INSET COORDINATOR INSTRUCTIONS

- BEFORE MEETING WITH TEACHERS FOR THIS MODULE, LOOK AT THE ‘MATERIALS FOR THE SESSION’ AND MAKE SURE THAT YOU AND THE TEACHERS BRING THEM.
- BEFORE MEETING WITH TEACHERS FOR THIS MODULE, ENSURE THAT YOU AND THE TEACHERS HAVE READ THE MODULE IN ADVANCE.
- PLEASE HAVE THE TEACHERS SIGN THEIR SIGNATURE BELOW.

**SAY TO TEACHERS:**

‘Now we will read the introduction to this module. After the first teacher reads a paragraph aloud, they can call on another teacher to read the next paragraph.’

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**INSET COORDINATOR INSTRUCTIONS**

**Module 3: Pupil Learning Activities to Develop Number Concept**

**CONTENT OF MODULE:**

This module provides learning techniques to develop pupils’ number concept. The pupil activities include the use of songs and music and puts emphasis on the pupil doing, manipulating objects, discovering concepts and learning by working in small groups. Teachers are also encouraged to incorporate rapid and simple knowledge checks during each lesson to continuously assess pupil learning. Teaching aids incorporated into the practice activities in this module include the counters and number cards addressed in the previous module.

**CORE CONCEPTS**

1. Children’s success in mathematics is dependent on their comprehension of the number concept.
2. Children learn maths concepts through fun and interactive activities such as song and music
3. Children learn maths concepts through engaging activities such as working in small groups.
4. Teachers can assess pupil learning progress through continuous knowledge checks during each lesson.

**MATHS VOCABULARY:**

- **Number Concept** – a pupil has sense of what numbers mean, understands their relationship to one another, is able to perform mental maths, understands symbolic representations, and can use those numbers in real world situations
- **Group Work** – an active learning teaching strategy where children are grouped into small groups and given instructions on learning and exploration activities.
- **Knowledge Check** – informal, rapid formative or continuous assessment conducted during every lesson by the teacher

**MODULE LENGTH:** 3 hours 30 minutes for Core Concepts and Activities plus 2 hours of Lesson Planning

**MODULE OBJECTIVES:**

By the end of this module, teachers will be able to:
1. Incorporate song and music into pupil activities to introduce and reinforce maths concepts
2. Understand that children learn through a variety of activities done in small groups
3. Learn to incorporate knowledge check activities into your lesson to assess pupils’ learning progress

**MATERIALS FOR THE SESSION:**

1. INSET Module
2. Copy of 2015 Standards 1 syllabus and copy of Module 1.
3. Notebook, pen, flip chart and markers, or chalk and board.
4. An instrument such as a drum or guitar.
5. Teaching Aid Box.

**LEARNING ENVIRONMENT FOR THE SESSION:**

1. Review the ground rules established by the participants during the first meeting.
2. Make revisions to the ground rules if required.
3. Arrange the desks so that all participants can see and speak to each other.
4. Feel free to ask questions.
5. Always be supportive of your colleagues.
6. Try to be creative and think about how ideas apply to your classroom.
7. Put phones or pagers on silent mode.

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<table>
<thead>
<tr>
<th>Teacher name</th>
<th>Signature</th>
<th>Standard</th>
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<tbody>
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**SAY TO TEACHERS:**
“Welcome to Module 3 of the INSET training for Counting. In this module we will learn how to incorporate teaching aids and pupil activities to develop the number concept. In this module, we will focus on music and song, group work and lesson knowledge checks. Before we begin, let us each share a success and a challenge faced when putting into practice the concepts and techniques discussed in the previous session. For each challenge that a participant mentions, let’s see if we can come up with a solution. Make sure to write down solutions that you find helpful or address the challenges that you identified.”

**READ ALOUD (5 MINUTES)**

Since the last session we practiced one or more teaching technique to apply the following concepts developed during the module:

1. Understand that children learn progressively from context to objects to symbols.
2. Collect, design, make and improvise teaching aids to use in pupil activities using materials found in the local environment.
3. Practice pupil activities that incorporate teaching aids that develop number concept.

Take a moment to individually jot down a success as well as a challenge you experienced while conducting these lessons in your class.

**WRITE INDIVIDUALLY (10 MINUTES)**

- Write down individually a success and a challenge you experienced while applying these strategies in the classroom.

**Successes**

(Describe the practice you have used and explain how you knew it was successful)

**Challenges**

(Describe the practice and explain why it is challenging)
GROUP DISCUSSION (15 MINUTES)

- Share one of these experiences with the group.
- For each challenge, see if you can come up with solutions for your colleagues’ challenges.
- During the discussion, write down solutions that pertain to the challenges you identified.

SHARE THE FOLLOWING WITH TEACHERS IF THEY ARE UNABLE TO IDENTIFY PUPIL ACTIVITIES:

- USING MUSIC AND SONG
- USING NUMBER CARDS TO MATCH WITH OBJECTS
- USING NUMBER-PICTURE CARDS
- USING THE NUMBER LINE
- PRACTICE WRITING THE NUMERAL IN THE EXERCISE BOOK OR SLATE
- SKIP COUNTING
- USING OBJECTS FOR COUNTING

READ ALOUD (5 MINUTES)

In this module you will learn to:

1. Incorporate song and music into pupil activities to introduce and reinforce maths concepts
2. Understand that children learn through a variety of activities done in small groups
3. Learn to incorporate knowledge check activities into your lesson to assess pupils’ learning progress
Now we will read the core concept. We will take turns reading the text aloud. After the first teacher finishes the paragraph, he/she can call out another teacher’s name so that they read the next paragraph. While we are reading, you should mark any key information. Put an exclamation point (!) Next to anything you think is important. Put a question mark (?) Next to anything that confuses you or that you disagree with. Finally circle (o) any new words.”

Just as phonemic awareness is a prerequisite to learning phonics and becoming a successful reader, developing the number concept is a prerequisite for succeeding in mathematics.

Children understand the number concept if they are able to demonstrate the following:

1. **One-to-One Correspondence**
   Children display one-to-one correspondence when they count a group of objects while physically or mentally touching each object once, and only once.

2. **Cardinality**
   Children understand that when you set up a 1-1 correspondence between the number names in their correct order and the set of objects you are trying to count, then the last number name you say is the cardinality (or size) of the group.

3. **Invariance of Number**
   Children understand that the number of objects does not change if the objects are displaced; in other words, even if the objects are separated into groups or hidden, the total number remains the same.

4. **Inclusion**
   Children understand that number labelling how many objects in a group includes all the objects in the group. In other words, regardless of the order in which the objects are placed, the number remains the same. For instance, “four” indicates the total number of marbles, rather than just the fourth marble.

5. **Ordinal Counting**
   Children understand that the number name indicates the position of something in a series such as First, second, third, fourth, fifth… etc.

6. **Counting-on**
   Children show an ability to count on when they can count a group of objects and continue from the total when an additional group of objects are added, without needing to start at one again.
Song and music in a mathematics classroom help teach concepts while making learning fun and interactive.

Song and music contributes to positive attitude in the classroom and school as a whole and encourages creativity in pupils. It captures every child’s attention around the action of singing and learning happens naturally and effortlessly. If you have a drum or other instrument that you know to play, or if there is a community member who can help you in the classroom, invite that person to join you. This approach is suitable for any maths specific competency and is best used to introduce a new topic or reinforce a topic. In this module, we will explore how to use it for developing the number concept. Other examples include, children counting forward and backward through song or acting out geometric shapes while singing a song about shapes or identifying times of a day in the form of a song. You can write your own songs for or you can also ask children to make up their own song about a math topic. If you incorporate songs into your lesson plan at least five times during the school year, children will get used to the instructions and it will take less time to organize. For songs children are familiar with, you can open a lesson with it as an introduction activity for no more than 5 minutes.

An activity like this may make children laugh and be noisy and loud. As long as they are participating in the song and learning how to count, you should encourage them to laugh and enjoy themselves. Before you do this activity, make sure that other teachers in the school know that you plan to do this activity. The head teacher should also be aware. This way, they will know to expect your class to be louder than normal. If their pupils get distracted, those teachers will know to explain why your class is so loud and that when they are in their maths class, they too will have a chance to sing and learn. This creates a positive attitude around mathematics learning throughout the school. Once this practice becomes frequent, pupils in other classrooms would not be so easily distracted and would begin to expect this form of learning in their own classes.

Using song and music to develop the number concept is effective only if the teacher designs the activity so that the song is accompanied by actions by pupils or reference to objects or number cards or other teaching aids in order to develop each of the five skills described above.

Although song and music is a useful learning strategy for memorisation and repetition, it is also critically important to develop pupils’ understanding of numbers. Therefore, when singing to learn counting and develop the number concept, it is important to reference the numerals by writing it on the blackboard or using the number chart on the wall and pointing at it while saying the word used for the number in the song. It is also important to associate the numeral with the quantity it represents using other activities in order to support the song activity. This develops the pupils ability to associate the numeral representation of the number with the word used for the number in the song.

Below are examples of songs for which you can create your own tune.
<table>
<thead>
<tr>
<th>English</th>
<th>Swahili</th>
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<tbody>
<tr>
<td><strong>One man went to mow a meadow</strong></td>
<td><strong>Mimi ni namba</strong></td>
</tr>
<tr>
<td>One man went to mow, went to mow a meadow</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td>He thought it such fun</td>
<td>Nasimama badala ya vidole vya mkono</td>
</tr>
<tr>
<td>That he called for another elephant to play</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td>Three elephants went out to play</td>
<td>Nasimama badala ya miguu ya mbuzi</td>
</tr>
<tr>
<td>Upon a spider’s web one day</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td>He thought it such fun</td>
<td>Nasimama badala ya mafiga jikoni</td>
</tr>
<tr>
<td>That he called for another elephant to play</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td>Four elephants went out to play</td>
<td>Nasimama badala ya macho ya mtu</td>
</tr>
<tr>
<td>Upon a spider’s web one day</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td>He thought it such fun</td>
<td>Nasimama badala ya shingo ya mtu</td>
</tr>
<tr>
<td>That he called for another elephant to play</td>
<td>Mimi ni namba (x4) Namba (x4)</td>
</tr>
<tr>
<td></td>
<td>Nasimama badala ya mwango wa yai</td>
</tr>
</tbody>
</table>

| **One elephant went out to play**                                     | **Mimi ni namba**                                                      |
| One elephant went out to play                                        | Mimi ni namba (x4) Namba (x4)                                          |
| Upon a spider’s web one day                                        | Nasimama badala ya vidole vya mkono                                    |
| He thought it such fun                                               | Mimi ni namba (x4) Namba (x4)                                          |
| That he called for another elephant to play                           | Nasimama badala ya miguu ya mbuzi                                      |
| Three elephants went out to play                                     | Mimi ni namba (x4) Namba (x4)                                          |
| Upon a spider’s web one day                                        | Nasimama badala ya mafiga jikoni                                      |
| He thought it such fun                                               | Mimi ni namba (x4) Namba (x4)                                          |
| That he called for another elephant to play                           | Nasimama badala ya macho ya mtu                                       |
| Four elephants went out to play                                     | Mimi ni namba (x4) Namba (x4)                                          |
| Upon a spider’s web one day                                        | Nasimama badala ya shingo ya mtu                                      |
| He thought it such fun                                               | Mimi ni namba (x4) Namba (x4)                                          |
| That he called for another elephant to play                           | Nasimama badala ya mwango wa yai                                       |

| **One man, went to mow a meadow**                                     | **Mimi ni namba**                                                      |
| One man went to mow, went to mow a meadow                             | Mimi ni namba (x4) Namba (x4)                                          |
| Two men went to mow, went to mow a meadow                              | Nasimama badala ya vidole vya mkono                                    |
| Two men, one man went to mow, went to mow a meadow                     | Mimi ni namba (x4) Namba (x4)                                          |
| Three men went to mow, went to mow a meadow                            | Nasimama badala ya miguu ya mbuzi                                      |
| Three men, two men, one man went to mow, went to mow a meadow           | Mimi ni namba (x4) Namba (x4)                                          |
| Four men went to mow, went to mow a meadow                             | Nasimama badala ya mafiga jikoni                                      |
| Four men, three men, two men, one man went to mow, went to mow a meadow | Mimi ni namba (x4) Namba (x4)                                          |
| Five men went to mow, went to mow a meadow                              | Nasimama badala ya macho ya mtu                                       |
| Five men, four men, three men, two men, one man wen to mow, went to mow a meadow | Mimi ni namba (x4) Namba (x4)                                          |
| Six men went to mow, went to mow a meadow                               | Nasimama badala ya shingo ya mtu                                      |
| Six men, five men, four men, three men, two men, one man wen to mow, went to mow a meadow | Mimi ni namba (x4) Namba (x4)                                          |
| Seven men went to mow, went to mow a meadow                             | Nasimama badala ya mwango wa yai                                       |
| Seven men, six men, five men, four men, three men, two men, one man wen to mow, went to mow a meadow | Mimi ni namba (x4) Namba (x4)                                          |
GROUP DISCUSSION (20 MINUTES)

- Identify other songs that you know already that could be used to teach and reinforce number concepts
- Determine whether the song is useful for developing number sense; in other words, it should not be a song useful for memorisation or repetition
- Write down any new ideas for songs that was discussed in your notebook or below

ACTIVITY – SONG AND MUSIC

SAY TO TEACHERS:
“Now you will do an activity with your group. First take 5 minutes to silently read the example lesson that illustrates how to incorporate song and music into your maths lessons.”

ACTIVITY – SONG AND MUSIC

SILENT REFLECTION (5 MINUTES)

- Read the activity below silently and think about how you can use it in your classroom.
- Write down any doubts or questions in your notebook to share with the group at the end of this session

Learning Objective: Count up to 10
Lesson Objective: Count down from 5

Material: Picture Cards
Activity: Song, Group Work
Vocabulary or Phrase: One, two, three, four, five

Steps to follow:

1. Introduction (10 minutes): Begin with a warm up activity so have your children stand up and sing the song below with actions; you can make up your own tune or replace the song with another song of your choosing that makes reference to the number 5. If the weather is nice, you can do this activity outdoors in the playground.
   - Form a circle with your pupils. You can be in the middle with your drum or instrument. If someone from the community is helping you, that person will be with you in the middle. If you don’t have a musical instrument, you can clap your hands to keep the rhythm.
   - Ask for 5 volunteers to join you in the middle. Now repeat the first line and ask the volunteers to mimic the actions.
   - You will now teach your pupils the song. This song is called “Five Little Monkeys Jumping in the Trees”. For the first line, you will sing and ask everyone to follow.
   - As you teach each line of the song, ask the group of volunteers to act out the song in the middle of the circle eliminating one child after each round to represent the total number that is being sung about.

   **Five Little Monkeys Jumping in the Trees**

   FIVE!!!
   Five little monkeys jumping in the trees
   One fell down and stubbed her toe
   Momma called the doctor and the doctor said
   “Hello? No more monkeys jumping in the trees!”
ENSURE THAT TEACHERS TAKE TURNS LEADING EACH ACTIVITY. DURING THE REFLECTION, TEACHERS MAY SHARE MANY CHALLENGES THEY THINK THEY MIGHT ENCOUNTER WITH THIS ACTIVITY. HERE ARE SOME POTENTIAL CHALLENGES AND SOLUTIONS.

CHALLENGE: REARRANGING THE CLASSROOM
SOLUTION: EITHER THE CLASS CAN GO OUTDOORS OR STUDENTS CAN STAND UP DURING THE SONG WITH THE 5 VOLUNTEERS AT THE FRONT OF THE ROOM.

CHALLENGE: TEACHER IS NOT MUSICAL

2. New Knowledge (15 minutes)
- Divide your pupils into groups of five to six. If you class size is greater than 50 pupils, you can also create a group per row
- Ask each group to pick a Picture card from your deck of cards and say how many monkeys are on the card
- Next, ask each group to pick amongst their group the number of pupils as indicated by the picture card (for example 2 monkeys on the card, they should select 2 pupils from their group) to come forward and act as monkeys
- Now give half of the groups each a pack of Picture Cards from 1 to 5 so that each pupil has a card and the other half of the groups Number Cards from 1 to 5 so that each pupil has a card
- Now ask the pupils with the picture cards to line up in random order in the front of the class or around the class holding up their cards so that everyone can see.

FOUR!!
Four little monkeys jumping in the trees
One fell down and stubbed his toe
Momma called the doctor and the doctor said
"Hello? No more monkeys jumping in the trees!"

THREE!!
Three little monkeys jumping in the trees
One fell down and bumped her head
Momma called the doctor and the doctor said
"Hello? No more monkeys jumping in the trees!"

TWO!!
Two little monkeys jumping in the trees
One fell down and hurt his head
Momma called the doctor and the doctor said
"Hello? No more monkeys jumping in the trees!"

ONE!!
One little monkey jumping in the trees
She fell down and bumped her nose
Momma called the doctor and the doctor said
"Hello? No more monkeys jumping in the trees!"

No little monkeys jumping in the trees
They held hands and skipped on home
Doctor called momma and momma said
"Hello? No more monkeys jumping in the trees!"
3. **Lesson Knowledge Check (5 minutes):** Close the period with a simple knowledge check.
   - Write a number from 1 to 5 on the board and read the number out loud. Ask pupils to show their thumbs up if they agree with what you said or thumbs down if they disagree. For example, if you write 2 and say “this is how you write five” then pupils should respond with a thumbs down because your statement is incorrect but if you write 3 and say “this is how you write three”, they should give you a thumbs up because it is correct.

This lesson is set for 30 minutes. You can improvise any part of this lesson to suit your lesson objective.

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**Role Play (30 Minutes)**

- In a group, practice the song and activity with a musical instrument. One teacher can play the role of the maths teacher and all the others can pretend to be pupils in Standard 1. The teacher can make up his or her own tune to the “Five Little Monkeys Jumping in a Tree” song. Alternatively, you can also use any other song that you already know that can be adapted for counting or write one for counting up from 1 to 10 or counting down from 10 to 1.

**Group Discussion (10 Minutes)**

- After trying the activity, discuss your experience in the group. Some questions to reflect on:
  - Do you think this activity is suitable for your classroom?
  - Will you practice it in your class?
  - What challenges do you think you will encounter in trying it in the class?
“Now we will read the core concept. We will take turns reading the text aloud. After the first teacher finishes the paragraph, he/she can call out another teacher’s name so that they read the next paragraph. While we are reading, you should mark any key information. Put an exclamation point (!) Next to anything you think is important. Put a question mark (?) Next to anything that confuses you or that you disagree with. Finally circle (o) any new words.”

Pupils’ learning is directly improved by the quality of your teaching irrespective of the class size.

It is easy to assume that learning occurs in proportion to class size. It is assumed that the smaller the class, the more pupils learn. However, research shows that pupils in large classes can learn just as well as those in small ones. For a teacher, a large class setting can challenge your organizational and managerial skills as you work to creatively organize your classroom into a comfortable and welcoming learning environment. It also challenges your ability to design a lesson that focuses on quality learning experiences for every child in your class regardless of your class size having only 20 students or having more than 60 students.

Pupils in large classes will be more attentive and their potential for learning will be increased when they are exposed to a wide variety of teaching methods and learning experiences. In this section we will discuss the importance of designing lessons that incorporate active learning in the form of group work. Active learning involves students doing an activity and thinking about what they are doing, rather than passively listening to a lecture. In active learning, there is less emphasis on transmitting information from the teacher to the pupil (such as through lecturing) and greater emphasis on developing students’ analytical and critical thinking skills, as well as on exploring attitudes and values held about the lesson.

Group work is an active learning strategy that is very useful in exploring maths concepts in small class sizes and large class sizes.

A group activity can be conducted as an in-class exercise or out-of-class assignment, and it is a very good way to manage the active learning of students in a large class. Students work together to discuss or solve problems, a process that is also called collaborative learning or cooperative learning. In a large class, students working in pairs or larger
groups can help each other and learn from each other. They don’t get bored listening to their teacher talk. Group exercises give students an opportunity to meet and work with one another. Increasing opportunities for children to work together can help them develop their communication and social skills, build self-confidence and improve their patience and persistence in problem solving. Also, small group work encourages students who may be reluctant to participate in a large class setting to become active learners. There are three main objectives in using small groups in large classes:

1. To provide energy and interaction, enabling more students to think during class, to participate actively, and to generate more ideas about a topic.
2. To give the teacher an opportunity to interact with more children as he or she moves around the room.
3. To provide a short break and shift in energy, which will make pupils more likely to listen to the teacher’s next 20 minutes of lecturing.

In conducting group work, you can make small groups of 3 to 5 children if you have a small class size. For larger class sizes, you can organise the groups by rows or you can rearrange the desks before the start of class so that they face each other forming groups of 6 to 10 children. You can also organize the groups to suit the pupil’s abilities. The two most common errors to avoid by teachers when working with pupils in groups is 1) to not give clear instructions and activity objective before the start of the activity and 2) neglecting groups while walking around the classroom inspecting and facilitating the activity. To conduct a successful group activity, the teacher should spend more time in the lesson preparation to anticipate these types of challenges. During group work, the teacher needs to move around the classroom to see what progress learners are making and what problems are coming up. You can give advice, encouragement, and extra individual help where it is needed. Teachers of large classes have tried different strategies including:

1. **Mixed-ability groups** where the more able learners in the group can help the others to master the work so that the teacher need not teach some parts.
2. **Same-ability groups** where the teacher can leave the groups of faster learners to get on with the work on their own. The teacher can then give extra help to individual learners in the slower groups.
3. **Group leaders/monitors** where the teacher appoints faster, more able learners as group leaders or monitors who can help slower learners.

GROUP DISCUSSION (10 MINUTES)

1. What were some of the new or important ideas that you marked with an exclamation (!) point?
2. What were some of the unclear ideas that you marked with an exclamation (?)?
3. What were new concepts that you circled?
ACTIVITY – GROUP WORK

SAY TO TEACHERS:
“Now you will do an activity with your group. First silently read the examples that illustrate how to use have your pupils work in groups. The activities use several teaching aids as well such as Counters and Number Cards.”

ENSURE THAT TEACHERS TAKE TURNS LEADING EACH ACTIVITY. DURING THE REFLECTION, TEACHERS MAY SHARE MANY CHALLENGES THEY THINK THEY MIGHT ENCOUNTER WITH THIS ACTIVITY. HERE ARE SOME POTENTIAL CHALLENGES AND SOLUTIONS.

CHALLENGE: REARRANGING THE CLASSROOM
SOLUTION: ALTHOUGH IT MAY FEEL AS THOUGH TIME IS BEING WASTED IN REARRANGING THE CLASSROOM, IT IS WORTH THE TIME SPENT BECAUSE SO MANY SKILLS ARE ACQUIRED BY PUPILS WHEN THEY WORK IN GROUPS. THEY LEARN TO COOPERATE AND HELP EACH OTHER. THEY LEARN FROM EACH OTHER AND TEACH EACH OTHER. REARRANGING THE CLASSROOM BEFORE THE START OF CLASS CAN SAVE TIME.

CHALLENGE: CHILDREN DON’T KNOW HOW TO WORK IN GROUPS
SOLUTION: THE FIRST FEW TIMES YOU TRY THIS STRATEGY, IT MAY NOT BE VERY SUCCESSFUL BECAUSE PUPILS ARE NOT USED TO WORKING IN GROUPS AND THE TEACHER IS NOT USED TO HAVING THE CLASSROOM IN A DIFFERENT ARRANGEMENT. BUT THE TEACHER NEEDS TO TRY IT SEVERAL TIMES, PERHAPS WITH THE HELP OF THE HEAD TEACHER UNTIL BOTH THE TEACHER AND PUPILS GET USED TO THE NEW APPROACH.

CHALLENGE: MORE THAN 50 STUDENTS IN THE CLASSROOM IS DIFFICULT TO MANAGE
SOLUTION: REQUEST HELP FROM COMMUNITY MEMBERS TO PROVIDE SUPPORT DURING LESSON.

ACTIVITY – GROUP WORK

SILENT REFLECTION (5 MINUTES)

Read the activity below silently and think about how you can use it in your classroom.

Learning Objective:
Count up to 10

Lesson Objective:
Associate numeral with quantity it represents

Material:
Counters and Number Cards

Activity:
Group Work

Vocabulary or Phrase:
One, two, three, four, five, six, seven, eight, night, ten

Steps to follow:
1. Introduction (2 minutes): Begin by leading the children through a short song about the number ten to focus their attention on the lesson of the day.
2. New Knowledge (10 minutes): Demonstrate by counting a set of objects or counters and writing the corresponding numeral on the board.
3. Reinforcement (20 minutes): Group work
   - Rearrange the classroom so that children can play and count on the floor if it is clean or rearrange the desks so that they are facing each other like in the photo. You should do this before the start of class.
   - Set down the bottle of counters and Number Cards from 1 - 10 on your desk for children to work in groups.
   - Depending on your class size, divide pupils into groups of 3 to 5 or by rows or for very large classrooms in groups of 6 to 10. Remember that you can group by mixed-ability or same-ability depending on the lesson and what you wish to achieve. Also you can appoint a few students as monitors or group leaders
   - Spread them around the classroom so there is enough space for each group to work and play.
   - Give each group 10 counters and a set of Number Cards from 1 to 10.
   - Instruct the class that each child in the group should take turn in counting appropriate number of counters and associating with numeral on the Number Cards starting from 1 to 10. Once one child completes her turn, she can make a pile of the counters so that the next pupil can count.
   - Let the children take turns doing this repeatedly as you walk around the groups observing them, asking them to help each other when needed. Remind children to move the counters using 1 to 1 correspondence instead of simply pointing at them. For groups that are ahead, you can instruct them to combine two number cards and count the total number of counters to begin a simple introduction to addition.
4. Lesson Knowledge Check (3 minutes): Randomly select a Number-Dot or Number-Picture card from you pack and hide the numeral and ask your pupils to show the quantity on the card using their fingers. You can do this row by row so that you can assess each child.
ROLE PLAY (15 MINUTES)

- Select one person as the teacher and the others pretend to be pupils
- Using the materials and arranging the desks as recommended, guide your pupils through the activity

<table>
<thead>
<tr>
<th>Learning Objective:</th>
<th>Lesson Objective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare and order numbers</td>
<td>Arrange in increasing order</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material:</th>
<th>Vocabulary or Phrase:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Cards</td>
<td>Order, increasing, decreasing</td>
</tr>
</tbody>
</table>

Steps to follow:

1. **Introduction (15 minutes):** Begin by playing a game
   - Ask seven children to come to front of the class.
   - Give each children a different quantity of counters to count out loud while showing the class.
   - Now have them rearrange how they stand in a row in increasing order of the number of counters each has.
   - Ensure that the numbers are not all consecutive. In other words, you can give out counters of the following amounts: 1, 3, 4, 6, 8, 9, 10 so some numbers in the sequence are missing such as 2, 5 and 7. This will challenge pupils to think about the actual quantity of counters and not the counting sequence they have already memorised at this point.
   - Call up another set of pupils and repeat the exercise with different quantities.
   - Ask them to arrange in decreasing order.
2. **New Knowledge (5 minutes):** Introduce the notion of Increasing and Decreasing order using the game as the reference point
3. **Reinforcement (10 minutes):** Group work
   - Rearrange the classroom so that children can play and count on the floor if it is clean or rearrange the desks so that they are facing each other like in the photo. You should do this before the start of class.
   - Give each group a pack of shuffled number cards.
   - Let each child practice arranging numbers in increasing order and decreasing order.
   - You can walk around the groups observing and providing guidance.

TURN AND TALK (5 MINUTES)

- After trying the activity, turn and talk to the person to your right about the experience. Some questions to reflect on:
  - What are the benefits of this activity?
  - Will you practice it in your class?
  - What challenges do you think you will encounter in trying it in the class?
**SAY TO TEACHERS:**

“Now we will read the core concept. We will take turns reading the text aloud. After the first teacher finishes the paragraph, he/she can call out another teacher’s name so that they read the next paragraph. While we are reading, you should mark any key information. Put an exclamation point (!) Next to anything you think is important. Put a question mark (?) Next to anything that confuses you or that you disagree with. Finally circle (o) any new words.”

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**GROUP DISCUSSION (10 MINUTES)**

- Share with the group 3 reasons why it is important to continually assess your pupils’ progress

**READ ALOUD (5 MINUTES)**

1. One teacher should start reading out loud. After he/she finishes the first paragraph, he/she can call out another teacher’s name so that they read the next paragraph.
2. While reading:
   - Put an exclamation point (!) next to anything that you find important
   - Put a question mark (?) next to anything you don’t understand or don’t agree with
   - Circle (o) any words that are new to you.

**Lesson knowledge checks are informal, rapid formative or continuous assessment and conducted during every lesson.**

Assessments help teachers know if pupils have achieved an objective stated in a lesson plan or unit. If students have not attained the objective, this means that they have not understood the lesson’s content. Assessments help teachers take action in order to better prepare their lessons as well as plan necessary review sessions.

**Lesson knowledge checks should be conducted informally during the course of a lesson to help teachers assess the lesson in progress and adjust instruction accordingly.** Its goal is to assess progress in learning over time which is different from the high-stakes national examinations conducted at the end of a school year.

**For teachers,** knowledge checks help to know whether students have achieved the objective of the lesson taught. It helps a teacher to know if pupils need more practice and support. It also helps a teacher redesign a lesson according to pupils’ learning needs. Classroom assessment relies on dialogue between the child and the teacher. In practice this means that the teacher is able to identify teachable moments and capitalise on it. For example, when a wrong answer is given, the teacher can probe the pupil further on how he or she arrived at the answer.
For pupils, knowledge checks help to correct mistakes and improve the quality and speed of pupils’ work. Pupils gain confidence in their abilities and learn to interact with their peers. It also gives pupils a comprehension of their own level of understanding and to identify areas where they need help.

**Show me Thumbs! and Fill in the Blank**

There are many ways to incorporate knowledge checks into lessons. One example of a knowledge check is the *Show me Thumbs!* activity. In *Show me Thumbs!* the teacher makes several true and false statements and the pupils respond by showing their thumbs up if they agree with the statement or their thumbs pointing down if they disagree with the statement. Another example is *Fill in the Blank* activity. In this activity, the teacher writes on the board different mathematical statements that are incomplete and the pupils have to fill in the blank spaces with the suitable response.

**ACTIVITY – LESSON KNOWLEDGE CHECK**

**SAY TO TEACHERS:**

“Now you will do an activity with your group. First take 5 minutes to silently read the examples that illustrates how to use the knowledge check “Show me Thumbs!” and “Fill in the Blanks” at the end or during a lesson.”

**SILENT REFLECTION (5 MINUTES)**

- Read the activity below silently and think about how you can use it in your classroom.

<table>
<thead>
<tr>
<th>Learning Objective:</th>
<th>Knowledge Check Objective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count up to 10</td>
<td>Associate numeral with quantity it represents</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material:</th>
<th>Knowledge Check Activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number cards</td>
<td>Show me Thumbs!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Steps to follow:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Instruct students as follows: “Show me a thumbs up if you agree, thumbs down if you disagree” in silence.</td>
</tr>
<tr>
<td>2. Shuffle the number cards and show a card and read the number. For example, if the card shows 3 and you read it as “five”, children should respond with thumbs down to disagree. If the card shows 3 and you read is as “three” then children should respond with thumbs up to agree.</td>
</tr>
<tr>
<td>3. Make a mental note of children who are not responding correctly so that you can work with them later.</td>
</tr>
<tr>
<td>4. Repeat the instructions carefully to ensure they understand the game and try again for a few more rounds until you get a good idea of pupils’ learning progress.</td>
</tr>
<tr>
<td>5. Congratulate and encourage them for their participation. Do not openly correct those who made an error but give the right answer after each round. This will permit children to self correct without being called out in public.</td>
</tr>
</tbody>
</table>

[Insert graphic on Show me Thumbs]
### Variation:
Point to a number on the 100s Number Chart that is mounted on the wall and say the number. If the number corresponds with what you say then children should show a thumbs up. If it doesn’t correspond, they should show a thumbs down.

#### Learning Objective:
- **Compare and order numbers**

#### Knowledge Check Objective:
- More than, less than or equal to

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### Material:
- Any objects in the room or playground

### Knowledge Check Activity:
- Show me Thumbs!

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#### Steps to follow:
1. Instruct students as follows: “Show me a thumbs up if my statement is true, thumbs down if it is false”.
2. Pose true/false questions that compare two sets of objects or two numerals that you write on the blackboard. For example:
   - "There are more girls than boys in this class, true or false?"
   - Show two sets of objects and state “There are more objects in this group than the other group, true or false?"
   - Write on the board 7 and 2, point to 7 and say “This number is more than this number” while pointing to 2, “true or false?”
   - Point to two numbers on the 100s Number Chart and pose the same question
3. Make a mental note of children who are not responding correctly so that you can work with them later.
4. Congratulate and encourage them for their participation. Do not openly correct those who made an error but give the right answer after each round. This will permit children to self correct without being embarrassed in public.

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### Learning Objective:
- Count up to 10

### Knowledge Check Objective:
- Count forward and backward

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### Material:
- Any objects in the room or playground

### Knowledge Check Activity:
- Fill in the Blank

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#### Steps to follow:
1. Instruct students as follows: “Complete the blanks so that it completes the sequence on your slate or notebook individually”.
2. Have the children show their books or slate by holding it up
3. Make a mental note of children who are not responding correctly so that you can work with them later.
4. Congratulate and encourage them for their participation. Do not openly correct those who made an error but give the right answer after each round. This will permit children to self correct without being embarrassed in public.

**ROLE PLAY (20 MINUTES)**
- In a group, practice the activity. One teacher can play the role of the maths teacher and all the others will pretend to be pupils.
- Guide your pupils through the knowledge check activity.

**TURN AND TALK (5 MINUTES)**
- After trying the activity, turn and talk to the person to your right about the experience. Some questions to reflect on:
  - What are the benefits of this activity?
  - Will you practice it in your class?
  - What challenges do you think you will encounter in trying it in the class?
  - Write down any doubts or questions to share with the group and the end of the session.
LESSON PLANNING

SAY TO TEACHERS:

“To improve pupils’ learning, it is very important that teachers are able to practice the teaching techniques they learn from INSET in their classrooms. For this, it would be beneficial to develop the lesson plans together as a group instead of individually. When we support each other through this process of lesson planning, we will be able to design better quality lessons. So let us dedicate at least 2 hours to lesson plan together. Let us decide now when we will meet next to complete this component of the INSET for this module.”

JOINTLY DETERMINE WHEN THE TEACHERS WILL MEET AGAIN TO COMPLETE THE LESSON PLANNING SECTION OF THIS MODULE. WHEN YOU MEET AGAIN TO WORK ON THIS SECTION, WALK AROUND AND SEE IF TEACHERS NEED HELP WITH THE PLANNING.

CONCLUSION

SAY TO TEACHERS:

“We have come to the end of the module. Please take minute to reflect on the session. Fill in the form to record your appraisal of today’s module. After you are finished, rip this page out and give it to me. Please be honest with your answers because your feedback will help to improve school based INSET in the future. “

COLLECT THE TEACHERS’ APPRAISAL FORMS AND BRING THEM TO THE NEXT WARD CLUSTER MEETING. WHILE THE TEACHERS ARE FILLING OUT THE APPRAISAL FORM, REFLECT ON THE OVERALL SUCCESSES AND CHALLENGES OF TODAY’S SESSION AND COMPLETE THE FORM BELOW.

WRITE INDIVIDUALLY (15 MINUTES)

Please fill in the following form to record your appraisal of today’s module. After you are finished, rip this page out and give it to your INSET Coordinator. Please be honest with your answers because your feedback will help to improve school based INSET in the future.

Marking Scheme for the INSET Appraisal:

<table>
<thead>
<tr>
<th>Points</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>I completely disagree with the statement</td>
</tr>
<tr>
<td>1</td>
<td>I partially disagree with the statement</td>
</tr>
<tr>
<td>2</td>
<td>I partially agree with the statement</td>
</tr>
<tr>
<td>3</td>
<td>I completely agree with the statement</td>
</tr>
</tbody>
</table>
Overall successes from this session: _____________________________

Overall challenges from this session: _____________________________

Appraisal for Module # ________     Topic of Module: _______________________________________________

Number of teachers who participated: ________         Did the Head Teacher participate:   Yes/No

Was the INSET Coordinator present to facilitate:   Yes/No

Read the statements below and tick the box that indicates whether your answer:

1. The Core Concepts of today’s module was very clear. I feel like I have a very good understanding of the topics.

2. This module had many useful and relevant strategies that I will try in my class.

3. The amount of time it took to complete this module was appropriate. It did not feel too long.

4. This module prompted a lot of interesting discussion and reflection.

5. The INSET Coordinator was prepared for the session – he/she has clearly read the module and had all the materials ready.

6. The INSET coordinator effectively facilitated discussion – he/she knows how to get people talking and how to help with answers.

7. The INSET coordinator knows how to maintain a good group dynamic – he/she makes sure that teachers are supportive, collegial and energised.

8. The INSET coordinator knows how keep teachers motivated – he/she follows up with teachers who are absent/late and reminds us of why INSET is important.

- Close the session by setting the meeting time and date for the Lesson Planning session for this module and the meeting time and date for the new module.