





ENGINE II TEACHERS' HANDBOOK





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ADDENDIX A. SEMIANUC LESSON PIAN

ACRONYMS

LCF – Learning Centre Facilitators OSG – Out-of-School Girls ISG – In-School Girls CVAP – Child and Vulnerable Adult Protection CP – Child Protection EGMA – Early Grade Mathematics Assessment EGRA – Early Grade English Assessment SeGMA – Senior Early Grade Mathematics Assessment SeGRA – Senior Early Grade English Assessment CSO – Civil Society Organisation T&L - Teaching and Learning

PREFACE

The Educating Nigerian Girls in New Enterprises (ENGINE) II programme is at the heart of Mercy Corps' vision of a Nigeria in which all people are empowered, engaged, resilient and secure. Nowhere is this more important than with girls. The ENGINE II programme is funded by the UK Department for International Development (DFID) through its Girls' Education Challenge (GEC) fund and has the aim of transforming the futures of marginalised girls through education. With the strong support of our implementing partners: Society for Women Development and Empowerment of Nigeria (SWODEN) in Kano, Action Health Incorporated (AHI) in Lagos, Kindling Hope Across Nations (KHAN) Initiative in Kaduna and Tabitha Cumi Foundation (TCF) in the Federal Capital Territory, ENGINE II is changing the lives of 18,000 marginalised girls across 209 communities.

This teachers' manual is one of the many critical resources produced by the programme to support the teaching and learning process for In-School and Out-of-School marginalised girls in 699 safe spaces - also referred to as Learning Centres. The centres provide appropriate context specific information that enables volunteer Teachers/Learning Centre Facilitators (LCFs) to effectively perform their. It also provides a strong overview of the ENGINE II programme and further illustrates the most important aspects of the programme's teaching and learning methodology.

The learning centres are a very important piece of the ENGINE II puzzle as they are key to the success of the three ENGINE II outcomes of improved Learning, Transition and Sustainability. I trust the LCFs will find this guide instrumental to their work with girls and the broader programme.

Let me take this opportunity to thank our Education Team, Implementing Partner Organizations, LCFs, Master Trainers, and Programme Staff for their incredible work and dedication to improving the lives of marginalised girls. This Teachers' Manual serves as yet another great example of what can be achieved and should be a source of great pride as it is rolled out across Nigeria.

Darius Radcliffe Country Director, Mercy Corps Nigeria

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Educating Nigerian Girls in New Enterprises (ENGINE) II is a 3 year adolescent girls' education programme, funded by the Department for International Development (DFID) through the Girls' Education Challenge (GEC) fund (April 2017 – September 2020). The programme targets both In-School Girls (ISG) and Out-of-School Girls (OSG) to increase learning outcomes – i.e. increased levels of literacy and numeracy. Mercy Corps leads the implementation of ENGINE II across four states in Nigeria, in partnership with Society for Women Development and Empowerment of Nigeria (SWODEN) in Kano, Action Health Incorporated (AHI) in Lagos, Kindling Hope Across Nations (KHAN) Initiative in Kaduna and Tabitha Cumi Foundation (TCF) in the Federal Capital Territory (FCT).

ENGINE II is a sequel to ENGINE I (October 2013 - March 2017) where the programme was successful in reaching over 24,000 marginalised girls, of which 18,000 girls have been retained across the four programme implementing states into its current second phase. The primary objective of ENGINE II is to increase the learning outcomes (literacy and numeracy) of these 18,000 retained girls, who are now aged between 17 and 23 years. Additionally, ENGINE II aims to facilitate and support girls to transition through key stages of education and access economic opportunities, as well as working to ensure the sustainability of programme activities by transferring ownership to the government, school stakeholders and community members for continuation once the programme ends.

A key component of ENGINE II is the 699 (In-School and Out-of-School) Learning Centres set up across the four implementing states, where marginalised girls are being tutored in basic Literacy & Numeracy, Life Skills and Financial Literacy. In order to guarantee improved learning, ENGINE II uses the "Learner Centred Teaching Methodology" at these Learning Centres.

1.2 AIM

The ENGINE II teachers' handbook has been written to provide relevant information to LCFs to enable them effectively perform their duties within the Learning Centres, and the programme as a whole. It provides an overview of the ENGINE II programme and further expounds on the most important aspects of the programme.

This handbook will help all LCFs deliver their lessons at the Learning Centres effectively. It will also help the LCFs tailor their teaching in line with the ENGINE II Teaching and earning (T&L) approach.

1.3 **OBJECTIVES**

This Teachers' handbook is put together to support facilitators on the ENGINE II programme. It is to:

i.	Help ENGINE II facilitators understand the goal of the
	ENGINE II programme

- ii. Serve as a reference tool for the ENGINE II Teaching and Learning approach
- iii. Clarify important aspects of the implementation of the ENGINE II programme to facilitators
- iv. Provide documentation of behavioural expectations for ENGINE II facilitators
- v. Provide guidance on activities and responsibilities of ENGINE II facilitators.

1.4 HOW TO USE THIS BOOK

This book should serve as a guide for teachers on the ENGINE II programme to develop skills to deliver quality teaching to the learners. It should be used as a reference book on good practices and methodology for teaching and also as a starting point for finding solutions and resources to be used in the classroom. their teaching for guidance on how to improve their teaching methodology.

1.5 HOW THIS BOOK IS DIVIDED

This section outlines the structure of this handbook. A brief summary of the chapter contents are provided below.

Chapter 1: Introduction

This chapter gives a general overview of the ENGINE II programme, the ENGINE II Teaching and Learning strategy, the purpose of this book and how to use it.

Chapter 2: Difficult Topics

This chapter discusses teaching methods that help in demystifying difficult topics in literacy and numeracy. Look here to get ideas on how to help learners grasp tricky topics.

Chapter 3: Teaching Mathematics

This chapter gives some useful tips about teaching mathematics in general.

Chapter 4: Teaching Phonics

This chapter gives some ideas and information for teaching phonics to learners. The chapter contains guidance on building pronunciation skills with charts showing sound formation with the lips.

Chapter 5: Read Aloud Texts for Basic Learners

The read aloud texts are short stories which the teacher can use to develop learners' reading skills. They also show how the stories can be used to develop basic numeracy skills by extracting numerical data from the texts.

Chapter 6: Word Lists

This chapter contains word lists at different levels of skill, which can be used to build learners vocabulary and reading skills.

Chapter 7: Effective Teaching, Learning and Assessment

This chapter discusses effective methods for teaching any subject. The meaning and use of formative and summative assessment is discussed. It discusses the

use of Blooms' Taxonomy of Knowledge in planning for teaching, learning and assessment. It also talks about how to help students learn and how to plan for the learner's learning. This chapter also discusses how to create effective assessments.

Chapter 8: Learning Benchmarks

This chapter explains the ENGINE II learning benchmarks and how they are to be used by the LCFs, Master Trainers and the entire programme team.

Chapter 9: Teacher Development

This chapter sheds light on the different ways teachers can work to improve the quality of their teaching practice.

1.6 ENGINE II TEACHING AND LEARNING STRATEGY

ENGINE II builds on the approach and learning from ENGINE I. During the first phase of the programme, academic support was only limited to the In-School Girls (ISG) and Out-of-School Girls (OSG) who received classes on Financial Literacy, Business Education and Life Skills through a nine month learning cycle. Through the nine month period, ISGs were taught core subjects such as Mathematics, English and Science. The LCFs for the ISGs were selected on the basis of their teaching expertise but the LCFs for the OSGs were community volunteers, who did not necessarily have the pedagogy expertise. On ENGINE I, the programme recruited an education management consultancy firm to develop a teachers' learning manual for ISGs based on the Government curriculum for Mathematics, English and Science (Grades JSS 1 to 3 and SS 1 to 3). ENGINE I also provided basic instructional materials for the teachers and the girls to enhance the learning outcomes of the girls within the ninemonth learning cycles. The ENGINE I programme also developed life-skills and financial literacy manuals for the teaching of both ISGs and OSGs, which were taught at the Learning Centres established by the programme.

From the programme's internal monitoring and from the endline evaluation, ENGINE II developed/adapted its Teaching and Learning approach. For example, it was evident that a nine months learning cycle was not enough for the girls to improve their learning outcomes, which has now been changed to 18 months (programme lifetime) to reinforce their learnings. Similarly, Government agencies such as the Ministry of Education (MoE) were not involved extensively. Moving forward, the programme leverages on existing structures to deliver its T&L such as the MoE, National Mass Education Commission and its line agencies at the different levels. One of the key findings from ENGINE I was that teachers play an important role in girls achieving their learning outcomes. Thus, ENGINE II developed a criteria for the selection of LCFs. The selection process consists of a written examination and an interview to assess their technical skills, delivery approach and attitude towards girls' education.

Building on this work, ENGINE II's focus continues to be on improving the learning outcomes of these two groups of girls (Improved levels of literacy and numeracy), and transitioning them to higher education and/or income generating opportunities such as internships or entry into the workforce. Achieving the Girls Education Challenge (GEC) learning outcomes is crucial to ENGINE II and in order to achieve this, ENGINE II is working to further streamline the programmes T&L approach with that of the Government of Nigeria, as well as providing more academic support to OSGs than in ENGINE I.

ENGINE II has adopted the **Learner-Centred Teaching Methodology (LCTM)** which aims to teach learners at their current level of knowledge regardless of their current class/grade level. It is a method of teaching which provides a level of personalised intervention for each learner to enable them build a strong foundation for their progressive transition to higher grades.

LCTM encompasses several strategies, which focuses on understanding the learners (especially the learners' level of knowledge) and supporting the learners to reach their potential. A strong aspect of the LCTM approach is the learners' needs assessment (LNA), which is conducted to determine the actual gaps in the learners' subject-matter proficiency. The LNA is a spiral test that begins to test the learners' knowledge from the lowest level and incrementally progresses to higher levels as the learner is able to answer the test items. The assessment stops at the level where the learner is unable to attempt the items presented successfully. The learner's level of knowledge is placed at the previous level of

items attempted successfully, regardless of their age or school grade. Armed with the results of the LNA, teachers are able to differentiate teaching material of each learner in the class. In this way, no learner is left behind, or slowed down. Another key strategy in LCTM is peer-to-peer mentoring. This strategy activates learners to support each other in the learning process. Learners who are ahead on the learning curve, are peered with slower learners to complete tasks and activities. This can be done in the form of group work or in pairs. This strategy is effective as it helps the advanced learners reinforce their learning

and it provides a new approach to the slower learner to understand the topics.

CHAPTER TWO: DIFFICULT TOPICS

Teachers will encounter situations where learners find certain topics difficult to grasp. This can result from deficiency in foundation knowledge in the topic area or from other cognitive or physiological problems. The teacher should be observant to detect and diagnose the challenges, and demonstrate creative thinking in order help learners overcome them.

ENGINE II Baseline Report made recommendations on areas of difficulty for our learners. Below are some identified areas of difficulty for learners.

The facilitator should pay special attention to slow learners when teaching these difficult topics. Extra effort should be taken to carry all learners along. The facilitator should employ memory building techniques to help learners master the topics.

2.1 LITERACY DIFFICULT TOPICS A. LETTER SOUND IDENTIFICATION

Learners should be able to identify all letters of the English alphabet by name and sound. Facilitators should take students through drills that help learners master this topic.

- 1. Using flashcards or wall charts: facilitator should show/ point to a letter randomly and ask learners to respond with the name and sound. For example: If the facilitator shows or points to the letter 'B', the learner(s) should say letter 'bee' says 'buh'. This drill should be repeated with groups of learners and individual learners to ensure that the whole class masters the letter names and sounds
- 2. The facilitator should teach vowel sounds and consonant sounds separately
- 3. The facilitator should guide the learners to sort pictures and objects using the sounds they are being taught.

- The facilitator should engage learners in reading and writing activities that require them to use the phonics information they have taught
- 5. Note:
 - a. Teach letter symbols (graphemes) associated with each sound
 - b. Use pre-recorded tapes by native speakers
 - c. Constant practice by LCFs to master the sounds
 - d. Prepare well before the class
 - e. Transcribe words
 - f. Encourage girls to master sounds in their native language
 - g. Differentiate between consonant sounds. Words are a combination of sounds
 - h. Teach words as combination of sounds
 - i. Teach to spell in letter sounds
 - j. Tools
 - i. Audio tapes
 - ii. Dictionary
 - iii. Chart organs of speech, sounds + words, pictures + simple sentence charts
 - iv. Books Brighter Grammar, First Aid in English, Writing books, Mastering English by Odiaka, Queen Primer, Gimsin Daniel Jones pronouncing Dictionary for teachers etc.

B. FAMILIAR WORDS

Learners should be able to read familiar two-letter, three-letter, four-letter and five-letter words. Facilitators should teach learners how to pronounce words by combining individual letter sounds. The facilitator should write on the board or use flashcards for this lesson.

- 1. The facilitator teaches learners to form two letter words by combining one vowel and one consonant.
- The facilitator teaches learners to pronounce three-letter words by pronouncing each component letter sound to form the word. For example: If the facilitator shows or points to the word 'boy', the

learner(s) should say – 'buh' – 'uh' – 'yi': 'boy'

- The facilitator teaches incremental word lengths (3-letter words,
 4-letter words and so on) using the same technique as above until learners develop proficiency in reading words of any length.
- 4. The facilitator can develop a word lists. See the back of this book.

C. NONSENSE-WORDS

The facilitator trains the learners to be able to pronounce any combination of letters. Nonsense-words are letter combinations that do not have dictionary meanings. They are used to test and build the agility of the learners in combining letter sounds even when the words are not familiar or aided by pictures.

1. Facilitator creates a set of nonsense-words of different lengths (two to four lettered words e.g. mert, gak, lanp, lont). Flashcards can be used for these lessons or facilitator can write on the board.

D. ORAL READING

The facilitator teaches learners to read short sentences and paragraphs at a reasonable pace. Learners should be able to read without long pauses between words.

- 1. The facilitator prepares a set of short sentences and paragraphs for this lesson. These can be written on a chart or on the board for the learners.
- The facilitator leads the learners through the reading exercise word by word. The facilitator should avoid the effect of 'cramming' (memorisation). Hence, the sentences should be different enough to task the learners' memory of letter sounds.
- 3. The facilitator should engage the learners in read aloud sessions.
- 4. Tools to aid teaching:
 - a. Simple story books
 - b. Pictorial books
 - c. Listening comprehension
 - d. Oral word drills from short stories

E. COMPREHENSION OF SHORT PARAGRAPHS

Learners should be able to answer simple questions based on short paragraphs read.

- 1. Facilitator provides a set of short paragraphs for this lesson. These can be identified from textbooks, story books or newspapers.
- 2. Facilitator starts by extracting key words from short paragraphs and drills learners in spelling and pronunciation.
- 3. Facilitator reads the paragraph to the learners twice and then asks the learners to explain paragraph in their own words
- 4. Facilitator provides the paragraph to the learners to read by themselves and answer questions about the paragraph.

F. COMPREHENSION ANSWERING SKILLS

- 1. Do not rush. Take your time while reading and answering the questions
- 2. Read the passage first before the questions.
- 3. After reading, look at the questions.
- 4. Go back and read the passage again.
- 5. Note possible answers that jump out at you. Don't assume.
- 6. Read the passage at least twice
- 7. For inferential questions, draw on background knowledge
- 8. Go back to questions and start answering.
- 9. Use draft answers first

G. ANSWERING COMPREHENSION ANALYTICAL QUESTIONS

- 1. Critical questions e.g what is the best title
- 2. You must think about it
- 3. Don't just lift answers directly from the passage
- 4. Study the passage critically
- 5. Read in-between the lines
- 6. Read to understand contextual meaning.
- 7. Draw on critical thinking about the information in the passage
- 8. Reason with the facts and information in the text
- 9. Facilitator should ask questions that task the reader

H. SHORT ESSAY WRITING

1. Mechanics in writing:

- a. Punctuation
- b. Paragraphing
- c. Spelling
- 2. Planning in writing
 - a. Think about the topic
 - b. List all the things you know about the topic
 - c. Arrange the points in a logical order.
 - d. Develop your points.
 - e. Review.
- 3. Basic features of an essay
 - a. Topic
 - b. Introduction
 - i. State your answer to the topic, or overall argument
 - c. Body
 - i. Divide into paragraphs. One paragraph per point
 - ii. Give more detailed description about the points
 - iii. Each paragraph should be 4-6 sentences
 - iv. Give examples that support your argument, answer questions such as what, why, who, when, how.
- 4. Conclusion
 - a. Summarise your points
 - b. State your emphatic answer to the topic.
- 5. Tools: Use pictures to teach on how to write essays
- 6. Books : NERDC Comprehensive English, Essential English Language by Olatilo and Olooku (nee Berkley)

2.2 OTHER BASIC LITERACY TOPICS

Difficult Topics	Solution
Alphabet Identification (Uppercase and Lowercase), Number Identification	 By differential method of capital and small letters Introduce letters through the use of flashcards and objects that each letter represents

Difficult Topics	Solution
Pronunciation/Phonetics	 Repetition of sounds using sound chart with common words for each sound Use of audio and video teaching aids Use of charts printed with all English phonic sounds Use of mirrors to show shape of lips and encourage proper enunciation
Tenses (past, present, future, continuous etc)	 Use of instructional materials Use of role play, scenarios and stories
Simple punctuation marks	 Use of oral expressions to demonstrate punctuations. E.g. rising tone at end of sentence indicates a question hence the question mark. Matching activity to help recognition of punctuation marks and association
Counting and number identification	 Using objects to count Pasting numbers and letters all around the classroom Flash cards

2.3 POST-LITERACY

Difficult Topics	Solution
Comprehension	 Ask learners to write down or note key facts in the passage Ask questions to reiterate key facts as the passage is being read to the class. Ask questions to the class after reading passages during any activity
Handwriting	TracingCopying
Parts of speech	 Clear explanation using everyday objects and events Slowly repeat as a class sentences that include the troubling part of speech, enunciating word and sounds before repeating at full speed
Structure	 Many learners try to translate directly from their local language. Help them understand that they cannot make a word for word translation
Spelling	 Frequent spelling practice and dictation Encourage mastery of letter sound to aid spelling Use games to reinforce knowledge of phonic sounds Consistent practice

Difficult Topics	Solution
	 Train learners to recognise frequently misspelt words Train learners to recognise words with silent letters.
Writing and reading practice	 Spelling and dictation Start with short words and build gradually Use flash cards for reinforcing sight words
Punctuation	 Repetition Teach learners to listen to the pause in speaking to determine the difference between comma and full stop. Explain the punctuation marks with clear and useful analogies.
Letter writing	 Consistent practice Show learners examples of different types of written letters.

2.4 SAMPLE SENTENCES AND SHORT PARAGRAPGHS

The facilitator can use these sentences as examples to teach learners a variety of skills including spelling, reading, tenses, parts of speech, number identification, simple addition, subtraction, multiplication and division.

- 1. There are 36 states in Nigeria. There is one Federal Capital Territory.
- 2. Amina is a good girl. She is kind and thoughtful.
- 3. Ayo has two brothers. They are kind to her and always protect her.
- 4. In Zuwera's house, some of the children help to fetch water while all

the others help to clean the house. Sometimes, their mother goes to market to buy food stuffs. When she returns, everybody helps to prepare the items for storage. The fresh vegetables are washed then packed in bags and stored in the refrigerator. The grains are poured into plastic buckets with covers then kept in the store. When everyone works together, the job gets done fast.

2.5 PRONUNCIATION PRACTICE GAMES FOR BASIC LITERACY

Odd One Out

Prepare a list with sets of three to four words that have the same vowel sound, plus one somewhere in the middle that is different. For example, cut, but, nut and put. Divide your class into two teams and have them form two lines in front of the board. Give each team a piece of chalk or white board marker. Write the first set of four words on the board. The students at the front of the line must read the set of words, race to the board once they have identified the word that sounds different and circle it. The first student to circle the odd word scores a point for the team.

Rhyming Pair Memory Game

Make cards with words that rhyme, like name/game, box/fox, tick/stick, etc Place them face down. Students take turns turning over the cards to find the pairs that rhyme. If the pair rhymes, the student takes the set of cards and places them in front of themselves. If the two cards the student flips over do not rhyme, the student puts the cards face down in their original place. The person who finds the most wins.

Minimal Pair Slap

Choose sets of minimal pairs (pairs of words that have very similar sounds, they are different by only one phoneme (sound/letter) see examples below) and write down each word on a separate card/piece of paper. Divide the class into two teams and have each team line up in front of a desk. The first students in line must have their hands behind their backs. Present two cards; for example: Forty and Fourteen. Say one of the words out loud for example Fourteen. Students

must slap the right card. The one who slaps it first must use the word in a sentence to get a point for the team.

MINIMAL PAIR EXAMPLES		
Vowel Sounds	Consonant Sounds	
s <u>i</u> t s <u>ea</u> t	<u>b</u> erry <u>v</u> ery	
d e sk d <u>i</u> sk	<u>b</u> uy <u>p</u> ie	
w <u>e</u> t w <u>ai</u> t	thi <u>n</u> thi <u>ng</u>	
b <u>a</u> t b <u>u</u> t	a <u>l</u> ive a <u>rr</u> ive	
s <u>o</u> s <u>aw</u>	ca <u>tch</u> ca <u>t</u>	
n <u>o</u> t n <u>o</u> te	<u>s</u> ea <u>sh</u> e	
b <u>a</u> d b <u>e</u> d	<u>f</u> an <u>v</u> an	
f <u>a</u> st f <u>ir</u> st	<u>f</u> at <u>h</u> at	
	<u>f</u> ree <u>th</u> ree	
	<u>s</u> ink <u>th</u> ink	
	wi <u>th </u> whi <u>zz</u>	
	pa ge pa ys	
	ba <u>d badge</u>	
	<u>f</u> ree <u>th</u> ree	

Simon Says Run

Your students will not be able to pronounce their sounds correctly until they can hear the difference between them. This game challenges their listening skills and gets students moving around the classroom at the same time. Label each wall of your classroom with one phonetic symbol representing a sound you want your students to practice. The first time this game is played, go over the sounds with the students, having them repeat the sounds of each wall, and do a practice round. Have students stand in the middle of the room, and then say, "Simon says..." filling in the blank with a word that uses one of the sounds you have labeled on your walls. Students race to the wall with the correct symbol for the sound they heard. Anyone who runs to the wrong wall is eliminated and must sit down. You can also eliminate anyone who gets to the wall too late though that is optional. Start with a few easy words to build confidence and help students who are behind feel included. Each round, make a Simon says statement, eliminating anyone who runs to the wrong wall. The last person standing wins the game.

What Is Your Number?

This fun game challenges students to listen for specific vowel sounds among a group of minimal pairs. Start by writing a group of ten words each beginning with and ending with the same sound. (For example, put, pat, pet, peat, pit, pout, pot, etc.) Write them across your board and then write the numbers zero through nine under them. Then tell your students you are going to give them your phone number, but instead of saying the numbers say the words above the numbers. Have students write down the number they think you gave them. When you are done, check to see who got the number right. Then have students make up phone numbers for themselves and recite the word equivalents to the rest of the class. Score one point for each number students get correctly for each phone number. The person with the most points at the end of the game wins.

Give It a Shot

Set up for this basketball pronunciation game by putting two trash cans at the front of your room and labeling each with a different vowel sound or two sounds your students have trouble distinguishing (r/l, p/b, etc.). Then put students into two teams. Have a player from one team come to the front of the room and read a word that contains one of the sounds on the trash cans. Another member of his/her team should then shoot a crumpled up piece of paper at the basket labeled with the sound the word contained. (You can also use a ball if you prefer.) The player scores one point for choosing the right basket and another point if they make the shot (i.e. if the ball enters the basket). If they aim or make the shot in the wrong basket, they score zero. Continue this way alternating teams until you run out of words or one team reaches a predetermined score.

Award the winning team with a basketball trophy made from plastic cups.

2.6 NUMERACY DIFFICULT TOPICS A. MISSING NUMBERS

Learners should be able to identify the missing number in a sequence of numbers.

- 1. Facilitator should build learners competence counting in steps of twos, threes, fours etc. by taking learners on drills of number sequences. For example: 1,3,5,7,9 and 5,10,15,20,25
- 2. The goal is to teach learners to identify the relationship between the numbers in the sequence.
- 3. The facilitator should explain to the learners that not all counting goes on in ones using examples such as items commonly packed in crates e.g. eggs, cartons, drinks, rolls of sachet beverage, milo and milk

B. ADDITION

Learners should be proficient in unit and tens addition without carry, and addition with carry

- 1. Facilitator should provide ample examples and exercises for the learners to practice and master basic addition skills.
- 2. The facilitator should begin with addition of unit numbers without carry and progress to more difficult problems
- The facilitator should guide the learners using learning tools such as counting stick/counters, dice, cards, money and so on to aid comprehension.

C. SUBTRACTION

Learners should be proficient in unit and tens subtraction without carry, subtraction with carry.

1. Use the same directions as provided above (ADDITION), substituting subtraction problems to aid students comprehension.

D. WORD PROBLEMS

Learners should be able to solve numeracy word problems.

- 1. Facilitator should provide several samples of simple word problems and teach learners to extract information for the calculations.
- 2. Facilitator should show examples of how to extract relevant information, how learners can identify the operation to be performed, explain keyword such as 'left', 'and', 'all together', which are helpful in identifying the operation to be performed.
- Facilitator can use read aloud texts to engage the learners in numerical operations.

2.7 OTHER NUMERACY TOPICS

Difficult Topics	Solution
Telling the time	 Use a clock that is well illustrated with hour, minute and second hands. Practice counting in steps of five to help learners with reading the minutes hand.
Roman Numerals	 Teach the roman numerals in groups as the patterns follow. E.g. I,II,III and IV, V, VI,VII,VIII
Factors and multiples of numbers (LCM,HCF)	 Teach students the relationship between highest common factor/ Lowest common multiple (HCF/LCM) and multiplication/division Give very clear and simple definition of all related terms: factor, multiple Teach some facts about HCF and LCM: One (1) is a factor of all numbers Each number is a factor of itself

Difficult Topics	Solution
	 Each number is a multiple of itself All factors of a number are always smaller than the number All multiples of a number are always bigger than the number All multiples of a number are always bigger than the number The LCM will always be greater than the HCF of the same group of numbers The HCF of a group of numbers will be less than the largest number in the group.
Multiplication of three digit numbers	 Teach words that have the same meaning as multiplication Ensure learners have mastered multiplication of one and two digits with carry before introducing this topic. Show learners that each line of digits can be treated as a multiplication on one digit numbers. Give several examples both worked and as exercises for learners. Any number multiplied by 1 is the same number Any number multiplied by 0 is zero
Fractions/Decimals and Percentages	 Using dissected object such as an orange to introduce the concept of 'part of'. Explain that fraction, decimals, percentages are

Difficult Topics	Solution
	 simply different ways of expressing 'part of' something. Use examples from everyday life such as part payment for goods, sharing food among family members etc
Division	 Teach words that have same meaning as division e.g. share, divide. Introduce the concept of division using everyday scenarios which are common to your learners. E.g. dividing the cost of transport of farm produce. Use learning aids such as counters to help. Employ stories and scenarios to create more real life examples. Any number that ends with 0 or 2 is divisible by 2 Any number that end with 0 is divisible by 10 Any number that ends with 0 or 5 is divisible by 5
Multiplication tables	 Use rote i.e singing Provide multiplication charts Learners can create their own personal charts
Mathematical symbols (operators)	Use diagrams and charts
Measurement	 Start with informal measurements such mudu, kongo, hand, feet, span etc

Difficult Topics	Solution
	 Use bottles, tapes etc. Introduce the learners to different units of measurement i.e volume, length
Shapes and colours	 Show learners colours and shapes from nature/ environment (sun, flowers, blocks, parts of buildings, toilet rolls, eggs, orange etc). Allow learners name colours and shapes in local language. Use diagrams and natural colours Introduce shapes and colours to learners using commonly occurring objects.

CHAPTER THREE: TEACHING MATHEMATICS

Mathematics is a very important subject. It is useful for every aspect of life. Unfortunately, many students have developed a fear for mathematics and teachers must find interesting ways to teach their learners to love the subject. Here are five principles for teaching mathematics:



- Start with a question: Do not make them memorise. Aim to develop your learners' ability to find answers. There is no room to think if you provide the answers first. Do not rush to the answer.
- Students need time to struggle: Teach kids to be courageous, tenacious. Give time to think and grapple with real questions. Students deepen their powers of observations and ability to take a risk. Use their wrong answers to lead them towards the right answer. Reward participation and progress.
- 3. You are not the answer key: Inquisitive students are a gift. You do not have to have the answer. When your students ask a question, say "let us find out together". Allow other students attempt to provide answers. Teach them that not knowing is not failure. It's the first step to understanding. They should discuss with each other and come to a logical agreement.
- 4. Say yes to your students' ideas: Saying 'yes' is not saying 'right'. Allow your students share their ideas, then guide them in analysing their ideas to see if they have considered all the possible points of view and facts before making their conclusion. You can accept students' ideas into the debate and say yes to your students' right to participate.
- 5. Play: The teacher should recreate their lessons into games that the learners can play either individually or in groups. Einstein said: "play is the highest form of research". When student's play, they activate different parts of their brains. Active learning is a very effective form of learning. Students retain more of what they do.

3.1 USEFUL RESOURCES FOR NUMERACY/ MATHEMATICS TEACHERS

- 1. <u>https://www.mathgoodies.com/</u>
- 2. <u>http://www.math-aids.com/</u>

CHAPTER FOUR: TEACHING PHONICS

Knowing the phonetic sound for each letter is the foundation for reading. Each letter has a sound and the combination of these sounds creates word pronunciations. Below are some tips to teaching phonics to your learners.

4.1 TRADITIONAL TWO LETTERS SOUND FORMATION PRACTICE [1]:

At the end of this step, the learners should be able to:

- a. Recognise how the consonant and vowel sound can be used together to form sound.
- b. Pronounce the traditional consonant and vowel sounds correctly.
- c. Write few short words in their traditional mother tongue.

CONSONANTS: bcdfghjklmnpqrstvw xz

VOWELS:



ba	be	bi	bo	bu
са	се	сі	со	cu

da	de	di	do	du
fa	fe	fi	fo	fu
ga	ge	gi	go	gu
ha	he	hi	ho	hu
ja	je	ji	јо	ju
ka	ke	ki	ko	ku
la	le	li	lo	lu
ma	me	mi	mo	mu
na	ne	ni	no	nu
ра	ре	рі	ро	pu
qua	que	qui	quo	qu
ra	re	ri	ro	ru
sa	se	si	SO	su

ta	te	ti	to	tu
va	ve	vi	vo	vu
wa	we	wi	WO	wu
ха	xe	xi	хо	xu
уа	уе	yi	уо	yu
za	ze	zi	zo	zu

4.2 PHONICS PRONUNCIATION CHARTS



Vowels


CHAPTER FIVE: READ ALOUD TEXTS FOR BASIC LITERACY

The following texts are adapted from the Reading and Numeracy Activity (RANA) [2] project. The facilitator should provide copies of the story to the learners and read aloud to them as they follow. If there is a proficient learner in the group, such a learner can be encouraged to read aloud to the others. The texts have been designed in such a way as to teach both literacy and numeracy. As the text is being read, the facilitator should get the learners to extract useful information (not writing the whole passage) from the texts which would be used later to answer the comprehension and numeracy questions. Facilitators are also encouraged to create similar stories of their own to teach other numeracy concepts not covered by those in this section and share with other facilitators.

A Town with Ten Trees

Once upon a time, there lived an old man who had only one daughter named Hadiza. One day, the old man called Hadiza to him. "I am very old and will not be around forever," he told her. "I want to make sure you are happy even when I am gone." Hadiza asked her father, "How can I be happy if you are not here?" Hadiza's father answered, "When you live in a town with 10 mango trees at the entrance, then you will be happy." Hadiza searched far and wide for a town with 10 mango trees. She could not find one. She asked her friends and neighbours about a town with 10 mango trees. They could not tell her. Hadiza began to grow weary. What if she never found the town? But suddenly, a thought occurred to her. "Why can't this town be the town with 10 mango trees?" she thought. Hadiza went and found 10 young mango trees. One by one, she planted each tree at the entrance of her town: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The years passed, and the trees grew and grew. Soon they had big leafy branches, and the townspeople came and sat under the shade. Soon the trees produced 29 ENGINE II Teachers' Handbook

fruit in abundance. The townspeople gathered together and ate to their fill. As Hadiza sat among her neighbours and ate the fruit, she thought, "I have found the town with 10 mango trees. And I am truly happy."

Comprehension Questions

How many trees did Hadiza's father recommend?

Why did Hadiza choose to plant the trees?

What does this story teach us about happiness?

Mathematics Exercises

1) Write the number 10 on the board. Ask pupils to write it in the air with you. Then ask a pupil to write it on the board.

2) Ask 10 pupils to come to the front of the room. Each pupil should put up their arms as if they are tree branches. Tell the class to pretend they are Hadiza's trees. Then ask the class to count the total trees. Then ask a pupil to count to 10 using a different set of objects in the room.

3) Write a number (0, 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10) on the board. Ask pupils to identify the number and hold up the correct number of fingers. Erase and repeat.

EXTENSION: Read the story again. When students hear a number, they should hold up the correct number of fingers.

The Blessings of Living Well

Once upon a time there was a young woman named Hauwa. She worked as a teacher, she was a generous neighbour, and she was happily married. There was just one problem, Hauwa and her husband wanted a child but were unable to conceive. They prayed and prayed, but to no avail. Finally, Hauwa went to her mother for advice. Hauwa's mother said, "My daughter, please do not worry. Continue to be a good teacher, and continue to be a good wife and neighbour. If you live well, you will be blessed beyond what you ask for." Hauwa was patient and was fortunate to become pregnant and give birth, not just to one child, but to

twins! Her husband was so happy that he decided to invite all the townspeople to a ceremony to name the babies. Everything needed for the ceremony was available except for water. That is because was no reliable source of water in the village. Hauwa was worried. She needed at least 10 buckets. "How will we have enough water for the party?" she worried aloud to her husband. Her husband remembered what a hardworking wife Hauwa was, and resolved to help her and gather his relatives to fetch the water. On the way to find water, they met Hauwa's neighbor Zainab, who asked where they were going. "Hauwa needs 10 buckets of water," Hauwa's husband said. Zainab remembered what a good neighbour Hauwa was, and she resolved gather the neighbours and bring the buckets themselves. On their way to find water, the neighbours met a group of Hauwa's pupils. "Where are you going?" they asked Zainab.

"We are going to fetch 10 buckets of water for your teacher Hauwa," she said. They remembered what a good teacher Hauwa was and decided they wanted get the buckets for her themselves. Soon the relatives returned with 10 buckets, the neighbours with 10 buckets, and the pupils with 10 buckets. Hauwa looked at them all in amazement. "30 buckets!" she said. "My mother was right. If you live well, you will be blessed beyond what you ask for."

Comprehension Questions

What was Hauwa's problem at the beginning of the story? Why were people so eager to help carry the buckets? Can you describe a time when you helped a friend or neighbour?

Mathematics Exercises

- Ask three pupils to stand up and hold up ten fingers. Ask the class to help you count the fingers of the three pupils to see if they add up to 30.
- Ask a pupil to come to the board and check Hauwa's math with an equation. Help the pupil as needed.
 - 10 10
 - <u>+10</u>

 Ask a pupil how many buckets Hauwa would have if each group of people had brought 12 instead of 10.

> 12 12 <u>+12</u>

EXTENSION: Repeat step 3 with the number 15. If time still remains, you can ask the pupils to provide three different numbers to add.

The Wise Woman and the Foolish Servant

Once upon a time, there lived a wise old woman in a village called Banga. She had 32 silver coins, which she hid in a box under her bed. Every morning the old woman counted her silver coins to make sure she had all 32. One morning, the old woman counted her silver coins. There were only 22. "Who stole my silver coins?" wondered the old woman. She thought about her many servants and knew that none of them had ever seen her box of coins. There was one who was foolish and dishonest. It was likely that he had taken the coins. However, the old woman had to have proof. After thinking for a while, the old woman had an idea. She called all of her servants together. She said to them, "I am an old and forgetful woman. I had a certain number of silver coins. I can't remember the number, but now I have only 22 coins. I will give a reward to anyone who tells me how many silver coins I had and how many I misplaced." "No one can know this," one of the servants protested. But the foolish servant shouted, "I know!" Everyone turned to him in amazement. The foolish servant said confidently, "You had 32 silver coins, and you misplaced 10. That is why you have 22 left." The old woman looked at the servant and smiled. "You are right. But unfortunately for you, only the thief himself could know that. So now you will have your reward!" The old woman's guards came and escorted the foolish servant out of the house. The old woman became known in the village for her wisdom.

Comprehension Questions

How many coins did the old woman have originally?

How did the old woman know who the thief was?

Why do you think the old woman tricked the servant instead of asking him directly?

Mathematics Exercises

1. Explain that we use subtraction when we want to show an amount that is taken away. Write the following equation on the board, explaining that these numbers represent the silver coins. Then ask pupils to help solve it. 32 -10

2. Ask pupils how many coins would remain if 20 were stolen. Then ask a pupil to write the equation on the board and solve it. 32 -20

3. Ask pupils to imagine that they had 45 coins, and they find that 15 are missing. Then ask a pupil to write the equation on the board and solve it.

EXTENSION: Use 32 coins (or you may substitute another small object, such as stones, nuts, pieces of paper, leaves, etc). Tell pupils you have 32, and then ask a volunteer to take a certain amount away. After the volunteer tells the class how many were taken, the class should guess how many remain. Then check the answer in two ways: use an equation, and count the remaining objects. You can also try the exercise having a pupil hide how many they took and the class works out the number together by subtracting the remaining from the original total.

The Thousand Bags of Grains

Once there was a village called Dombo. The people of Dombo were honest and faithful, but they were also very poor and hungry. One day, the village head, the elders, and the community decided to solve their problem of hunger. "We must inspire our farmers to produce more food," said the village head. "Let's have a competition. Whoever can produce 1,000 bags of grain will be named farmer of the year." Many farmers agreed to do the competition. Mallam Kowa said to himself, "I will work twice as hard as before, farming by hand. I will surely win." But Mallam Dankeke said to himself, "Let me see what the other villages

have done." So Mallam Dankeke visited the neighbouring villages. He saw the farmers there were using tractors, and producing hundreds of bags of grain. "Let me rent a tractor," he said. "Perhaps I will win." Harvest season came. Mallam Kowa had worked twice as hard as usual. He produced 200 bags of corn and 200 bags of millet. Mallam Nalado had hired two strong men. Together, they produced 300 bags of corn and 300 bags of millet. Mallam Dankeke had used his tractors. He produced 500 bags of corn and 500 bags of millet. "It is decided!" cried the village head. "Mallam Dankeke is the winner!"

Comprehension Questions

1. How many bags of corn and millet did Mallam Dankeke produce?

2. Why do you think that Mallam Dankeke's strategy worked better than the others?

3. Do you think the village solved their problem of hunger?

Mathematics exercises

1) Write Mallam Kowa's name on the board. Then ask pupils how many bags of corn and how many bags of millet he grew. Then show pupils how to find the answer by adding the numbers on the board:

200 <u>+200</u>

2) Repeat step 1 with Mallam Nalado (using 300 and 300) and Mallam Dankeke (using 500 and 500). Ask for volunteers to add the numbers.

3) Ask pupils if Mallam Kowa and Mallam Nalado combined could match Mallam Dankeke. Then show them how to add to find the answer with addition:

400 <u>+600</u>



EXTENSION: Read the story again. When you arrive at the part when the bags are announced, ask volunteer pupils to add the totals again on the board.



CHAPTER SIX: WORD LISTS

Word lists are used to build the literacy skills of learners. Word lists contain words frequently encountered at the learner's grade level. Teachers can create word lists for their learners based on their level of advancement. If a learner completes a word list at her grade level, the teacher should introduce the learner to the next grade level word list. Teachers can creatively use the word list to build literacy skills in reading, writing and grammar.

Level 1

а	funny	look
and	go	make
away	help	me
big	here	my
blue	I	not
can	in	one
come	is	play
down	it	red
find	jump	run
for	little	said

Level 2

all	four	out
am	get	please
are	good	pretty
at	have	ran
ate	he	ride
be	into	saw
black	like	say

brown	must	she
but	new	SO
came	no	soon
did	now	that
do	on	there
eat	our	they

Level 3

after	give	let
again	giving	live
an	had	may
any	has	of
as	her	old
ask	him	once
by	his	open
could	how	over
every	just	put
fly	know	round

Level 4

always	fast	pull
around	first	read
because	five	right
been	found	sing
before	gave	sit
best	goes	sleep
both	green	tell
buy	its	their
call	made	these
cold	many	those
does	off	upon
don't	or	

Level 5

about	far	laugh
better	full	light
bring	got	long
carry	grow	much
clean	hold	myself
cut	hot	never
done	hurt	only
draw	if	own
drink	keep	pick
eight	kind	seven
fall		

NOUNS

apple	day	home
baby	dog	horse
back	doll	house
ball	door	kitty
bear	duck	leg
bed	egg	letter
bell	eye	man
bird	farm	men
birthday	farmer	milk
boat	father	money
box	feet	morning
boy	fire	mother
bread	fish	name
brother	floor	nest
cake	flower	night
car	fame	paper
cat	garden	party
chair	girl	picture

chicken	good-bye	pig
children	grass	rabbit
Christmas	ground	rain
coat	hand	ring
corn	head	robin
cow	hill	Santa

List available from <u>https://www.yourmdl.org/wp-content/uploads/2013/05/</u> Sight-Words.pdf?x15511___

CHAPTER SEVEN: EFFECTIVE TEACHING, LEARNING AND ASSESSEMNT

The aim of teaching is for learning to occur. In order to confirm that learning is taking place, the teacher should assess the students regularly. Assessments are used to help the teacher and students to know the knowledge gaps and plan a way to cover the gaps. Teachers should plan for formative and summative assessment of their learners.



Figure 1: Relationship between Assessment and Teaching & Learning

7.1 BLOOM'S TAXONOMY OF KNOWLEDGE

The goal of learning is to achieve some specific learning outcomes. These outcomes are achieved overtime. Learners start from a low level of knowledge and gradually increase in their knowledge, as they are exposed to more information and experiences as organised by the curriculum/teacher/school. The level of knowledge can be determined/measured by asking the learners

questions. Benjamin Bloom designed a tool, which can help to show a learner's level of knowledge by the kind of questions she is able to answer. As you move up the hierarchy (taxonomy), the question types require more detailed and complex answers from the learners. The teacher should use the Bloom's taxonomy to plan their lessons such that they are able to move their learners from a low level of knowledge to a high level by the end of the class, topic or term and using the correct type of questions/activities to assess the learners.



Figure 2: Bloom's Taxonomy of Knowledge

Remembering

Your learners should be able to remember what has been taught. Your learners should be able answer questions that ask them to list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote and name, who, when, and where.

The skills required at this level of knowledge are:

- Observation and recall of information
- Knowledge of dates, events, places
- Knowledge of major ideas
- Mastery of subject matter

Understanding

You should prepare your learners to be able to summarise, describe, interprete, contrast, predict, associate, distinguish, estimate, differentiate, discuss and extend ideas based on the topics you have taught.

The skills required at this level of knowledge are:

- Understand information
- Grasp meaning
- Translating knowledge into new context
- Interprete facts, compare, contrast
- Order, group, infer causes
- Predict consequences

Applying

At this stage, your learners will be able to apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover based on what they have been taught.

The skills required at this level of knowledge are:

- Use information
- Use methods, concepts, theories in new situations
- Solve problems using required skills or knowledge

Analysing

Learners at the analysing stage will be able to separate, order, explain, connect, classify, arrange, divide, compare, select, explain and infer information



presented to them.

The skills required at this level of knowledge are:

- Seeing patterns
- Organisation of parts
- Recognition of hidden meanings
- Identification of components

Evaluating

At the evaluating stage, learners assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare and summarise information.

The skills required at this level of knowledge are:

- Compare and discriminate between ideas
- Assess value of theories, presentations
- Make choices based on reasoned argument
- Verify value of evidence
- Recognise subjectivity

Creating

At this stage, learners become contributors to knowledge. They can combine, integrate, modify, rearrange, substitute, plan, create, design, invent, compose, formulate, prepare, generalize, rewrite and answer what if?

The skills required at this level of knowledge are:

- Use old ideas to create new ones
- Generalise from given facts
- Relate knowledge from several areas
- Predict, draw conclusions

7.2 FORMATIVE ASSESSMENTS

AND

SUMMATIVE

Formative assessments are used to give feedback on learners' progress and effort. The key activity in a formative assessment is feedback. The teacher must provide feedback to the learner on how well she is doing, and help her plan how best to reach the required learning goal. Formative assessments also help the teacher to understand what teaching and assessment methods work best for their learners. Frequent formative assessments are needed to give the learners plenty opportunity for learning, experimenting and improvement. Formative assessments are the teachers' opportunity to determine how learning is progressing and decide what and if remedial action is needed.

The characteristics of formative assessment are:



Figure 3: Formative assessment characteristics

- It should be goal-oriented Know exactly what you want the students to learn and develop your tests to help them progress towards this learning. Use it to guide students towards performing well. It should be specific, observable, and measurable.
- **It must focus on higher-order thinking skills –** Your formative assessments should not only focus on what can be memorised i.e. mere facts. Formative assessments should test students' ability to apply knowledge beyond mere facts. We want to know if they are applying, analysing, evaluating, and creating.
- It should hold students accountable for individual performance -Group assessment is useful in itself. Plan group work so that each individual can show his/her ability. When you know the exact needs of the individual, it will give you direction to steer your instruction (learner-centred teaching). This sets the students up for success.
 It should be seamless - Do not change your routine to fit the test. Adapt your chosen assessment style to your normal routine. Teachers should learn several assessment styles so that they encourage learners with different learning styles to participate at their best. You might need to build your formative assessment into your lesson, such that the learners are unaware.

Summative assessment is used for **evaluation**. Its aim is to grade students and place them on a scale along with similar students across a wide range. Summative assessments are used to make decisions such as promotion to the next class, admission in to a school, eligibility for scholarship etc. It can be seen as a benchmarking exam. It is used to also assess the quality of learning going in a school in comparison to similar schools in a particular city, state, country and in even across international boundaries. Summative assessments should be documented to show learners achievement at the end of the term (quarterly).

7.3 FEEDBACK TECHNIQUES FOR FORMATIVE ASSESSMENT

Giving effective feedback is a core component of effective formative feedback. Feedback must move the learner forward. In other words, feedback must help the learner know where he/she is on the way to achieving the learning goals that have been set at the beginning of the learning period. For feedback to be effective,

- Learners must have a clear understanding of what they are trying to learn (Learning objectives).
- Learners can recognise achievement (Learning outcomes).
- Learners understand what 'good' looks like (Success criteria).
- Learners know why they are learning this in the first place (How this learning fits into the big picture)

Following are some techniques for effective formative assessment:

1. Marking for improvement

When grading students' work, record a grade in your grade-book, but only give students written comments on how to improve. Give students time to read the comments in class and one week to resubmit the work. The final grade is the average of the first and resubmitted grade.

2. Mastery marking

Only accept students' work when it is of a specific quality. You might only give one grade, an A. Students are expected to continue to redraft and resubmit their work as many times as necessary in order to achieve an A. The overall grade is then determined by the number of As.

3. +, -, = (Plus, Minus, Equals)

Mark students' work in relation to previous work. If the latest work is of the same quality as the last, it receives an '=', if it is better than the last, it receives a '+', and if it is not as good as the last, it receives a '-'.

5. Responding to marking

Write your teacher's feedback, signed and dated, at the start of the exercise book. Students then make an appropriate response below the teacher's feedback, including where to find any redrafting. Do not mark the next piece of work until the student has responded to the last feedback provided.

6. Focused marking

Mark students' work against one or two specific criteria, even though there may be many criteria that could be marked. This allows you to provide more focused and detailed feedback on these criteria than if everything was marked. The grade-book contains the skill marked rather than the title of the work set.

7. Find and fix your mistakes

Instead of marking answers as correct or incorrect, tell the students the number of answers that were wrong. Give them time in class to find and correct their mistakes, either individually or in groups.

8. Margin marking

Instead of marking each spelling or grammar mistake on essays, place a mark in the margin. Students then find their own mistakes and correct them

9. Traffic lights

Give students a RED, AMBER or GREEN mark for a piece of work. All RED and AMBER work can be redrafted in an attempt to achieve a GREEN mark. The final grade is calculated from the number of GREEN and AMBER marks.

10. Aim for the next level

Students identify areas of improvement by comparing their work to exemplars at the next level of achievement. Students realise that they need to set themselves higher standards. Able students find that they can improve a good piece of work.

11. Match comments to work

Write comments about students' work on strips of paper without names. Sit students in groups of four. Each group of four students get back their four pieces of work and their four comments. The group needs to decide which comment goes with which piece of work. [3]

7.4 BLOOM'S TAXONOMY AND ASSESSMENTS

The teacher can use bloom's taxonomy to plan his/her teaching and assessment. When a teacher knows what level of knowledge he/she wants the students to reach after the lesson, it helps in preparing the right assessment and the right teaching to produce the expected results.





Figure 4: Bloom's Taxonomy and Assessment

DAILY

Daily assessments are used to check **remembrance** of topics learnt in the course of the day's lesson. The facilitator should take a random sample of learners and test their knowledge of the topic taught for the day. The main aim is to ensure that learners remember what they have learnt. This assessment can also be done at the start of the next lesson, i.e. the facilitator should assess the students' "knowledge from previous lesson" at the beginning of next day or next week's class. Assessments can be oral, but should go round the class. It should occur at any time (and continuously) during the lesson, not only at the end. There is no need for documentation. The facilitator should use this assessment to gauge learners' knowledge gaps and plan remedial action.

WEEKLY

Weekly assessments are used to check **understanding and application** of topics learnt in the course of the week. Learners should be able to compare and contrast. Learns should be able to answer "if...then" questions. Take the

following question: if Jane likes to eat sweet things and mangoes are sweet, then does Jane like mangoes? – the learner should be able to take prior knowledge and apply it to give an answer based on the principles of compare and contrast, consequence and implication etc. The facilitator should go beyond checking knowledge to checking that learners understand and can apply the knowledge to different or new situations/contexts. Assessment can be oral or short written quizzes which can be peer-graded. There is no need for formal documentation. The facilitator should use this assessment to gauge learners' knowledge gaps and plan remedial action.

MONTHLY

Monthly assessments are used to check **application and analysis** of topics learnt in the course of the month. Can your learners understand how to apply addition in everyday life for example? Can they decide how to calculate the number of cubes of sugar in 5 boxes, if one box contains 90 cubes, after a multiplication lesson? Can they determine if a question is wrong? A level of **evaluation** can be introduced here. Learners can be allowed to evaluate their peers' work and give feedback with guidance from the facilitator. This assessment has to be documented by the facilitators for monitoring and supervision purposes. This assessment should also be used to inform revision of topics if necessary.

TERMLY (QUARTERLY)

Quarterly assessments will be used to check learner's ability to **evaluate and create** knowledge on topics learnt in the course of the term (quarter). This assessment is to record the knowledge acquired by the learners. This means learners should be able to create something new with their knowledge and also decide if another person's work is correct, good, average, bad etc. For example, learners should be able to tell how good a fellow learners' essay is using the ideas learnt form an "essay/letter writing" class. They should also be able to suggest possible corrections to make the essay/letter better. Learners should be able to follow steps learnt to produce complete essays/letters. Facilitators will administer quarterly assessment to determine each learners' level of knowledge. This assessment's results will be recorded to show each learner's achievement and progress.

7.5 DEVELOPING ASSESSMENT QUESTIONS AND ACTIVITIES

Learners' assessments should be planned with the right objectives in mind. Assessments are a tool for knowing the amount of knowledge gained by the learners. Here are some points to note when planning an assessment:

- 1. **Set your assessment goal:** What do you want to achieve with your assessment? Is it formative, to discover your students' weaknesses or summative to record achievement at the end of the learning period?
- Decide what level of knowledge you plan to test: The type of questions you ask or the type of activities you set for the learners will be determined by the level of knowledge you expect your learners to display.
- 3. How will you deliver the assessment?: What method will you use? Oral assessment, paper-based test, group work, projects or research papers?
- Develop your grading criteria: Decide what you are expecting as a response to your assessment. Give room for creative and innovative answers to encourage your learners.
- 5. **Determine how you will give the learners' feedback:** The most important goal of assessment is to help the teacher and learners determine how well they are moving towards the previously set learning goals (benchmarks).

CHAPTER EIGHT: LEARNING BENCHMARKS

ENGINE II has adopted learning benchmarks which are the **minimum level** of knowledge for every ENGINE II girl. ENGINE II measure girls' knowledge at two levels:

- 1. **Transition:** For this measurement, every ENGINE II girl should move from one grade level to the next higher grade.
 - i. Primary 1 to 3 benchmark covers the literacy benchmarks for Primary 1 to 3 (ISGs) and Basic Learners (OSGs).
 - ii. Primary 4 to 6 benchmark covers the literacy benchmarks for Primary 4 to 6 (ISGs) and Post-Basic (OSGs).
 - iii. Junior Secondary benchmark covers the literacy benchmarks for Junior Secondary 1 to 3 (ISGs) and Continuing Education (OSGs).

Note: Please refer to ENGINE II literacy and numeracy benchmarks booklets respectively for details of the benchmarks.

 Learning Outcomes: This measurement states that every ENGINE II girl will have functional literacy and numeracy skills. This measurement is important for ENGINE II and all LCFs should pay special attention to achieving the benchmarks with all their girls.

8.1 LEARNING OUTCOMES FOR OUT-OF-SCHOOL GIRLS (OSG)

Out-of-School (OSG) – Literacy Learning Benchmarks

Relevant subtasks	Literacy	Notes
Subtask 1, 2 and 3	Proficient in letter sound identification, Proficient in familiar words, Proficient in non-familiar words	 Learners should be able to identify all the English alphabets and their phonics sounds, including letter combinations. Learners should be able to read popular words at their level Learners should be able to to read non- words (i.e read nonsense words that do not have any meaning using the phonic sounds of each letter) Read initial sounds, final sounds and segment sounds of words
Subtask 4	Established in Oral reading fluency	 Learners can listen to a passage and answer literal and inferential comprehension questions correctly
Subtask 5	Proficient in comprehension of short fluency paragraph	 Learners should be able to read a short paragraph accurately at acceptable rate

Relevant subtasks	Literacy	Notes
		Learners should be able to respond to literal and inferential questions on the passage read

Out-of-School (OSG) – Numeracy Learning Benchmarks

Relevant subtasks	Numeracy	Notes
Subtask 1 and 2	Proficient in Number Identification and in Number Discrimination	 Learners should be able to be able to identify number from 0 to 100 Learners should be able to differentiate between numbers that are greater than and less than.
Subtask 3 and 4	Proficient in Missing Numbers and Additions	 Learners should be able to provide the missing number in a series. E.g 1,2,_,4 or 5, 10, _, 15, 20 Learners should be able to solve simple addition questions without carryover
Subtask 5 and 6	Proficient in subtractions and words problems	Learners should be able to solve simple subtraction questions without carryover

8.2 LEARNING OUTCOMES FOR IN-SCHOOL GIRLS (ISG)

In-School Girls (ISG) – Literacy Learning Benchmarks

Relevant subtasks	Literacy	Notes
Subtask 6	Established in comprehension (+ analytical questions)	Learners should be able to read short passages and answer questions that require a level of critical thinking
Subtask 6	Proficiency in comprehension (+ analytical questions)	
Subtask 7	Established in comprehension (+ inferential questions)	Learners should be able to read short passages and answer
Subtask 7	Proficient in comprehension (+ inferential questions)	questions that require them to apply common sense knowledge from experience
Subtask 8	Established in short essay construction	Learners should be able to construct a well organised essay of acceptable length on a specified topic without help
Subtask 8	Proficient in short essay construction	

In-School Girls (ISG) – Numeracy learning benchmarks

Relevant subtasks	Numeracy	Notes	
Subtask 7	Established in Advanced multiplication and division	Learners should be able to solve complicated multiplication and division of 3 digit	
Subtask 7	Proficient in Advanced multiplication and division	numbers, fractions, decimals etc	

Relevant subtasks	Numeracy	Notes	
Subtask 8	Established in algebra	Learners should be confident to solve algebraic problems both mechanical and word problems e.g. open sentences, operating common mathematical formulae (including/especially from word problems) in addition, subtraction, multiplication and division	
Subtask 8	Proficient in algebra		
Subtask 9	Established in sophisticated word problems	Learners should be expert in complicated word problems that require multiple skills (addition, subtraction, multiplication, and division), including interpreting simple charts and diagrams.	
Subtask 9	Proficient in sophisticated word problems		

The **minimum goal** of ENGINE II is to ensure that all girls enrolled, meet these learning benchmarks.

CHAPTER NINE: TEACHER DEVELOPMENT

As a teacher, you must have a personal development plan. A teacher must be a lifelong learner. Teachers must always try to improve on themselves every day. What are your professional goals? You should have a plan for achieving your goals to be a great teacher to your students. To achieve this, you must reflect on your teaching practice every day. You must be ready to learn from your colleagues and students what you are doing well and what needs improvement. You must also listen to your supervisor.

9.1 PERSONAL REFLECTION

In learner-centred teaching and learning, it is of utmost importance for the teacher to reflect regularly on their teaching practice. Without reflection, the teacher's improvement will be hampered. Reflection is important so that teachers can discover the strategies that work for their students.



Figure 5: Personal Reflection Cycle

For reflection to be effective, the teacher must be open-minded, able to criticise their own work and take feedback from others. Think about the questions in the table below and answer them thoughtfully after each class.

Qu	estion	Yes	No
1.	Was there sufficient probing of the learners' existing knowledge and abilities?		
2.	Did I provide the learners with enough examples?		
3.	Did my questioning initiate critical and creative thinking?		
4.	Did I encourage learners to ask questions?		
5.	Did I encourage learners to listen and respond to the remarks of their peers during large and small group discussions?		
6.	Did I provide sufficient opportunity and time for learners to work independently, in pairs and in small groups?		
7.	Did my classroom environment encourage learners to take risks during activities?		
8.	Did I provide a variety of resources and experiences to meet the needs of all learners?		
9.	Did I encourage and enable learners to access and use a wide variety of resources?		
10.	Did I consider the influence of culture and gender on learners' interaction and communication styles?		
11.	Did learners see me as a passionate teacher?		
12.	Was my assessment of learners fair?		

9.2 PROFESSIONAL DEVELOPMENT

A teacher must be a lifelong learner. Every teacher must have a plan for their continuous professional development. Nobody knows it all. A teacher must be aware of their skill gaps and seek ways to fill them.

- Reading: Books are the cheapest way to gain worldclass knowledge. Today, you can have access to millions of books via the internet, and you can store them on your phone, tablet or computer to read at any time.
- Trainings: ENGINE II has established Teacher Professional Development Days to provide training to all teachers. Teachers should

look out for other useful training organised by professional bodies such as the National Union of Teachers (NUT), Teachers' Registration Council of Nigeria (TRCN), Mathematical Association of Nigeria (MAN), Science Teachers Association of Nigeria (STAN) and other non-profit organisations. Teachers should also aspire to get to the highest levels of higher education by pursuing higher degrees up Doctorate (PhD) level.

3. Peer-mentoring: A teacher that knows the importance of her professional development will seek out a mentor even if this is not formally provided for within the school system. ENGINE II has instituted mentors in the form of Master Trainers who are on ground to give feedback and support on teacher's professional skills.



Figure 6: Components of Teacher Development

9.3 COMPREHENSIVE EVALUATION DOMAINS AND INDICATORS

Teachers can use these indicators for personal evaluation/reflection:

Planning

- a. Establishes appropriate instructional goals and objectives.
- b. Plans instruction and student evaluation
- c. Adapts instructional opportunities for diverse learners.

Teaching

- a. Demonstrates a deep understanding of the content area.
- b. Uses research-based classroom strategies (higher order thinking, problem-solving, and real world connections) for all students.

Assessment & Evaluation

- Uses appropriate evaluation and assessments to determine students' mastery of content and make instructional decisions.
- b. Communicates student achievement and progress to students, their parents, and appropriate others.
- c. Reflects on teaching practice through careful examination of class room evaluation and assessments.

Learning Environment

- a. Creates a classroom culture that develops student's intellectual capacity in the content area.
- b. Manages classroom resources effectively.

Professional Growth

- a. Collaborates with colleagues and other appropriate people.
- b. Engages in high-quality, on-going professional development.
- c. Performs professional responsibilities efficiently and effectively.

Communication

- a. Communicates clearly and correctly with students, parents, and other stakeholders
- ENGINE II Teachers' Handbook

9.4 CLASSROOM OBSERVATION

The goal of classroom observation is to obtain a representative sample of a teacher's performance in the classroom. Evaluators cannot accomplish this goal with a sample of only a few hours of observation or with an observation of only one class. Observations can be formal and planned or informal and unannounced. Both forms of evaluation can provide valuable information.

9.5 LESSON PLANS

Review of lesson plans and classroom records: Lesson plans can reflect how well a teacher has thought through his/her instructional goals. Looking at classroom records, such as tests and assignments can indicate how well a teacher has linked lesson plans, instruction, and testing.

9.6 NOTE TO SUPERVISORS

Expand the number of people involved in the evaluations. Most often, principals or department supervisors conduct evaluations. Self-evaluations give teachers' perspective on their work. Peer and student evaluations, if schools administer them properly, can also benefit teachers. Teachers who want to improve their teaching are eager to know how other teachers and their students view them. These are the people who interact with the teacher every day. Their perspectives should not be ignored during the evaluation process.

A post-observation conference can give teachers feedback on their strengths and weaknesses. Evaluators must remember to:

- Deliver the feedback in a positive and considerate way;
- Offer ideas and suggest changes that make sense to the teacher;
- Maintain a level of formality necessary to achieve the goals of the evaluation;
- Maintain a balance between praise and criticism; and
- Give enough feedback to be useful but not so much that the teacher is overwhelmed.

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APPENDIX

Appendix A: Semantic Lesson Plan

CLASS:	LEVEL 3	
SUBJECT:	NUMERACY	
TOPIC:	NUMBERS in Words up to 10,000	
DURATION:	45minutes	
DATE:	29th March, 2019	
INSTRUCTION RESOURCES:	The Teacher uses counters,	
	flashcards, abacus and other objects	
	in the class	
SPECIFIC OBJECTIVE:	At the end of the lesson, the pupil	
	should be able to	
	i. Identify numbers	
	ii. Read numbers in words	
	iii. Write numbers in words	

PREVIOUS KNOWLEDGE:

Learners are familiar with numbers

LESSON DEVELOPMENT

STAGES	TEACHERS'	PUPILS'	LEARNING
	ACTIVITY	ACTIVITY	POINT
Introduction	The teacher introduces the lesson by showing the pupils counters to count along with him/her	The learners count the counters along with the teacher.	The learners can now count numbers.

STAGES	TEACHERS'	PUPILS'	LEARNING
	ACTIVITY	ACTIVITY	POINT
Step I	The teacher shows numbers on flash cards to the learners and encourages them to identify the numbers	The learners identify the numbers on flash cards	The learners can identify numbers
Step II	The teacher explains that to write numbers in words you must first identify the value of the digits thus: 1468 count three digits from your extreme right thus: 1468	The teacher calls the learners one after the other to repeat same on the board.	The learners can identify digits and their values.
Step III	The teacher gives the learners work on numbers in words thus: Write these numbers in words 1. 1694 2. 5681 3. 1111 4. 3452 etc	The learners answer the questions in their books	They can write numbers in words
Evaluation	The teacher uses some of the questions above to evaluate the learners	The learners answer the questions	Learners can write numbers in words.
Conclusion	The teacher marks & does corrections with the learners	The learners copy the corrections in their books.	The leaners can write without assistance

STAGES	TEACHERS'	PUPILS'	LEARNING
	ACTIVITY	ACTIVITY	POINT
Home work	The teacher gives them home work thus: Write in words: 1. 1984 2. 3246 3. 5693 4. 15968	The learners copy the home work in their books.	The learners can do their homework without assistance

Importance of a Lesson Plan

- 1. It is a statutory record.
- 2. It enhances quality delivery of the lessons.
- In case of absenteeism, another teacher can deliver the lesson.
- 4. When you plan your lessons, you include innovations that will attract the learners.
- 5. A planned lesson considers individual differences in the learners.
- 6. A teacher or facilitator who plans his/her lessons can avoid personal mannerism.
- 7. A planned lesson builds up confidence in the facilitator.
- 8. It is a punishable offence not to plan your lessons.
- 9. It enables the facilitator to include activities in the lesson.
- 10. In the learners' centered method of teaching, lesson plans are compulsory.








