learning communities to support professional learning	1. Discuss best practices about ICT resources for professional development 2. Teachers investigate collaborative networks for growth e.g. Rwanda Teachers' Portal 3. Conduct web search to identify learning opportunities that can help in reaching professional development goals (formal or informal learning, including MOOCs) 4. Teachers develop individual professional development plans for after the course
Assessment criteria: Locate necessary resources that help to acquire additional subject matter and pedagogical knowledge for professional development.				

Materials

OER:

1. ICT Essentials for teachers, computers, Internet, OERs
COL/Guyana MoE. (2012). Unit 2: Use of ICT to Support Lifelong Learning
<http://colccti.colfinder.org/sites/default/files/guyana/pages/TL/Module05/Unit02/01.html>
2. COL/Guyana MoE. (2012). Unit 1: Life Long Learning I
<http://colccti.colfinder.org/sites/default/files/guyana/pages/KD/Module05/Unit01/01.html>
3. Cambridge Univ. (2013). OER4Schools.org Unit 6: Into the Future
http://oer.educ.cam.ac.uk/wiki/OER4Schools/Into_the_future
4. MoEST Kenya. (2016). KICTCFT: Collaborative Teacher networks
<http://kictcft.or.ke/course/view.php?id=16>
5. MoEST Kenya. (2016). KICTCFT: Personal Learning Networks
<http://kictcft.or.ke/course/view.php?id=15>

Facilitation Guide

This final unit is to be completed online. The teachers will access unit 14 using their own devices and connecting to the LMS at <https://ict-essentials-for-teachers.moodlecloud.com/course/view.php?id=17>. Teachers will access the tutorials and forum from the LMS as well as submit their portfolio assignment using the assignment tool. You will need to provide online support in the various forums.

Activity 1 (90 minutes): Teachers will be asked to investigate collaborative teacher networks, e.g. the Rwanda Teachers Portal at www.education.rw and Microsoft's Educator Community at <https://education.microsoft.com/>, to ascertain what value they offer teachers. Teachers will discuss merits of these networks in a forum.

Activity 2 (90 minutes): Teachers will be introduced to various options for professional development including MOOCs and other online courses. After investigating a number of course offerings, e.g. Coursera's Teacher Professional Development courses <https://www.coursera.org/courses?categories=teacherpd&languages=en&query=teacher+education>, teachers will discuss the merits of such study options in a forum.

Activity 3 (60 minutes): Encourage teachers to develop a personal professional development plan that outlines a timeline and professional development options that they would like to study to continue their professional growth. This professional development plan will be uploaded to the LMS using the assignment tool in unit 14. The instructions state:

Develop an individual personal development plan that outlines a timeline and development options that you would like to study to continue your professional growth after the ICT Essentials course.

1. Use the computers at your disposal to conduct any research you might need to further your understanding and aid you in completing this activity.
2. Reflect on your own professional development learning goals and consider what your goal in education is, be it a headmaster, district official, government education advisor or minister.
3. Create a PowerPoint presentation and capture this information on your first slide.
4. Next, conduct a web search and identify three different learning opportunities that you wish to explore in helping you reach your goals. These may be formal or informal learning opportunities. In your PowerPoint presentation, create a slide that lists the basic details of each option (i.e. name of learning opportunity, website address and brief description of each).

GLOSSARY

Application: a computer programme (see programme)

Assessment for learning: a new name for formative assessment (see formative assessment)

Competency: the skills, knowledge and understanding needed to do something successfully

Course: a programme of study

Curriculum: a list of the topics to be learnt in a course of study. (The terms 'curriculum' and syllabus' are used slightly differently in different countries, but essentially they both mean a list of what is to be learnt.)

Didactic teaching/didactic instruction: teaching by telling students about the subject; teaching by talking, explaining, demonstrating, lecturing, posing questions to students, answering students' questions and conducting discussions with students. This is in contrast to teaching by helping students to learn through experimenting and reflecting, by getting students to do things rather than primarily listening to the teacher.

Digital (as in digital content, digital devices, digital resources, digital technology): computers and computer technology; computers store and process information by converting it all to single-figure numbers – digits

Digital literacy: basic computer skills such as being able to do word processing or go online

Digital tools: ICT

Formative assessment: assessment that helps students to learn by showing what the students have not understood, what they might need to repeat and whether they are ready to move to the next stage

Graphics software: computer programmes, like Photoshop, which create and manipulate images, pictures, photographs, diagrams and drawings

Information and Communication Technology (ICT): computers, mobile phones, digital cameras, satellite navigations systems, electronic instruments and data recorders, radio, television, computer networks, satellite systems or almost anything that handles and communicates information electronically; ICT includes both the hardware (the equipment) and the software (the computer programmes)

ICT CFT: UNESCO's ICT Competency Framework for Teachers, also referred to as the Framework

Internet: the internet and the World Wide Web (www, or web, or websites) are often used interchangeably, but strictly speaking, the internet is the network which connects computers around the world, and the websites are the documents, images and other material on the network

Knowledge Society: a country, or economy or community, in which knowledge is very important because much of its economic and social activity involves handling information; see also <http://unesdoc.unesco.org/images/0014/001418/141843e.pdf> and <http://unesdoc.unesco.org/images/0012/001295/129531e.pdf>

Knowledge Society skills: the skills needed to handle and create information and knowledge, such as problem solving, critical thinking, analysis, collaboration, communication, understanding others' points of view, and being able to use ICT which is a key tool for handling information

Learning organizations: organizations, such as a school or a company, which embrace the idea that everyone needs to keep learning throughout life; teachers would continue to learn more about the subjects they teach and learn more about how to teach those subjects

Learning society: a society which embraces the idea that everyone should keep learning throughout life

Module: in this publication, the modules are parts of the ICT CFT; a course of study in teacher education or a professional learning programme based on the ICT CFT might be divided into these Framework modules or it might have a different modular structure

Networks: linked computers; computers may be linked together either by wires or wirelessly; linked computers could be just the computers in a classroom or an office building or a set of computers in different parts of the world

Online: connected to the internet or a computer network, for example accessing websites and email

Package: computer programme (see programme below)

Pedagogy: teaching methods, styles and techniques; the way in which the teacher teaches; it can also mean simply teaching, or the study of teaching

Presentation software: computer programmes, like PowerPoint, which are used to create and display a series of slides (text and images) typically to an audience watching a large screen

Productivity software (or tools): word processing, spreadsheet and presentation software

Professional learning: the additional skills and knowledge which teachers acquire in their work, beyond what they learnt to become qualified teachers; teachers can gain this additional knowledge and skill in various ways, through courses, programmes, conferences, seminars, events and workshops, from colleagues, through experience and experimentation, personal research and reflection, and through membership of professional networks and associations; sometimes referred to as professional development or continuous professional development (CPD)

Programme: another word for software, application, package, for example Microsoft Word, or Photoshop, the set of instructions loaded into a computer which enable it to provide specific functions such as word processing, spreadsheets, presentations, databases, and image editing

Resource (as in digital, ICT, web, online resource): digital information, and digital hardware and software

Rubrics (as in assessment rubrics, knowledge-based rubrics, performance-based rubrics): criteria for assessment; the features to be looked for in evaluating students' work; rubrics often include the weightings or the number of marks to be awarded to different aspects of a piece of work

Software (software package etc): computer programme (see programme)

Syllabus: another word for curriculum (see curriculum)

Technology: often used as another word for ICT, although technology can mean almost any type of tool or applied knowledge

Tool (as in digital tools): digital hardware and software
Tutorials (as a type of software): usually a video explanation or demonstration

Unit (as in unit plans): part of a course of study, a module

Web content: information supplied on websites

Wiki: a website which can be edited by users (directly, via their web browsers)