Rwanda *Advanced ICT Essentials For Teachers* Course Curriculum Document

Based on the UNESCO ICT Competency Framework for Teachers (version 3)

With Support from UNESCO and Korean Republic Funds-in-Trust

Version 3 (15th February 2019)

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Contents

Table of Contents

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Introduction

As part of a collaboration between the Rwanda Education Board (REB), UNESCO and Korean Republic Funds-in-Trust (KFIT) a blended learning teachers ICT integration professional development course called the *Rwanda ICT Essentials for Teachers course* was developed and piloted successfully during 2016-17. Over 150 teachers were trained in two pilots' sessions and the REB is investigating how best to roll out the course to more teachers. During the collection of data for the training report participants and officials from the Rwanda Education Board (REB) requested the development of an *Advanced ICT Essentials for Teachers'* course, that would provide more in-depth training for capable teachers in terms of ICT for education. It was reported while there are some options for teachers who are new to computers there was nothing for teachers who already had the basic skills and know-how.

An initial survey of REB, Ministry of Education and University of Rwanda representatives as well as the members of the *ICT Essentials for Teachers* WhatsApp group made up of course graduates and e-tutors of the original programme identified the following priority areas for the new course: Strategies to incorporate new technologies into teaching and learning such as Interactive Whiteboards, mobiles, simulation and multimedia software; Strategies to use ICT to support inclusive education and students with special needs; Opportunities to use ICT to move towards progressive teaching methodologies such as student-centric approaches, pervasive education.

ICT Essentials for Teachers course was based on the UNESCO ICT Competency Framework for Teachers (CFT) and built by adapting and supplementing existing Open Educational Resources (OER). It was decided that a similar model should be used to build the *Advanced* course. This Advanced ICT Essentials Course curriculum document outlines how each of the 10 units of study have at their core an ICT CFT competency and also suggests some OER that can be adapted and contextualised to work within the Rwanda context. Below is an overview of different teacher ICT competencies organised according to levels and aspects as outlined in the UNESCO ICT CFT (version3) document.

UNESCO ICT CFT v3	Learning levels		
Aspect / Educational focus	**Knowledge Acquisition (KA)**	**Knowledge Deepening (KD)**	**Knowledge Creation (KC)**
Understanding ICT in Education	Policy Understanding	Policy Application	Policy Innovation
Curriculum and Assessment	Basic Knowledge	Knowledge Application	Knowledge Society Skills
Pedagogy	ICT-enhanced Teaching	Complex Problem-solving	Self-management
Application of Digital Skills	Application	Infusion	Transformation
Organization and Administration	Standard Classroom	Collaborative Groups	Learning Organizations
Teacher Professional Learning	Digital Literacy	Networking	Teacher as Innovator

The *Rwanda Advanced ICT Essentials for Teachers Course* has been built by selecting competencies and objectives from the framework that respond to the requirements of the Rwanda Competency-based Curriculum and that align with the needs of teachers with intermediate ICT skills identified during a round of consultation with education stakeholders.

Rwanda *Advanced ICT Essentials for Teachers Course* Units of Study. How to ...	Unit Competency: Teachers can ...	UNESCO ICT CFT v3 Alignment (Objective code)
Workshop Units (Face-2-Face)		
Use interactive whiteboard to support teaching and learning	describe and demonstrate the use of common hardware	KA.4.a
Use assistive technology for inclusive and special needs education	access, evaluate, organise and disseminate digital resources to support students with disabilities	KD.5.c
Use Technological Pedagogical Content Knowledge (TPACK) Framework Project learning in TPACK	use ICT appropriately to achieve curriculum standards	KD.2.a
Incorporate Games into Lessons	Operate software packages that are appropriate to subject areas to encourage higher order thinking in students.	KD.4.a
Online Units		
Use Mobile Devices to Support Teaching and Learning	use communication and collaboration technologies, including mobile technologies	KA.4.l
use multimedia application and simulations	use authoring tools to design curriculum materials	KD.4.c
Motivation for Learners and Learning Modalities	develop professionally within subject areas by using ICT to acquire subject resources and discover new teaching strategies	KA.6.b
Create learner-centric lessons	help students design project plans and activities that engage them in collaborative, problem solving research or artistic creation	KC.3.c
Design a 'Flipped Classroom' (Pervasive education)	use digital tools to support online collaboration between students and members of the knowledge community	KC.4.b
Create an online learning environment (Google Classroom & Moodle Cloud)	create an online learning environment to support pervasive learning	KC.4.a
Facilitate online learning	Use digital tools to, ● support online collaboration between students and members of the knowledge community	KC.4.b & c

	● track and evaluate student contributions to learning in the Knowledge community	

The target audience of the Advanced ICT Essentials for Teachers course are those teachers who have successfully completed the original ICT Essentials for teachers blended learning course. This advanced course is XX notional hours in length. The course commences with a two-day orientation workshop that provides a refresher course on studying using the Rwanda Education Board's learning management system, it will introduce the participants to their facilitators and provide an opportunity to complete 4 units that require specialised equipment and/or access to local experts. The remaining 7 units are completed online over the next 14 weeks. Participants competencies are assessed using evidence collected of their performance in the classroom or by their insight displayed in forum discussion

The Rwanda *Advanced ICT Essentials for Teachers Course* was adapted from open courseware and existing OER, particularly the materials developed by Matthew Goniwe School of Leadership and Governance, South Africa for their *MG Online Teacher ICT Integration* course. Their materials were licensed with Creative Commons Attribution-ShareAlike (CC BY SA) license. However, the developers also need to acknowledge the *Kenyan ICT CFT Course* developed by the Ministry of Science and Technology, as a source for quality open resources adapted for part of this course, (CC BY SA).

A] WORKSHOP UNITS 1-4

Unit 1: Use Interactive Whiteboard to Support Teaching and Learning

Topic area: **Educational Technology**			Sub-topic area: **Interactive Whiteboards**	
Unit title: Use Interactive Whiteboard to Support Teaching and Learning			Time: 4 hours	
Key competency: Describe and demonstrate the use of common hardware (UNESCO ICT CFT v3 - **KA.4.a**)				
Learning Objectives			**Content**	**Learning activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Explain components of an interactive whiteboard hardware. 2. Identify characteristics of interactive whiteboard software. 3. Explain the process to integrate the interactive whiteboard into curriculum activities.	1. Navigate the interactive whiteboard interface. 2. Write, erase, save text, enter objects and manipulate them on screen. 3. Use 3D objects, interactive objects, video clips, audio files. 4. Use built-in games function to enhance a lesson. 5. Create lessons that incorporate interactive whiteboard technology	1. Appreciate that interactive whiteboards can be truly interactive and can support both teaching and learning. 2. Appreciate that interactive whiteboard can ease teaching and make learning more fun.	1. Introduction to, and background of, interactive whiteboards. 2. Pros and cons of using interactive whiteboards. 3. Interactive whiteboard interface. 4. Use of interactive whiteboard tools. 5. Strategies of linking interactive whiteboard functionality to	1. Tutorial on interactive whiteboard interface and tools. 2. Access web-based tools and videos on how best to integrate the curriculum objectives to interactive whiteboard functionality. 3. Design lesson plan that explicitly links

	with curriculum requirements.		curriculum needs.	curriculum objectives to interactive whiteboard activities. 4. Deliver the lesson using the interactive whiteboard.

Assessment Activity:

Forum: Teachers interact with peers and facilitator to discuss how to use an interactive whiteboard in teaching and learning activities. The discussion must cover how the interactive whiteboard is enhancing the teaching and learning process. Suggestions should include lesson ideas that could also be done on paper.

Template: Teachers use a template to help them develop an interactive whiteboard-based lesson and submit it for grading.

Practical: Teachers need to demonstrate interactive whiteboard competency either during face to face training or by submitting video evidence.

Supporting Reference and Open Educational Resources:

References
- Introduction to Interactive Whiteboard: https://www.youtube.com/watch?v=cNa89aqeIpE
- Benefits of Interactive Whiteboards in the Classroom: https://www.platinumcopiers.com/aquos-board/7-benefits-of-interactive-whiteboards-in-the-classroom/
- Benefits of Interactive Whiteboards in the classroom**:** https://www.youtube.com/watch?v=RGNVcD5ADK8&t=250s

OER
- MG Online - Introduction to Interactive Whiteboards Part 1: https://mgonline.mgslg.co.za/course/view.php?id=15
- MG Online - Introduction to Interactive Whiteboards Part 2: https://mgonline.mgslg.co.za/enrol/index.php?id=16
- MG Online - Ideas for using SMART Notebooks for teaching and learning: https://mgonline.mgslg.co.za/enrol/index.php?id=22
- UBC - http://scarfedigitalsandbox.teach.educ.ubc.ca/tag/interactive-whiteboards/
- Concordia Univ. - http://kb.cu-portland.edu/IWB101

- Fryer, W. - http://www.speedofcreativity.org/2011/03/24/ipad-as-an-interactive-white-board-for-5-or-10/
- Wikibooks:
  https://en.wikibooks.org/wiki/Technology_Integration_In_K12_Education/SmartBoards_vs_White_Boards_in_the_Elementary_Classroom

Facilitation Guide

This is a face to face unit done during the workshop
1. Encourage teachers to work through the basic interactive whiteboard tutorials that outline the basic operations of the board.
2. Provide access to some more materials that look specifically at how teachers might use the technology to support the Rwanda competency-based curriculum.
3. In a forum teacher discuss how they think they might use interactive whiteboard technology to support what they are teaching.
4. Teachers are tasked with writing up their ideas as a lesson plan and submit for grading.
5. Deliver the lesson using the interactive whiteboard and submit evidence either to workshop evaluator or by submitting a video of a interactive whiteboard lesson.

Unit 2: Use Assistive Technology for Inclusive and Special Needs Education

Topic area: **Educational Support**				Sub-topic area: **Inclusive and special needs education**	
Unit title: Use Assistive Technologies to Support Inclusive and Special Needs Education				Time: 4 hours during workshop	
Key competency: Use, evaluate and disseminate digital resources to support students with disabilities (UNESCO ICT CFT v3 - **KD.5.c**)					
Learning Objectives			**Content**	**Learning Activities**	
Knowledge & understanding	**Skills**	**Attitudes and values**			
1. Differentiate characteristics of inclusive and special needs education. 2. Determine assistive technologies that support inclusive and special needs education.	1. Choose appropriate assistive technology to support different learning needs. 2. Use specific assistive technologies such as text to speech, speech to text, Braille technology, light alerts, sign language etc. 3. Use accessibility functions on PC, laptops and mobile devices. 4. Adjust specific settings on popular software and online platforms.	1. Teachers appreciate that with the support of assistive technologies all learners have equal opportunities.	1. Concepts of inclusive and special needs education. 2. Types of assistive technologies. 3. Case studies and best practice examples of using assistive technologies. 4. Appropriate use of assistive technologies.	1. Review web resources and video on inclusive education and special needs. 2. Engage in a forum discussion with peers on how to support inclusive education and students with special needs within your own context. 3. Allocate appropriate technology to specific group of learners	

				with special needs and report on experience.

Assessment Activity:
1. Teachers participate in a forum discussion where they discuss what types of ICT would be most practical and helpful to use in their context.
2. Task teachers to explain why they think their choice of ICT would be helpful. This is a graded forum discussion and the unit facilitator will grade contributions.
3. Support actual learners who need assistive technologies and report on the experience.

Supporting References and Open Educational Resources:

OER
Zimbabwe ICT Essentials - Accessibility Guide - https://www.oercommons.org/courses/zimbabwe-ict-essentials-accessibility-guide?__hub_id=32
YouTube: Trend towards inclusive education - https://youtu.be/uIuTXwSJJeE
YouTube: The power of Inclusive education - https://www.youtube.com/watch?v=Tzl8eSK7aIA
YouTube: Cultivate Inclusion - https://youtu.be/H2vzTkP5cU4
YouTube: What are learning Disabilities? - https://youtu.be/_3ONz6TaKIk
YouTube: SA Blind - https://youtu.be/cQ8kVOITYXI
YouTube: Dyslexia Support - https://youtu.be/rRqOFM_JSbI
YouTube: Multiple Intelligences https://www.youtube.com/watch?v=IYh8yoQJJSk
YouTube: The 9 Types of Intelligence - What Your Talents Reveal About You, the 9 Types of Intelligence - https://www.youtube.com/watch?v=jVQitvk1Xtk
YouTube: 9 Types of Intelligence. Which is Yours? - https://www.youtube.com/watch?v=QmIxAvKi1Eg
HEART: Inclusive learning - http://www.heart-resources.org/topic/inclusive-learning/
LN Murungi: Inclusive basic education in South Africa - https://journals.assaf.org.za/index.php/per/article/view/20/58

References

Concepts of inclusive and special needs education
Special Needs Policy of Rwanda - http://mineduc.gov.rw/fileadmin/user_upload/POLICY_SPECIAL_NEEDS_EDUCATION.pdf
1. HEART: Inclusive learning: http://www.heart-resources.org/topic/inclusive-learning/

2. LN Murungi: Inclusive basic education in South Africa: https://journals.assaf.org.za/index.php/per/article/view/20/58
3. YouTube: Cultivate Inclusion: https://www.youtube.com/watch?v=H2vzTkP5cU4&feature=youtu.be
4. YouTube: What are Learning Disabilities?: https://www.youtube.com/watch?v=_3ONz6TaKIk&feature=youtu.be
5. YouTube: Trend towards inclusive education: https://www.youtube.com/watch?v=uIuTXwSJJeE&feature=youtu.be
6. YouTube: The power of Inclusive education: https://www.youtube.com/watch?v=Tzl8eSK7aIA

Types of assistive technologies
7. Example of Assistive Technologies in classroom: https://www.masters-in-special-education.com/lists/5-examples-of-assistive-technology-in-the-classroom/
8. Berkley Web Access: Types of Assistive Technology : https://webaccess.berkeley.edu/resources/assistive-technology
9. Understood: 8 Examples of Assistive Technology and Adaptive Tools: https://www.understood.org/en/school-learning/assistive-technology/assistive-technologies-basics/8-examples-of-assistive-technology-and-adaptive-tools?view=slideview
10. YouTube: Assistive Technologies: https://www.youtube.com/watch?v=omjVM1lwkII
11. Examples of students using assistive technologies: https://www.masters-in-special-education.com/lists/5-examples-of-assistive-technology-in-the-classroom/
12. Connecticut Assistive Technology Guideline: https://webaccess.berkeley.edu/resources/assistive-technology

Appropriate use of assistive technologies
13. YouTube: Appropriate use of assistive technologies: https://www.youtube.com/watch?v=0bWqC4AucVE

Facilitation Guide
This is a face to face workshop session.
1. Encourage teachers to review a set of web resources and videos on inclusive education and special needs.
2. Facilitate a graded forum discussion with educators on how best to support students' needs within their own context.

Unit 3: Use Technological Pedagogical Content Knowledge (TPACK) Framework

Topic area: **Curriculum, Pedagogy and Technology**			Sub-topic area: **Lesson Planning**	
Unit title: Use the TPACK Framework			Time: 4 hours during workshop	
Key competency: Use ICT appropriately to achieve curriculum standards (UNESCO ICT CFT v3 - **KD.2. a**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Introduction to learning theory and pedagogical paradigms and the role of planning frameworks 2. Explain the characteristics of TPACK Framework 3. Design different components of the TPACK Framework 4. Explain the how the TPACK framework can help to integrate ICT effectively into teaching and learning.	1. Design appropriate activities to be used as part of the TPACK lesson design. 2. Compare TPACK with Traditional teaching approach. 3. Create your own TPACK inspired lessons. 4. Design project-based learning using the TPACK framework	1. Teachers believe they must blend the requirements of the curriculum objectives with the potential of technology	**Forms of knowledge** 1. Pedagogical Knowledge (PK) 2. Content Knowledge (CK) 3. Technological Knowledge (TK) **Intersection knowledge** 1. Technological Pedagogical Content Knowledge (TPACK 2. Technological content knowledge (TCK) 3. Technological Pedagogical	1. View a series of videos that provide background to how the TPACK framework. 2. Play a game that simulates the TPACK design considerations 3. Investigate Learning Activity Types (LAT) 4. Teachers investigate several TPACK Case Studies 5. Devise a TPACK inspired lesson plan using a template.

			Knowledge (TPK) 4. Pedagogical Content Knowledge (PCK)	

Assessment Activity:
The assessment for this unit is to design a learning experience using the Learning Activity Type (LAT) method developed by Mark Hofer and Judi Harris. Consider,
1. A choice of learning goals (CK)
2. Classroom and school context (Context)
3. A choice of appropriate activities (PK, CK and TK)
4. Select an assessment strategy (PK)
5. Select tools and resources (TK)

Use a template to develop a TPACK inspired lesson plan for a section of the syllabus.

Supporting Reference and Open Educational Resources:

OER
MG Online: Introduction to the TPACK Framework - https://mgonline.mgslg.co.za/course/view.php?id=26
MG Online: TPACK for Specific Subjects - https://mgonline.mgslg.co.za/course/view.php?id=27
Sophia: Lesson Planning with TPACK - https://www.sophia.org/tutorials/lesson-planning-with-tpack-5
YouTube: TPACK & SAMR Model Presentation - https://www.youtube.com/watch?v=lDV2oyAgu9Y

References
MacGraw-Hill: TPACK in Classroom - https://www.mheducation.ca/blog/category/course-design/
Schoology: TPACK Explained - https://www.schoology.com/blog/tpack-framework-explained

Facilitation Guide
This is a workshop activity.

- Using the REB Moodle platform encourage teachers to view a series of videos that provide background to how the TPACK model works and that unpack the various TPACK components http://elearning.reb.rw

- Encourage the teachers to play a game that simulates the TPACK design considerations. It particularly forces the participants to break up the curriculum into Technological Knowledge (TK), Pedagogical Knowledge (PK) and Content Knowledge (CK). See https://youtu.be/ZiSfuVrt0AE for instructions to set it up.
- Spend time encouraging teachers to understand Learning Activity Types (LAT) as this will help them identify activities that can link technology, content and pedagogy. see http://activitytypes.wm.edu/index.html
- Teachers investigate a number of TPACK Case Studies. See https://tpackcases.org/
- Finally, the teachers need to devise a TPACK inspired lesson plan for their own subjects using a template. See https://mgonline.mgslg.co.za/pluginfile.php/98/course/section/119/Lesson%20Plan%20Template.pdf

Unit 4: Incorporate Games into Lessons

Topic area: **Creating and Using Educational Technology**			Sub-topic area: **Gamification**	
Unit title: Incorporate Games into Lessons			Time: 3 hours at workshop and 1 hour at school	
Key competency: Use digital tools to; 1. Use games-based learning appropriate to subject areas to encourage higher order thinking among students. 2. Operate software packages that are appropriate to subject areas to encourage higher order thinking skills in students. (UNESCO ICT CFT v3 **KD.4. a**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Explain the role games can play in making sections of the syllabus more engaging to students 2. Identify different types of games	1. Select sections of the curriculum where games can play a positive role in improving student engagement. 2. Design games to support learning. 3. Select appropriate technology to support classroom games. 4. Deliver a game in class.	1. Appreciate that games can play a positive role in engaging and motivating students.	1. Difference between gamification and gaming. 2. Different types of gamification, Structural vs Content Gamification. 3. Components of a gamification classroom. 4. Tools to help develop gamification	1. Teachers review video tutorials and web resources on gamification. 2. In a forum teacher discuss scenarios where they believe gamification might improve a particular section of the syllabus. 3. Teachers need to

				classrooms.	experiment and select a gamification tool to create a classroom game. 4. Teachers deliver the game and video the students playing the game. 5. Video is submitted as portfolio evidence.

Assessment Activity:

At the workshop
1. Teachers identify a section of the curriculum that would benefit from gamification
2. Teachers design the game to played
3. Teachers select appropriate technology to support the game
4. Teacher create the game.

At School
5. Teachers deliver the game in class within two weeks of the workshop.
6. Teachers record the students playing the game and submit as evidence for portfolio.

Supporting References and Open Educational Resources:

OER
- Edu Hack: Use games to improve learner's engagement-https://eduhack.eu/course/area-2/activity-6/
- BMC Medical Education: Computer game-based and traditional learning method: a comparison regarding students' knowledge retention- https://bmcmededuc.biomedcentral.com/articles/10.1186/1472-6920-13-30
- YouTube: What is GAMIFICATION OF LEARNING? What does GAMIFICATION OF LEARNING mean? - https://www.youtube.com/watch?v=mqSiYhfBdWI

- YouTube: - Gamify your classroom https://www.youtube.com/watch?v=giks98BBrYY
- YouTube: Different types of Gamification - https://youtu.be/mvBgENlJXS0

Reference
- YouTube: Using Games in The Classroom - https://youtu.be/o6IELVV2xLQ
- Sophia: Gaming vs Gamification - https://www.sophia.org/tutorials/gaming-vs-gamification-2
- Sophia: Gamification Strategies - https://www.sophia.org/tutorials/gamification-strategies
- Technology Advise: Best Gamification Tools - https://technologyadvice.com/gamification/
- Captura: Best Gamification Software - https://www.capterra.com/gamification-software/
- GetApp: Free Gamification Software - https://www.getapp.com/operations-management-software/gamification/p/freemium/
- The Tech Edvocate - 8 Must Have Gamification Apps, Tools and resources - https://www.thetechedvocate.org/8-must-gamification-apps-tools-resources/

Facilitation Guide
This is a workshop activity.
1. Facilitators can take the teachers through series of video tutorial or present on their own.
2. It is important that the facilitator identifies what are the characteristics of a classroom game and present a few local examples.
3. Teachers sit in groups and discuss which sections of their syllabus lend themselves to gamification.
4. Teachers then design a short game with the facilitators support.
5. Teachers then take the game to class in the following weeks and try it out
6. Teachers need to submit a video 2 weeks after the workshop as evidence of how well the game worked to support learning. this video will go into the teacher's portfolio.

B] ONLINE UNITS 5-11

Unit 5: Use Mobile Devices to Support Teaching and Learning

Topic area: **Educational Technology**			Sub-topic area: **Mobile Devices**	
Unit title: Use Mobile Devices to Support Teaching and Learning			Time: 2 hours over 2 weeks	
Key competency: Use communication and collaboration technologies, including mobile technologies (UNESCO ICT CFT v3 - **KA.4. l**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Define mobile devices (Laptops, tablets and smartphones). 2. Identify pros and cons of using mobiles to support education (Including policy restrictions). 3. Describe a lesson design and delivery using mobiles effectively as a supportive technology.	1. Explore opportunities to incorporate mobiles into both teaching and learning. 2. Design a lesson plan to effectively use mobile devices. 3. Deliver a lesson that incorporates mobile devices. 4. Use mobile devices in the Continuous professional development	1. Embrace the idea that mobiles, if controlled, can help enormously in supporting learning. 2. Mobiles can support pervasive education. 3. Appreciate that mobile devices can support lifelong learning.	1. Introduction to mobile devices for education. 2. Advantages and disadvantages of using mobile devices. 3. Control mechanisms to ensure responsible use of smart phones in class. 4. Examples of good mobile device use in	1. Review web resources and videos on the potential benefits of using mobiles for teaching and learning. 2. Review web resources and videos on good lesson design using mobiles for teaching and learning. 3. Design a lesson that effectively uses

			teaching and learning.	mobiles to achieve a syllabus objective.
				4. Deliver a lesson that effectively uses mobile devices.

Assessment Activity:
1. Provide a lesson plan that identifies both a specific syllabus objective and a strategy to use mobiles to achieve the objective.
2. Deliver a lesson as planned effectively using mobile devices.

Portfolio item

Supporting References and Open Educational Resources:

OER
- Allen, K. Mobile phones in the classroom: A helpful or harmful hindrance? - https://psychlopaedia.org/learning-and-development/mobile-phones-in-the-classroom-a-helpful-or-harmful-hindrance/
- Examples of Mobile Contracts - http://cellphonesinlearning.blogspot.com/
- Harriet Koshie Lamptey - https://zenodo.org/record/1129069#.W97WlpMzZPY
- TED: Using Mobiles to Rekindle Learning: Rapelang Rabana at TEDxCapeTown - https://youtu.be/2wKwpnwPVdQ
- Erik Klopfer: Mobile as a Creative Medium - https://www.youtube.com/watch?v=_UHA9XYAXjA&list=PL0oxMOHZR4dWyMkYUJaV2e_kxbu1A4foc
- Davda, A - Mobile learning - https://youtu.be/4FNeIYFkxDI
- British Council: Mobile Learning - https://www.youtube.com/watch?v=uYRxpoFPCFU
- Commonwealth of Learning: Benefits of Mobile learning - https://youtu.be/X6mdB5zSyqs
- Commonwealth of Learning: Mobile Learning Pedagogy - https://youtu.be/ZMQ5nFV5ecA
- John Traxler: The Future of Mobile Learning - https://www.youtube.com/watch?v=K3VBnn61Gdk
- John Traxler: Blended learning with mobiles - https://www.youtube.com/watch?v=b_2rg_OxJ6M
- Teach Digital: Curriculum by Wes Fryer, Cellphones - http://teachdigital.pbworks.com/w/page/19791019/cellphones

- Claudia Aparicio- https://prezi.com/ra9bd4mdjhxs/view/#1_384342

Tablets
- eLearning World: 10 Benefits of Tablets in Classroom **-** https://myelearningworld.com/10-benefits-of-tablets-in-the-classroom/ and https://www.pdsttechnologyineducation.ie/en/Technology/Advice-Sheets/Tablet-PC-or-Tablet1.pdf

Laptops
- https://www.learningliftoff.com/how-laptops-in-the-classroom-improve-student-learning/

Facilitation Guide

This is an online unit
1. Review web resources and videos on the potential benefits of using mobiles for teaching and learning such as, *Allen, K Mobile phones in the classroom: A helpful or harmful hindrance?* and educators discuss if this is a viable method in their schools.
2. Adapt a contract document between students and school to ensure responsible use of mobiles at school. Consider this resource - http://cellphonesinlearning.blogspot.com/
3. Review web resources and videos on good lesson design using mobiles for teaching and learning, particularly this resource by COL https://youtu.be/ZMQ5nFV5ecA
4. Design a lesson that effectively uses mobiles to achieve a syllabus objective.

Unit 6: Use Multimedia Applications and Simulations

Topic area: **Educational Technology**			Sub-topic area: **Multimedia & Simulations**	
Unit title: **Use Multimedia Applications and Simulations**			Time: 3 hours over 2 weeks	
Key competency: 1. Use multimedia applications and simulations to design teaching and learning materials 2. Use authoring tools to design curriculum materials (UNESCO ICT CFT v3 - **KD.4.c**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Explain terms used in multimedia and simulations. 2. Explain how multimedia and simulations can support in critical thinking, problem solving, communication, collaboration and creativity.	1. Use existing multimedia and simulation resources and tools. 2. Demonstrate how to incorporate multimedia and simulations into lesson design. 3. Create multimedia, simulations, animations and screencasts.	1. Teachers embrace the idea of using technology to create multimedia and simulations to support learning.	1. Introduction to multimedia, simulations resources and tools. 2. Role of multimedia and simulations in supporting critical thinking, communication, collaboration and creativity. 3. Advantages and disadvantages of multimedia and simulations for	1. Review web-based materials and video tutorials on multimedia and simulations. 2. Search for existing curriculum-based multimedia and simulations and development tools using the Internet. 3. Create an animation or screencast. 4. Share resources

			teaching and learning. 4. Effective lesson designs that use multimedia and simulations. 5. Existing multimedia and simulations resources and tools. 6. Creation of multimedia and simulation resources.	with peers.

Assessment Activity:

For this assessment, teachers create and share their own animation or screencast video.
1. Choose a topic currently being covered with one classis.
3. Select the kind of multimedia to be developed – an animation or a screencast
4. Choose the software to use.
5. Make the animation or screencast.
6. Use the online forum to share their resources with peers.

Portfolio activity

Supporting References and Open Educational Resources:

OER
- PhET - https://phet.colorado.edu/
- GeoGebra - https://www.geogebra.org/
- Powtoons - https://www.powtoon.com/tutorials/
- Khan Academy Video Tutorials - https://youtu.be/_-vZ_g7K6P0,
- YouTube: Multimedia in Education - https://youtu.be/LbEiBNQMg9U

- YouTube: PowerPoint Screen Recording Feature - https://youtu.be/kQwGEY4IDi0
- YouTube: What is Multimedia | Multimedia Definition | Multimedia Communication - https://www.youtube.com/watch?v=Syeu_l3sAJE
- YouTube: Multimedia in Education - https://www.youtube.com/watch?v=SH73vNexb88
- YouTube: How to Create a Multimedia PowerPoint Presentation - https://www.youtube.com/watch?v=8xaMaIJfOhY
- YouTube: Online Simulation Education - https://www.youtube.com/watch?v=X_nekmFQx1c
- YouTube: Multimedia in Education - //www.youtube.com/watch?v=MWQhnWAR4xw

References
- Introduction to multimedia: https://www.youtube.com/watch?v=xtZYZNIcajo
- Simulation: https://cft.vanderbilt.edu/guides-sub-pages/digital-labs-and-simulations/
- 21st century skills: https://www.youtube.com/watch?v=f0RyaAsVNGU
- 4cs: https://www.youtube.com/watch?v=Gu_3r_xSAuw
- 4cs: https://www.youtube.com/watch?v=QrEEVZa3f98

Simulation in Education*:*
https://www.youtube.com/watch?v=sPe5NQYi1hE
https://www.youtube.com/watch?v=Wp3jyLkfBQs

Multimedia PowerPoint presentation lesson*:*
- https://www.youtube.com/watch?v=8xaMaIJfOhY

Facilitation Guide
This is an online unit
1. Teachers review web-based materials and video tutorials that provide an overview of the term's multimedia and simulation.
2. Access online free and open professionally made simulations at PhET (Science), Open GIS (Geography) and GeoGebra (Maths) that can be used as resources in lessons.
3. Try out various tools to support the authoring of animations and simulations, CamTasia, PowToons, Paint.net, Paint 3D, ScreenCast-o-Matic, PowerPoint.
4. Create an animation or screencast to support the syllabus.
5. Share resources with peers using the online forum.

Unit 7: Motivation for Learners and Learning Modalities

Topic area: **Curriculum, Pedagogy and Technology**			Sub-topic area: **Learning Modalities**	
Unit title: Motivation for Learners and Learning Modalities			Time: 3 hours over 2 weeks	
Key competency: 1. Develop professionally within subject areas by using ICT to acquire subject resources and discover new learning modalities 2. Develop professionally within subject areas by using ICT to acquire subject resources and discover new teaching strategies (UNESCO ICT CFT v3 - **KA.6.b**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Explain the four learning modalities - visual, auditory, tactile and kinesthetic modalities. 2. Describe Gardner's Complex Theory of Multiple Intelligences. 3. Identify strategies to motivate learners to learn	1. Use simulation to identify which students prefer which learning modalities and when. 2. Apply the skills learned in the simulation to a real situation and students. 3. Use different strategies to motivate learners to learn	1. Appreciate that different students are motivated to learn in some degree by behaviours and responses elicited by the teacher. 2. Teachers need to be able to interpret from student behaviour what their particular learning needs are	1. Introduction to learning modalities 2. Role of Gardner's Theory of multiple intelligences to motivate learners 3. Strategies to motivate learners to learn	1. Use the Sim Rwanda simulation on SimSchool and interact with students to practice identifying which students perform best under which conditions. 2. Observe a real class and identify which students prefer which modalities. 3. Write a report on the experience and what

				the implications are for future teaching. 4. Share experience with course peers.

Assessment Activity: After completing a teaching simulation (SIMSchool) that demonstrates how student learning preferences manifest themselves teachers need to observe their own learners and firstly identify their preferences and then adjust their teaching to respond to these student signals. On completion of the school exercise teachers need to report on their experiences and submit to a forum of peers for sharing and discussion.

Grade forum activity

Supporting Reference and Open Educational Resources:

OER
- Strategies to motivate students(include links)
- SIM School Simulation - http://rwanda.simschool.org/ including documentation - "Learning styles: The four modalities" [username: demo1@rwanda.simschool.org, password: **demo**]
- YouTube: https://youtu.be/IgJW4r4eJJI
- YouTube: https://youtu.be/2EmNMqli_O0
- Learning Style inventory - http://problemsolvingsurvey2014.weebly.com/the-assessment.html
- CCTI: 5 Innovative Approaches to Learning with Technology - http://cctionline.org/courses/innovative-approaches-to-learning-with-technology/
- Teflpedia - http://teflpedia.com/Multiple_Intelligences
- Phyllis Nissila - https://openoregon.pressbooks.pub/collegereading/chapter/lesson-1-6-on-howard-gardners-multiple-intelligences-theory/ and https://openoregon.pressbooks.pub/collegereading/chapter/lesson-1-visual-auditory-or-kinesthetic/
- Lovless, B: https://www.educationcorner.com/motivating-your-child-to-learn.html

References
- Differentiated instruction strategies: Multiple intelligences: https://www.youtube.com/watch?v=yJ328s7LUrI
- Skills 4 trainers: http://skills4trainers.blogspot.com/2014/02/theory-of-multiple-intelligences.html
- Motivating students: https://cft.vanderbilt.edu/guides-sub-pages/motivating-students/
- Strategies for Increasing Student Motivation: https://ctl.byu.edu/tip/strategies-increasing-student-motivation

- Student Motivation: http://stemteachingcourse.org/course-content/other-content/student-motivation/

Facilitation Guide
This is an online unit
1. Teachers review web resources and video tutorials on Modalities and Gardner's 'Theory of Multiple Intelligences'
2. Teachers then engage with the SimRwanda and engage with simulated students to see if they can motivate learners to learn.
3. Teachers are then tasked to observe the learners in their own class and identify which students respond to each of the 4 modalities.
4. Teachers then write up and share the experience with course peers using the discussion forum

Unit 8: Create Learner-centric Lessons

Topic area: **Curriculum, Pedagogy and Technology**			Sub-topic area: **Approaches to Teaching & Learning**	
Unit title: Create learner-centric Lessons			Time: 3 hours	
Key competency: Help students design activities that engage them in collaborative, problem solving research or artistic creation (UNESCO ICT CFT v3 - **KC.3.c**)				
Learning Objectives			Content	Learning Activities
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Identify learner-centric approaches in the classroom 2. Describe characteristics of learner-centered teachers 3. Identify technology that can support learner centric approach	1. Analyse the learning needs of students at school 2. Analyse existing lessons within a subject to determine how best to adapt it to support learner-centredness 3. Use Substitution, Augmentation Modification Redefinition (SAMR) model to plan technology integration 4. Explain how ICT can support learner centric approach	1. Teachers appreciate that they need to share the responsibility for learning with the students 2. Teachers are keen to facilitate learning rather than to lead it 3. Teachers embrace the idea of using technology to help transform their teaching to adopt student-centric approaches	1. How student-centred is different from teacher-centred learning. 2. What students want from school in order to learn 3. Changing approaches to teaching 4. Using the SAMR model to plan the integration of ICT into student-centric lesson 5. Technology options to support student-	1. View a series of videos and web resources on Student-centred learning. 2. Complete a questionnaire that assesses teachers teaching preferences. 3. Review the SAMR model on ICT integration. 4. Design a lesson plan that uses a student-centric approach to learning.

			centric approaches to learning	5. Deliver the SAMR based lesson through micro-teaching and video lesson as evidence.

Assessment Activity:

Teachers design their own technology-enabled learner-centric learning activity to use in their own classroom. Learners will be tasked to engage in various technology mediated activities. Educators can use a SAMR template to help them plan but must mention,
- What the learning outcomes are
- What the learners will do
- What technology will be used that both the teacher and learners will have access to
- How the learning will be assessed

Teachers are required to have the lesson filed as evidence that they can deliver a SAMR based lesson.

Supporting References and Open Educational Resources:
OER
- MG Online: What is Learner Centric Education? - https://mgonline.mgslg.co.za/course/view.php?id=28
- MG Online: ICT to Support Learner Centric Education - https://mgonline.mgslg.co.za/course/view.php?id=31
- Faculty Focus: Characteristics of Learner-centred teaching - https://www.facultyfocus.com/articles/effective-teaching-strategies/five-characteristics-of-learner-centered-teaching/

References
- CBC resources from REB: http://old.reb.rw/fileadmin/competence_based_curriculum/index0.html

Facilitation Guide

This is a completely online unit of study and needs to be facilitated remotely
1. Teachers will view a series of videos on student-centred learning including https://youtu.be/e6ieXLVCss4 , https://youtu.be/FfOlec8L97s , https://youtu.be/QrEEVZa3f98 and https://youtu.be/z56SNAQNOqs as well as review the web resource at Faculty Focus

2. Then encourage the teachers to complete a personality survey that assesses educators teaching preferences
3. Teachers then need to engage with the SAMR model on ICT integration including https://youtu.be/LeaAHv4UTI8 , https://youtu.be/9b5yvgKQdqE , https://youtu.be/SC5ARwUkVQg and https://youtu.be/ZQTx2UQQvbU
4. Show teachers some examples of technology that supports student-centric approaches to learning including Media wiki, WordPress, Google Docs, PowToon, PowerPoint and Podomatic etc.
5. Now encourage the teachers to create a lesson plan that uses a technology enhanced student-centric lesson plan using a template.
6. Teachers must deliver the lesson and video the experience as evidence.

Unit 9: Design a 'Flipped' Classroom (Pervasive Education)

Topic area: **Curriculum, Pedagogy and Technology**			Sub-topic area: **Approaches to Teaching & Learning**	
Unit title: **Design a 'Flipped' Classroom (Pervasive Education)**			Time: 3 hours	
Key competency: Use digital tools to support online collaboration between students and members of the knowledge community (UNESCO ICT CFT v3 - **KC.4.b**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Define pervasive education. 2. Explain benefits of pervasive education, e-learning and blended learning. 3. Identify characteristics of 'Flipped' classroom. 4. Differentiate 'flipped' from traditional classrooms.	1. Apply pervasive education principles to lesson design. 2. Design lessons that use a 'flipped' classroom. 3. Implement the 'flipped classroom' approach to learning.	1. Believe that education happens constantly and is not limited to school and/or classroom sessions. 2. Appreciate that time in class is valuable and should be used for higher order thinking skills and practical sessions not exposition. 3. Appreciate that learning happens formally, informally and socially.	1. Introduction to pervasive education. 2. Contrast 'Flipped' vs. traditional classrooms. 3. Advantages and disadvantages of pervasive education. 4. Flipped classroom approach to learning. 5. Strategies to design and implement flipped classroom lessons.	1. Review videos on the principles of pervasive education. 2. Using an online template to develop a pervasive education lesson plan. 3. Deliver a pervasive education lesson through micro-teaching and report on experience and submit video as evidence.

Assessment Activity:
- In a forum discussion teacher first debate the pros and cons of pervasive education and the 'flipped' classroom approach and discuss why/why not it would work in their own context.
- Teachers are asked to reflect on the discussion and then create a 'flipped classroom' lesson plan for a section of the curriculum they teach.
- Teachers must then implement the lesson plan at school.
- Teachers are asked to reflect on how the lesson went, what worked and what did not. They also need to gauge students experience. Teachers write up the experience and upload their documents for grading including a video as evidence of the experience.

Supporting References and Open Educational Resources:

OER
- MG Online: The Flipped Classroom - https://mgonline.mgslg.co.za/course/view.php?id=58
- MG Online: Pervasive Education - https://mgonline.mgslg.co.za/course/view.php?id=57
- YouTube: Flipped Classroom Model: Why, How, and Overview - https://youtu.be/BCIxikOq73Q

Reference
- Course Design – The Flipped Classroom: https://stemteachingcourse.org/course-content/course-2-content-advancing-learning-through-evidence-based-stem-teaching-version-2-0/week-6-course-design-the-flipped-classroom/
- How to deploy a Flipped Classroom: https://www.youtube.com/watch?v=kLPmf2rq1Hg

Facilitation Guide
This is an online activity
1. Encourage the teachers to review videos on the principle of pervasive education including https://youtu.be/sR9eHzV0Fjg , https://youtu.be/bS7AFS0WmWQ and https://youtu.be/nA1Aqp0sPQo
2. Teachers complete an online template that takes them through the steps of developing lessons that embrace pervasive education principles.
3. Encourage teachers to review the resources on 'flipped' classrooms. Including https://youtu.be/26pxh_qMppE , https://youtu.be/bwvXFlLQClU and https://youtu.be/ZyE5mAYYTdw
4. Facilitate a discussion in an online forum where teachers brainstorm which components of the syllabus might work best using a 'flipped classroom approach'
5. Task teachers with developing a lesson plan that incorporates a 'flipped' classroom approach to learning. Ensure that these plans are submitted online.
6. Next encourage teachers to implement their lesson plans.

7. Finally ask the teachers to monitor what works what did not and how the students responded to this different way of learning. These experiences need to be written up in a MS Word document and submitted online for grading. A video also needs to be recorded and submitted as evidence of the experience.

Unit 10: Create an Online Learning Environment (Google Classroom & Moodle Cloud)

Topic area: **Creating and Using Online Learning Environments**				Sub-topic area: **Learning Platforms**	
Unit title: **Create an online learning environment (Google Classroom & Moodle Cloud)**				Time: 4 hours over 2 weeks	
Key competency: Create an online learning environment to support pervasive learning (UNESCO ICT CFT v3 - **KC.4.a**)					
Learning Objectives			**Content**	**Learning Activities**	
Knowledge & understanding	**Skills**	**Attitudes and values**			
1. Identify online learning platforms. 2. Explain the benefits of structuring pervasive learning using a Learning Management System (LMS). 3. Explain the characteristics of good online learning environments.	1. Create an instance of Google Classroom. 2. Insert a test, an assignment and a set of resources into the Google Classroom. 3. Create a unique Google Classroom code for the students. 4. Create a free instance of Moodle Cloud. 5. Set up a simple Moodle cloud course online.	1. Appreciate that learning can be pervasive but also structured. 2. Value the role ICT can play in providing structure to learning outside the classroom.	1. Introduction to online platforms. 2. Google Classroom. 3. Moodle Cloud. 4. Advantages and disadvantages of using an online platform to help structure learning that takes place outside the classroom.	1. Review a video on the benefits of using a VLE. 2. Work through a series of tutorials to set up a Google Classroom. 3. Create an instance of Google Classroom. 4. Work through a series of LMS video tutorials. 5. Set up a small course using Moodle Cloud.	
Assessment Activity: Teachers are tasked with developing their own instance of either Google Classroom or Moodle cloud learning environments. They are challenged to build an online course that contains,					

- Its own course shells
- a resource document
- an interactive quiz
- a forum discussion
- a wiki exercise for students

Supporting References and Open Educational Resources:

- MG Online: Creating Online Learning Environment (LMS) - https://mgonline.mgslg.co.za/course/view.php?id=46
- MG Online: Moodle in the Cloud - https://mgonline.mgslg.co.za/course/view.php?id=51
- MG Online: Google Sites - https://mgonline.mgslg.co.za/mod/lesson/edit.php?id=1067
- MG Online: Google Classroom - https://mgonline.mgslg.co.za/course/view.php?id=48
- CCTI: Designing Learning - http://cctionline.org/courses/2-designing-learning/

Facilitation Guide

1. Teachers review web-based resources and video tutorials such as Google Classroom and using Google Docs https://youtu.be/-apCIbV9YKA , https://youtu.be/CeFJvXhFJd8 , https://youtu.be/GIN-EtPa0lw , https://youtu.be/Yiu3dBeSI_A
2. Encourage the teachers to replicate what they saw in the videos to create their own instance of Google classroom for their classes. Encourage them to insert a multiple-choice test, set an assignment and include resources to support the assignment. Also ensure they generate the unique classroom code to ensure the students have access.
3. Review a video tutorial on the benefits of using a VLE or LMS https://youtu.be/zv5bpfxJ2xE Also outline what a good online course might look like and how this is different from Google classroom where you simple provide access to resources.
4. Then encourage the teachers to set up their own Moodle LMS.
5. Once they have an instance take them through a series of tutorials on how to set up their space. Let them set up a course, https://youtu.be/dCdoUoIeBY8 , https://youtu.be/69FhVA4QgaI , Make them aware of the 'edit icons' https://youtu.be/1bief7fjKsI , how to add text https://youtu.be/_n-EI087Mog , and add activities https://youtu.be/VTxE_cSJv3E and assessments https://youtu.be/pmo2UNa2wJI
6. Teachers are tasked with creating a small course on Moodle cloud. Participants need to create a course, add a document resource, add an interactive quiz, set up a discussion forum and have a wiki exercise set up for the students.

Unit 11: Facilitate Online Learning

Topic area: **Creating and Using Online Learning Environments**			Sub-topic area: **Supporting Online Learning**	
Unit title: **Facilitate Online Learning**			Time: 2 hours	
Key competency: Use digital tools to, ● support online collaboration between students and members of the knowledge community (UNESCO ICT CFT v3 - **KC.4. b.**) ● track and evaluate student contributions to learning in the Knowledge community (UNESCO ICT CFT v3 - **KC.4.c**)				
Learning Objectives			**Content**	**Learning Activities**
Knowledge & understanding	**Skills**	**Attitudes and values**		
1. Differentiate teaching from facilitation. 2. Determine the importance of online presence for a teacher. 3. Identify essential competencies of a facilitator. 4. Define roles of an online facilitator: Supporting online learning, managerial support, technical support and nurturing social cohesion online.	1. Facilitate learning when students work online. 2. Manage online course logistics. 3. Nurture online relationships and handle conflict. 4. Provide technical support.	1. Enthusiasm of teacher to support students when they work online. 2. Motivate students to work online.	1. Facilitating learning and how it differs from teaching. 2. Facilitation competencies. 3. How online facilitation is different from face to face facilitation? 4. Roles of an online facilitator. 5. Strategies to support online learning. 6. Strategies to manage online course logistics.	1. Review web resources and video on facilitation techniques 2. Devise a support strategy for learners when they engage with the learning resources on the online platform developed in unit 9. 3. Conduct online discussion where teachers facilitate and collect evidence

			7. Strategies to nurture online relationships.	(WhatsApp or Forum discussions) of good facilitation. 4. Write a reflection piece on the experience.

Assessment Activity:

Using the online learning environment that you created in Unit 9, design a short program/topic/lesson for your learners or colleagues that you can facilitate online. Spend some time planning how you will run the course and in what ways you will be supporting the learners while they are online to make sure that they stay engaged and interested. Try and run this programme for a couple of days or a week. Identify an instance in a forum discussion where your involvement is an example of good facilitation. Supply a screenshot or hyperlink for grading. Write of the experience and explain why you think your role is an example of good facilitation.

Supporting References and Open Educational Resources:

OER
- MG Online: Facilitating online learning - https://mgonline.mgslg.co.za/course/view.php?id=47
- KICT CFT: Online Facilitator's Training - http://kictcft.or.ke/course/view.php?id=21

Facilitation Guide

1. Encourage teachers to review web resources and video on facilitation techniques, https://youtu.be/iNBcyPPutko, competencies and roles etc.
2. Task the teachers to devise a facilitation strategy to support students engage with the online environment they built as part of unit 9.
3. Teachers must run their online lesson and provide support.
4. The final step is to write up the experience and identify what worked well and what was challenging.