creative learning through technology

KPLAY Activities Manual

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INTRODUCTION

This activities manual has been developed by the KPLAY Team to respond to teachers' and learner needs to improve the delivery of foundational Literacy and numeracy in schools in Kwale and Kilifi Counties. This manual will be used as an instructional tool and a point of reference to help support teachers in the integration of creative learning in their classroom and in any environment where learning happens. Most activities can be simplified or made more complex to suit the needs of the learners. These activities are not exhaustive but provides an idea for the teachers to explore other playful activities that can be implemented in the classroom.

1. FLN ACTIVITIES.

The activities manual has been developed to support teachers and learners by providing several activities that can be used to enhance the understanding of concepts and topics around literacy and numeracy in the classroom using creative learning. The activities are designed to promote competency-based teaching and learning. Creative learning is important because it allows learners to develop vital cognitive, emotional, and social skills that will be used throughout their lives. Creative learning allows your learners to learn about themselves and their environment through a spectrum of activities that are meaningful, joyful, actively engaging, iterative, and socially interactive. While a learner sees these activities as fun games, the activities help to increase retention and break down difficult concepts and enable them to learn different skills including building their SEL skills.

Every activity includes instructions on how to conduct the activity and then support your learners to ensure that they are developing important learning skills towards the stated objectives, such as improving their vocabulary, critical thinking, patience, or concentration, empathy, collaboration among other skills. As such, it is crucial for you as teachers to include these activities in your lesson plans and conduct them with learners in the class. The activities are linked to specific topics based on the curriculum and the majority can be simplified further for younger children or built upon for older learners, but some can only be done with specific learner grades. Ideally, the activities are sufficient for one 30 min class except for two activities however if the lesson is longer, more practice time can be given to allow all learners to participate however different variations that target the same concept can be introduced and learners have agency to choose from the different options.

2. STRUCTURE.

This manual will cover activities that can be done across different subjects or learning areas:

- Social-emotional activities: these create positive relationships, positive energy and behavior in the classroom learner attitudes etc.
- Mathematics (numeracy activities)
- English (Literacy Activities in English)
- Science and technology.

3. INCLUSIVITY

Regardless of gender, age, skill, or socioeconomic background, all children MUST be granted the opportunity to take part in creative learning activities. These are inclusive activities that promote children's active involvement in selecting and customizing the games they play. Make sure there are equal opportunities for boys and girls to choose, take part in, and lead activities. The activities can be changed to promote inclusivity. Avoid reinforcing preconceptions or providing gender-stereotypical examples as an educator. For instance, don't assign heavy lifting tasks only to boys or require girls to clean up after an activity. When you are coming up with examples make sure to utilize language that is inclusive of both genders and to give names from both genders. Encourage your learners to participate in all activities and to assume whatever position that they can to learn about other people's perspectives.

4. SOCIAL EMOTIONAL LEARNING

Social Emotional Learning is an educational methodology that aims to foster social and emotional skills within the school curriculum. SEL helps students of all ages to better comprehend their emotions and fully feel their emotions and demonstrate empathy for others. This helps learners make responsible decisions and build positive relationships with others.

Social Emotional Learning Competencies based on the CASEL framework.

i. Self-Awareness
ii. Self-Management
iii. Social Awareness
iv. Relationship Skills
v. Making Responsible Decisions

SEL ACTIVITIES

i. Life is good.
ii. Moments in my life.
iii. Clap Clap.
iv. Appreciation chain.
v. Finger breathing game

Life is Good:

This activity is on seeing and reframing and allows learners to rise above the challenges to move on to learning.
How to: roll / throw a ball to each other in a circle naming one thing that bothers you and then adding the phrase “and life is good.”

Leading the game

1. We are going to throw this ball to each other and when the ball comes to you, you are going to share something that is bothering you.
2. I will do it first then pass the ball to the next learner. first “**I forgot to carry my pencil sharpener today and** add “and life is good”….”
3. Now ask the learner to name something that happened to them that made them unhappy and then add life is good and pass the ball to the next learner. Guide players to speed up the game as the ball keeps rolling.

Moments in my life:

Introduce your learners to this game by asking them, what makes them happy or sad?

1. Invite each learner to write or draw two things that make them sad and four things that make them happy. They can draw one idea on each piece of paper.
2. Invite learners to set up a happy jar and a sad jar. Ask them to crunch the papers into balls. Keep the balls separate – they will see who can throw the happy paper balls into the happy jar and the saddest paper balls into the sad jar.
3. After playing, invite children to discuss the ideas in the jars. Ask children where to keep the jar of happy ideas and encourage them to take a paper from the happy jar the next time they feel sad or worried.

Clap Clap:

This is an activity that can be done in the classroom to help learners compose themselves and concentrate

1. When you notice your learners are going off-task during the lesson you can say, “If you can hear me clap once”, then give them the chance to clap in response.
2. once everyone is in sync then ask the learners to shake their bodies n ask them to shake out their body for 3 minutes before continuing to learn.

Appreciation chain:

- This is a caring and connecting activity and children feel good when appreciated.
- Think of something you appreciate your neighbor/someone in the class for and then the teacher allows a sharing moment with the person you appreciate. or
- write down things we are grateful for, in your classroom, our home, and put a flip chart paper and children can write it
- Talking points: how do you feel when you appreciate something or someone? What are some ways that we are all connected?

5 Finger Breathing Game:

This is a simple yet powerful activity designed to help children regulate their emotions and calm their minds.

Leading the game:

1. In this game we will use our fingers as a visual guide to quiet our mind. Starting with the thumb, inhale slowly while tracing up one finger, then exhale slowly while tracing down the same finger.

Repeat this process for each finger, taking deep breaths and focusing your attention on the sensation of the breath and the movement of the fingers.

Talking points: Can you think of a situation when this game could be useful in daily life? (maybe to calm down when your little brother makes you upset, or to help you concentrate.

NUMERACY ACTIVITIES

The mathematics activities illustrated here include

i. Finger Speed Sums
ii. Buzz
iii. Number Wheel/Place Value
iv. Stamp Clap Snap – Place value.
v. Number Expansion: place value
vi. Addition with numbers and sticks – Basic operations
vii. Subtraction with bundles and sticks – Basic operations.
viii. Oral Mathematics – Ball tossing.
ix. Oral Mathematics- Addition and subtraction tables.
x. Mind Map Activity

ACTIVITIES SECTION

Activity 1: Finger Speed-Sums (1-5 minutes)

Students meet in pairs with one hand behind their back. On the count of three, they each put forward some number of fingers. Whoever first says the sum of the fingers on both students' hands wins. Then the pair breaks up and each person finds a new person to play with. Advanced players can use two hands instead of just one hand. have learners get into a group of four, and then create two pairs, have each pair of learners do this game 3 or 5 times and keep track of who won the most rounds. The winner of each pair now plays the other winner, and the two play each other.

Activity 2: Buzz

Buzz is a quick and easy way to help students recognize multiples. To play, first have all students stand up. This game works well when students are arranged in rows or a circle but can be done with any arrangement if students know the order in which they will participate.

Once all students are standing, select a student to start counting. Before that student says 1, tell the students which multiple they "buzz" must on. For example, you may say that students will buzz on multiples of 3. That means that as the students count, any student whose number is a multiple of 3 will say "Buzz" instead of the number. Any student who says the wrong number or forgets to say "Buzz" is out and sits down.

For large classrooms:

- ✓ Divide into groups of 10 or manageable sizes, and the learners must monitor themselves to see if a child does or does not buzz correctly. The teacher assigns a group leader who is a learner who is good in mathematics to support the other learners.

NOTE TO THE TEACHER: This style of learning will require you to let go of being the judge of all correct answers and let learners begin to oversee their own progress and correctness. The learners can seek your advice should they disagree on the answer but allows you time to go around and see what learners are doing. learners will need to learn how to correct each other in supportive ways. This may take time for children to master this skill.

Activity 3: Number game - place value

Learning Objective:

● To recognize and read numbers and identify the place value of digits in given numbers.

Materials:

● 9 stones & chalk.

Note: This activity is best done outdoors.

The facilitator will:

- Ask a learner to collect 9 small stones before the class begins.
- Draw 2-3 concentric circles on the floor. In the inner circle, write "Ones", in the second circle "Tens" and in the third circle “hundreds” depending on the level of the learners. Draw a line about 1 meter away from the circle, this is dependent on the children’s age / height.
- Draw a place value frame next to the circle to record the results of the throws.
  a) Explain the rules of the game to the learners. The stones that fall outside the biggest/last circle will be removed and not counted.
  b) All stones must be thrown into the circle at the same time / together.
  c) Stones that are on the lines will not be counted.
- Explain to learners that the value of the stone is only because of its position in the circle. If learners collect the stones from the circles and transfer them to the frame, please explain the reason to them.
- After the demonstration, ask 2-3 learners to do this activity in the whole class before moving on to practicing it in small groups.

Activity Steps

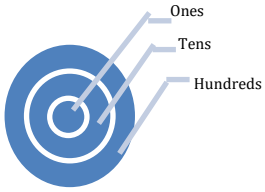
- Draw the circle as per the number of digits he/she wants to teach the learners. E.g., for 3-digit, draw three circles – Hundreds, Tens, and Ones.
- Start with 2-digit numbers and then go to higher digits by adding a new circle.
- Be very careful and give clear instructions before the learner throws the stones.
- The learner will stand on the line and throw all the stones.
- The rules above will be applied to remove stones outside the circle or on the line
- The learners will transfer the stones from the circles starting from the most inner circle of ones towards the largest circle. The learner will collect stones in the ones circle and place them in the frame and write how many they are e,g if they collect 2 stones in the ones circles then they will be written as two in the frame and left there.
- ask the learners to collective the stones in each circle and transfer them and write the number into the frame. After completing transferring all the stones that were in the circle, ask the learner to read the numbers, read the numbers together. E.g., Twenty-Four. (2 tens and 4 ones)

- Once the stone is removed from the circle, it doesn't have any value, he/she will not pick it before writing the number.

Process

9 Stones

Chalks



Recording table

No	Hundreds	Tens	Ones	Number
Student 1				
Student 2				

- You can have your learners work in groups which each group led by a group leader who records the scores made and done by the learners.
- Activity can be done to create numbers with learners, arrange numbers in order understand why we do regroup and carry in addition and subtraction.

Activity 4: Stamp Clap Snap.

Learning Objective:

- To recognize numbers and place value of two- or three-digit numbers.

Materials:

- No material

The facilitator will:

Ask the learners to listen and observe.

- Explain the value of a **snap** by doing the demonstration. E.g., One snap means 1, and two snaps mean 2, and 6 snaps mean 6.
- Explain the value of a **clap** by doing the demonstration. E.g., One clap means 10, two claps mean 20, and 5 claps mean 50.
- Explain the value of a **stamp** by doing the demonstration. E.g., one stamp means 100, two stamps mean 200 and 6 stamps mean 600.
- Ask learners to carefully listen and watch as you stamp, clap and snap and count the stamps, claps & snaps in their mind. E.g., 4 stamps, 3 claps and 1 snap are equal to 431.
- Ask learners how many stamps, claps and snaps they heard and identify the number accordingly.
- Start this demonstration with small numbers and motivate the learners to recognize the number together.
- It is important that while doing this activity, the one leading can give the instructions in moderate speed but not too slow.
- Reverse the order to snap, clap and stamp after the learners understand this game or say the number and ask a learner to stamp, clap & snap. After that, ask the learner to show this number on the number chart.

Activity 5 – Number Expansion

Learning Objective:

- To identify place value of digits in given numbers and write numbers in expanded notation.

Materials:

- Flash cards with different values (Ones -1-9, tens- 10-90, hundreds 100-900, Thousands 1000-5000).
- Chalk.

Process:

Group practice.

- Have the learners already divided into groups to do the activity, working with their peers will encourage more collaboration.

Individual practice

- Introduce learners to a new pattern such as from left to right, right to left, top to bottom, bottom to top, zigzag, diagonally, random and one, one after one and zero to ten.
- For differentiated instruction teach 1-digit level learners by hiding/folding the chart. For example, show 1-9 and 10-90 column in expansion chart and vice versa for other levels.

The facilitator will:

- Show one number using expansion cards.
- Ask learners what the expansion of the number will be or what are the different numbers inside this number.
- Show the number in expanded form and explain the expansion of the number.
- After 2-3 demonstrations with different numbers in the whole class, spread all cards on the floor.
- Write any 3- or 4-digit number on the board and ask learners to read the number loudly.
- Call one learner up front and ask him/her to make the number written on the board with the expansion cards.
- Ask the learner to show the expanded form of the same number.

Group practice.

- Divide learners into groups depending on your classroom enrollment and distribute a set of expansion cards.
- Have a competition amongst groups to find the expansion of numbers written on the board.

Illustration

i. Show one number using expansion cards.

3	7	4

ii. Show the number in expanded form and explain the expansion of the number.

3	0	0

7	0

4

iii. Write the number on the board and have the learners try out the number extensions in their groups.

The facilitator will:

Choose numbers as per the level of the class, for the whole class demonstration.
Provide enough expansion cards for group practice.

Activity 6 : Basic Mathematics Operations.
Addition with bundles and sticks.

Learning Objective:

● To demonstrate and understanding of how to solve addition word problems up to 2-digit numbers with carry over.

Materials:

● Sticks, rubber band and chalk.

The facilitator will:

- Write the addition word problem clearly on the chalkboard and read it out loud for the learners.
- They will read the problem clearly without learners repeating.

The teacher will seek volunteers to read which helps in learning literacy too.

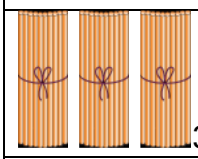
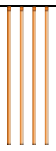
Lesson one will be spent on explaining the bundles and sticks concept.
Bundles are formed from 10 sticks. So if you have 16 sticks, you will form 1 bundle and 6 sticks will be left over.

Learners will bring many sticks to be used during the sessions and stored in the classroom.

Follow the instructions!

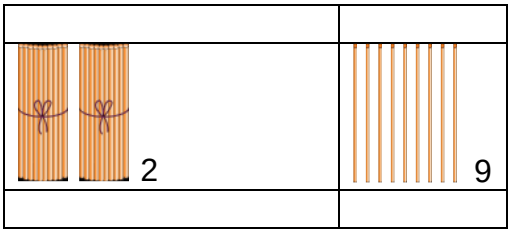
i. Draw a table on the floor and invite two learners to act as Swaleh and Nuru and solve the word problem with their help by using bundles and sticks.
ii. Remind the learner the rule of making a bundle of 10 sticks.
iii. Fill up all information in the frame with the help of the 4 questions,

Step 1 - say, “As Swaleh has 34 pineapples, he will pick 34 sticks.
Discuss, “How many bundles can be made with those sticks?” Then place the bundles in the Bundles column and sticks in the Sticks column.
SWALEH

Bundles	Sticks
 3	 4

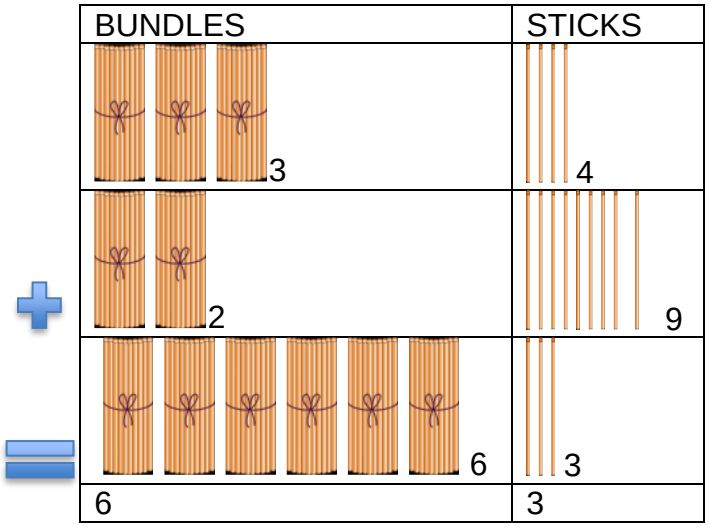
Step 2 - similarly take 29 sticks and ask Nuru to make a bundle. Place bundles in the bundles column and sticks in the stick's column.

NURU



Step 3 - Discuss which operation needs to be done and then introduce the addition operation sign or plus sign.

Addition



<u>Activity 7: Basic Mathematics Operations.</u>

<u>Subtraction with bundles and sticks.</u>

Learning Objective:

● To demonstrate and understanding of how to solve subtraction word problems up to 2-digit numbers.

Materials:

● Sticks, rubber band and chalk.

The facilitator will:

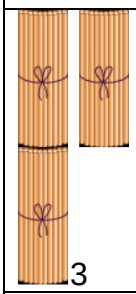
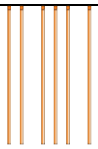
- Write the subtraction word problem clearly on the chalkboard and read it out loud for the learners. (Amina has 36 pineapples- Shukri has 24)
- They will read the problem again clearly without learners repeating.
- The teacher will seek volunteers to read which helps in learning literacy too.

<u>Follow instructions.</u>

iv. Draw a table on the floor and invite two learners to act as Shukri and Amina and solve the word problem with their help by using bundles and sticks.
v. Remind the learner the rule of making a bundle of 10 sticks.
vi. Fill up all information in the frame with the help of the 4 questions,

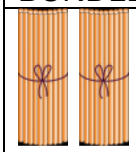
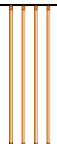
Step 1 - say, “As Amina has 36 pineapples, he will pick 36 sticks.
Discuss, “How many bundles can be made with those sticks?” Then place the bundles in the Bundles column and sticks in the Sticks column.

AMINA

Bundles	Sticks
 3	 6

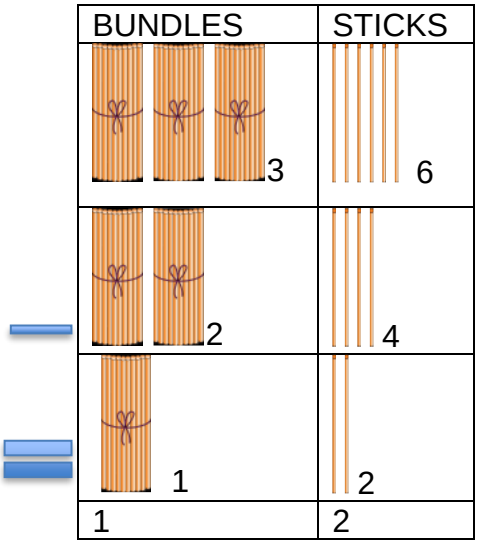
Step 2 - similarly take 24 sticks and ask Shukri to make a bundle. Place bundles in the bundles column and sticks in the stick’s column.

SHUKRI

BUNDLES	STICKS
 2	 4

Step 3 - Discuss which operation needs to be done and then introduce the addition operation sign or plus sign.

Subtraction



Activity 8: Basic Mathematics Operations.

Oral Mathematics – Ball tossing.

Materials

A ball.

Process

The facilitator will:

Ask learners to stand in a circle and introduce them to the activity by taking them through the instructions.

Explain the rules:

- He/ she will throw the ball towards any learner and ask oral Addition/Subtraction questions.
- Demonstrating the activity for the learners helps prepare them to do the activity with their peers.
- The learner will catch the ball and say the correct answer simultaneously.
- Now the same learner will throw the ball to another learner and ask the questions simultaneously
- Throw a ball at a learner and ask an addition problem such as “What is 3+4?”
- After the learner answers the question, ask him/her to throw the ball at another learner.
- Give a new addition problem to the learner who caught the ball.
- Demonstrate the activity and motivate the learners to ask the question and give the answer quickly.

The facilitator will:

i. Do it for all levels as this is an important activity.

ii. Start this activity after giving learners practice in oral addition and subtraction charts.
iii. Have no writing activity during tossing the ball activity.
iv. Use different content while doing addition and subtraction operations.

Example:

- Addition (one digit by one digit):
  8 plus 7, 4 plus 5.
- Subtraction (one digit by one digit and two digit by one digit; numbers between 10-18)
  6 minus 3, 9 minus 2.
  18 minus 7, 16 minus 4.

Activity 9: Basic Mathematics Operations.

Oral Mathematics: Addition and Subtraction Tables.

Learning Objectives:

● Build the capacity for oral addition with 1-digit by 1-digit numbers.
● Build the capacity for oral subtraction with 2-digit by 1- digit numbers leading to answers between numbers 0 to 18.

Materials:

● Chalk, Blackboard and Addition and subtraction tables.

ORAL ADDITION

+	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

ORAL SUBTRACTION

-	1	2	3	4	5	6	7	8	9
10	9	8	7	6	5	4	3	2	1
11	10	9	8	7	6	5	4	3	2
12	11	10	9	8	7	6	5	4	3
13	12	11	10	9	8	7	6	5	4
14	13	12	11	10	9	8	7	6	5
15	14	13	12	11	10	9	8	7	6
16	15	14	13	12	11	10	9	8	7
17	16	15	14	13	12	11	10	9	8
18	17	16	15	14	13	12	11	10	9

The facilitator will:

- Draw a blank oral addition/subtraction chart on the board.
- Do the activity with one chart at a time.
- Ask learners to draw the same chart in their notebooks.
- Give 2 demonstrations to the learners on how to fill up these charts.
- Ask two learners to come up to the board, divide the chart into two parts and ask them to fill up the chart as quickly as possible.
- Simultaneously, ask other learners to fill up the chart in their notebook.
- Encourage both learners to finish the chart as soon as possible.

- Discuss the solution with both learners and ask the other learners to verify the answers.
- Do the demonstration with 4-5 learners until they can do oral addition and subtraction.

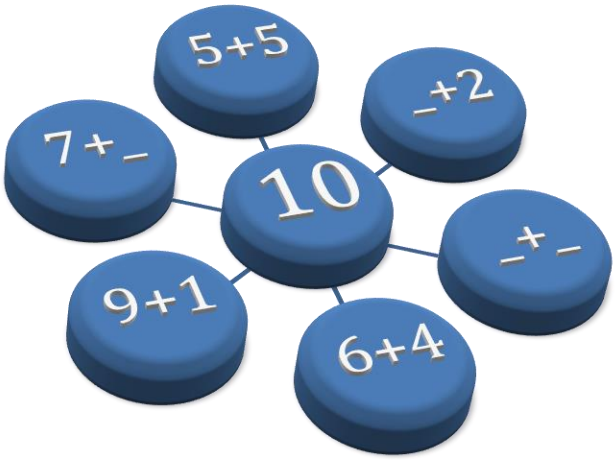
Group practice.
The facilitator will divide the class into a small group and ask them to do the practice, as demonstrated earlier. The group leader will facilitate the practice in small groups.

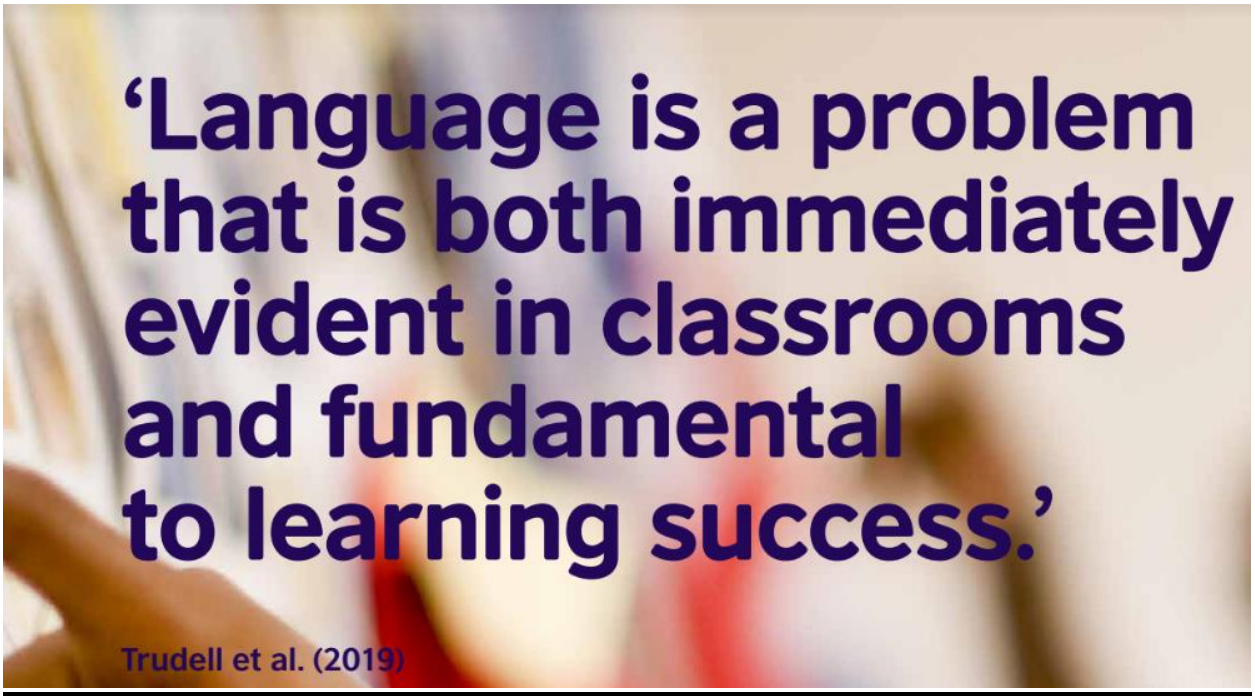
The facilitator will:
Initially, divide the charts into parts like addition between 1 to 5 then 1-9. Similarly, for subtraction, 10-15, subtract from 1-5, then 10-18 subtract from 1-9.

Activity 10: Mind Map

Learning Objectives:

Materials:
Process:
The facilitator will:
Choose any number for the mind map. Example, pick the number 10
Say two numbers that add to 10 and write them on the mind map as shown in the image. Example: 6 + 4 = 10.
Ask the learners for a few pairs which makes 10. Learners will write in the notebooks, example 5+5 = 10, 9+1 =10. After the learners have worked together and come up with different number pairs, you can then give them different numbers and they can build mind maps.





LITERACY ACTIVITIES

LITERACY ACTIVITIES

1) Comprehension Activity.
2) Story Activity.
3) Bingo Activity.
4) Mind – map activity.

Activity 1: Comprehension Activity.

Learning Objectives:

i. Help learners build their understanding of language vocabularies and build their grammar.
ii. Help learners improve their punctuation.

Materials:
Chalk and Blackboard

Process.

- Select a story from any workbook of the lesson you are going to teach.
- Show the learners the picture if any if not read out the title.
- Ask your learners to share ideas about what they think is going to happen in the story you are going to read to them based on the title

- Write the predictions by the children on what will happen. Put this on a mind map.

Examples are or might be:

i. The ox attacked the boy.
ii. The boy grazed the ox.
iii. The ox got lost.

- After the learners have shared their thoughts / predictions, read out the story aloud.

STORY

The boy and the ox.

Once upon a time there lived a man who had many oxen. One day his son went to graze the oxen. One ox stepped on his bare foot and the boy screamed. Luckily there were men, women and children from the village who were passing by.
The men and women were going for a meeting. The children were playing. They all ran to where the screams were coming from. They found the boy in great pain and were ready to help him.
The boy was taken to hospital. One man drove the oxen home. He found the boy's father taking care of the sheep. The father was sad when he heard what had happened. He ran to the hospital.

- After reading the story ask the learners to check and confirm if their predictions were right going through all the responses the learners gave.
- Close the books and then ask them to share what they remember from the story after it was read and write out in the form of a mind map.
- Using the new responses, ask the learners in groups to use the new responses to make their own story like the story that was read. A few learners can present.

Lesson 2:
For further understanding, ask learners to form groups and read the story again taking note of 3 questions to ask their friends.

- Each question has 5 points for the correct answer.

Group Questions

i. Direct questions from the story?
ii. What is meaning of a difficult word /new vocabulary…….. from the story?
iii. What is the opposite of word…… from the story?
iv. Ask the other group one indirect question from the story. Based on the story but there are no answers provided in the story.
v. The learners can use to challenge the other groups and helps to deeper understand the story.

Activity 2: Story Activity.

Learning Objectives:

i. To help improve the learners' reading and comprehension skills.

Materials

Chalks and blackboard

Process

- Ensure that your learners are already divided into a group and are sitting in their groups before the lesson begins. Have at least 5 learners working together in a group, this number can either increase or decrease based on the enrollment size.
- Introduce the activity by instructing the learners that you are all going to create a story together in the classroom.
- After you create a story, they will then do it themselves in their group.
- Every group will create a story of their own and will share their story with the rest of the class.
- You can add a layer of challenge for differentiated instruction and have them come up with stories that go beyond one paragraph.

Instructions

i. **The story will start with one word that will be shared to each group. E.g., School.**
ii. **The learner who speaks first will construct a sentence using the word provided, e.g. It was Monday morning, and I went to school.**
iii. **The second student will then build on the story by constructing a continuation sentence after the first sentence. E.g., When I got to school, all my friends were waiting for me by the gate.**
iv. **All the members in the group will construct their sentences and share within the group.**
v. **After everyone has shared their sentence. They will join all the sentences into a story and share it with the rest of the class.**

Example: It was Monday morning, and I went to school, when I got there, I found all my friends waiting for me by the gate. I greeted all of them and we walked to class sharing stories about how we enjoyed the holiday.

Activity 3: Bingo Activity.

Learning Objectives:

i. Introduce learners to word identification.
ii. Introduce a game into a learning environment, e.g., in science: wild animals, domestic animals and for social studies you can teach transport, occupation etc.

Materials

A piece of chalk, 3 leaves, 3 stones

Process:
Group the learners before the lesson begins and each group must have a leader..
For this activity, you will have two learners participating in the activity. This can be done at three different stations in the classroom running concurrently.

Instructions

i. Select 3 learners to do the activity.
ii. 2 learners will pick different materials e.g. 3 stones and the other to pick 3 pieces leaves.
iii. The main goal of the activity is that the three items align either horizontally, vertically, or diagonally on the bingo board.
iv. The learner whose objects aligns first is the winner and he or she can shout BINGO!
v. The third learner will lead the two by randomly mentioning names on the bingo board until we have a winner.
vi. This activity will be done by all the groups and the facilitator will ensure that all learners have participated in the activity.

Wild animals

Elephant	**Rabbit**	**Leopard**
Antelope	**Rhino**	**Buffalo**
Lion	**giraffe**	**Zebra**

Occupations

Teacher	**Soldier**	**sailor**
Doctor	**Driver**	**pilot**
lawyer	**Fisherman**	**rider**

Activity 4: Mind map
This activity can be done across different leaning areas, Mathematics, Swahili, Science and Technology etc.
If you want to help the children learn how to make a simple sentences, complex sentences and short paragraph, you can start from words.
Ask the children to close their eyes, ask them what they saw when they were coming to school.
List everything, they mention to you on the board, e.g., cow, car, sheep, mother, etc.

Ask children which word they would like to work with, they can vote by putting his hands up but they can only vote once

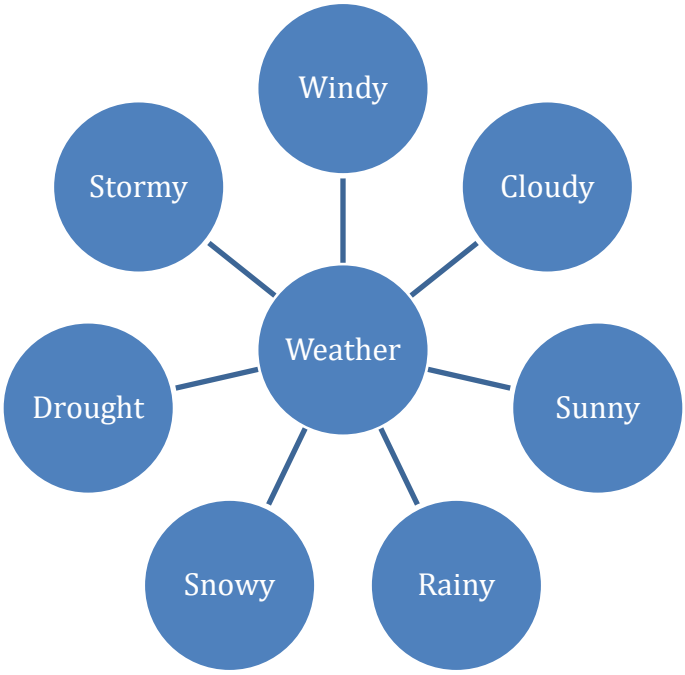
<u>The popular word is used to do a mind map</u>

Using the word in the middle (must) and any other words outside the circle, write 6 sentences.

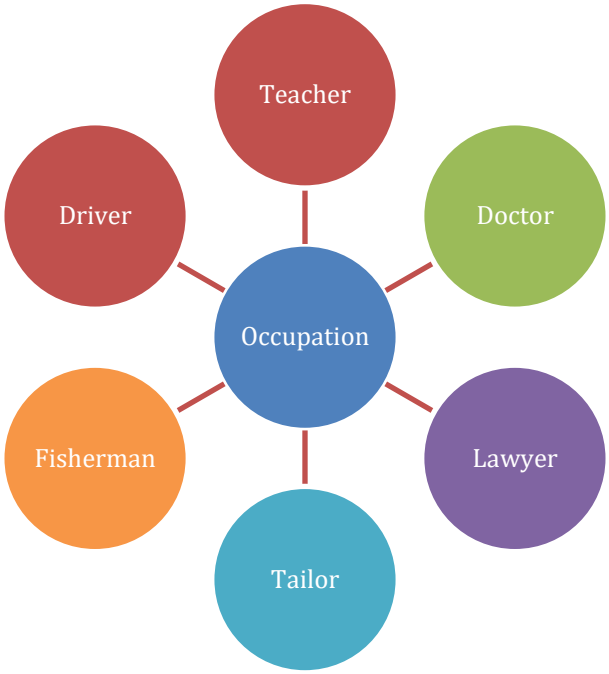
1. My mothers sings in church.
2. My mother cooks and cleans every day.
3. My mother loves me.
4. Her mother loves to cook and clean.

If learners are older, you can ask them to do a short paragraph or story.

This can be done in a science class. Use the topic in the middle and then ask them what comes to their mind when they hear the word weather.



Discuss the various things that you have written.



After your learners have listed the different occupations in the circles, prompt them to make sentences about what each occupation does. For example: ‘ A doctor treats patients in a hospital.’

SCIENCE AND TECHNOLOGY ACTIVITIES

Activity 1: Paper Circuits Activity.

Learning Objectives:

i. Introduce learners to simple circuits.
ii. Get hands -on experience with the basics of electricity.

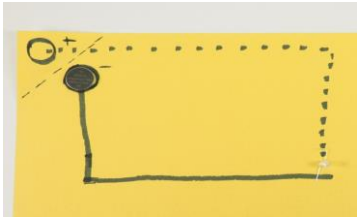
Materials

Aluminum foil Tape, Scissors, Pen, Coin Cell Battery*, LED Diode.

Instructions

i. Cut two strips of aluminum foil; one will carry the positive charge, the other will carry the negative
ii. Using a marker, draw how the components of your circuit will be laid out on your piece of paper (positive charge, negative charge, battery, LED diode). Ensure that the foil lines overlap with your battery, LED diode, and do not touch each other.
iii. Tape the aluminum foil along the line you drew, folding it to make turns. DO NOT tear the foil to make a turn; this will break the circuit. The foil lines need to be one, continuous piece. If the foil rips, it will not carry a charge and will need to be replaced. Also, do not use masking tape or glue; these are insulative materials and will not allow the charge to carry through.
iv. Bend the LED diode's long leg; this is the positive leg. Bending allows you to know which side is positive and negative at a glance.
v. Tape the diode so that the positive side overlaps the positive charge foil and the negative overlaps the negative charge foil.
vi. Place your battery and fold your paper over so that the positive and negative foil lines receive power.
vii. Watch your LED light up!

Step 1



Step 2

Step 3 and 4

Step 5,6 and 7

Activity 2: Window Lights Activity.

Learning Objective:

i. learners will be introduced to the basics of an electric circuit and to differentiate between good and poor conductors.

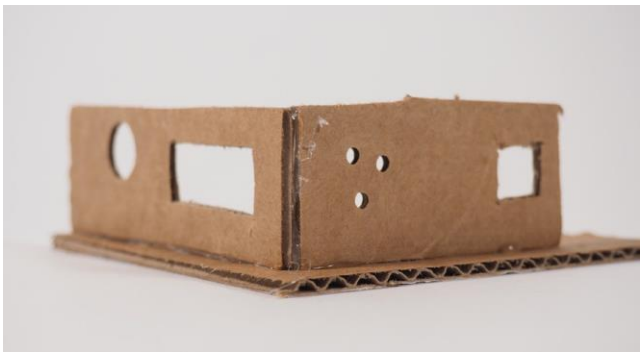
Materials

Aluminum foil Tape, Scissors, Pen, Coin Cell Battery*, LED Diodes, Softboard or used cardboard boxes, glue gun and glue sticks.

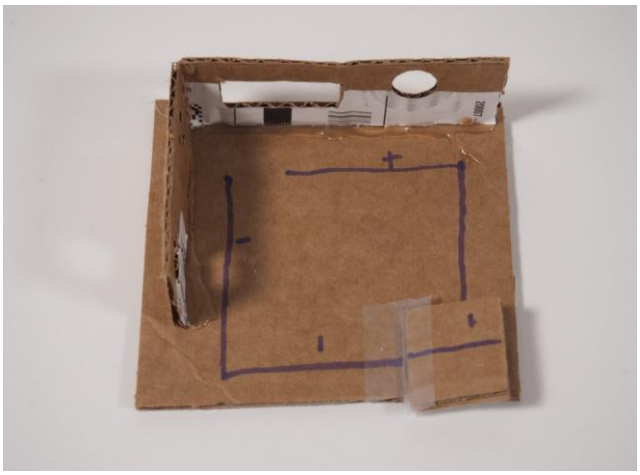
Instructions

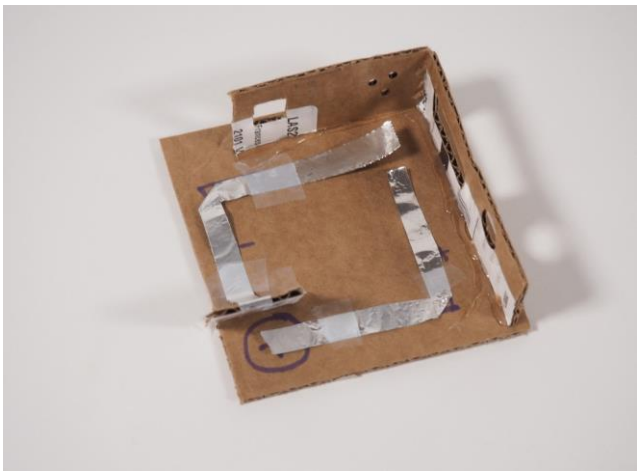
Design a building out of cardboard. Use scissors to make windows in different shapes for your building and then hot glue the walls and floor together. Leave the back of the building open so that you have space to build your circuits.

Plan out your circuit with a marker .



Tape down your aluminum foil and LED diode(s) along your circuit.





Disclaimer: Coin batteries are extremely dangerous if ingested. Only use this activity with learners under constant supervision.

Place your battery and light up your building.

Activity 3: Magic Paper.

Learning Objective

1. Demonstrate the

Materials

Piece of paper. Extras – Water paints, color pencils

Instructions

1. Prepare the plain papers that you are going to use for this activity, these can be used papers or used magazine papers available in the local community.
2. Identify one learning area that you are going to teach using this activity, an example would be “transport – under transport we can have the different modes of transport e.g. road transport, air transport, sea or lake transport.”
3. Share these instructions with learners as they sit in groups, have them think about the different modes of transport available in their communities, prompt the learners to use the pieces of people to make any form of transport they know.
4. After they have made the different items, please have the learners each share the different artefact they made and share briefly why they chose that.

Image 1: boat made from paper **Image 2: airplane made from paper.**

Showcase some of the artefacts made by the learners as you celebrate their work.

NOTE: This activity can be used in different learning areas depending on the educator's creativity.

Activity 4: Blood Components Game.

Learning Objective

1. Identifying the different components of blood by matching cards representing each component and stating its name.
2. Explain the functions and importance of each matched blood component in the body's circulatory system.

Materials

1. Cards or papers divided into sets (one set per blood component)
2. Marker
3. Labels with blood component names (Red Blood Cells, White Blood Cells, Platelets, Plasma)
4. Optional: Pictures or symbols representing each blood component

Instructions

1. Prepare the cards by dividing them into sets, each representing a blood component. Write the name of the blood component on each card.
2. If desired, you can include pictures or symbols to represent each blood component to make the game more visual.
3. Mix up the cards and scatter them face down on a table.
4. Divide the participants into teams.
5. Each team member takes turns flipping two cards at a time, trying to match blood components.

6. Once a match is made, the player explains the function and importance of the matched blood component.
7. The team with the most correct matches and accurate explanations wins the game.

This game helps reinforce the understanding of the different components of blood and their functions in the body's circulatory system.

Activity 5: Creating a Water Filtration System

Learning Objective:

To teach pupils about water purification and the importance of clean water through building a simple water filtration system using common materials.

Materials Needed:

- Plastic bottles (1 per group)
- Scissors or craft knives (for teacher use)
- Coffee filters
- Sand (clean and fine)
- Gravel
- Cotton balls
- Charcoal (optional)
- Dirty water samples (prepared by mixing soil, small leaves, etc., in water)
- Clear cups or containers (1 per group)
- Rubber bands
- Markers

Activity Instructions:

Begin with a discussion about the importance of clean water for health and the environment.

- Explain that clean water is essential for drinking, cooking, and cleaning, and that not all water sources are clean.
- Introduce the concept of water filtration and how it can help clean dirty water.

Demonstration

- Show the students how to build a simple water filtration system.
- Cut the bottom off a plastic bottle to create a funnel shape.

- Layer the materials inside the bottle in the following order from bottom to top: coffee filter, cotton balls, activated charcoal (if available), sand, and gravel.
- Place the cut-off bottom of the bottle back into the top of another bottle to catch the filtered water.

Hands-On Activity

Divide the students into small groups and distribute the materials.

- Ask each group to build their own water filtration system following these steps:
    1. Cut the bottom off the plastic bottle (teacher assistance required for safety).
    2. Secure a coffee filter over the neck of the bottle with a rubber band.
    3. Layer cotton balls over the coffee filter.
    4. Add a layer of activated charcoal (if available).
    5. Add a layer of clean sand.
    6. Add a layer of gravel.
- Once the filtration systems are assembled, pour dirty water into the top and observe as it passes through the layers and collects in the bottom bottle.

Discussion and Reflection

- Once all groups have filtered their water, compare the results. Discuss the following questions:
    - How clear is the filtered water compared to the original dirty water?
    - Which materials were most effective at cleaning the water?
    - What are some other methods of water purification?
    - Why is access to clean water important for communities around the world?

Extension Activity

- Challenge pupils to improve their filtration systems by experimenting with different materials or layering techniques.
- Discuss the real-world applications of water filtration and how it can be used in places without access to clean water.

Plasticine Recipes

Conductive Plasticine

Materials

1 Cup (237 mL) Flour, 1 Cup (237 mL) Water,1/4 Cup (59 mL) Salt, 1 Tbsp (15 mL) Vegetable Oil, Food color – to help make different plasticine colors.

Instructions

i. Mix flour and salt together in a medium-sized bowl, until well combined.
ii. Mix water and food coloring in a separate bowl, until the color is evenly dispersed.
iii. Add the oil to the water and stir before adding to the flour + salt bowl.
iv. Stir until dough is hydrated and then pour out onto a lightly floured surface to knead until smooth and no longer sticky.
v. Add small amounts of flour as needed if the dough is too sticky.

Insulative Plasticine

Materials

1 Cup (237 mL) Flour 1/2 Cup (118 mL) Sugar, 3 Tbsp (44 mL) Vegetable

Oil, 1/2 Cup (118 mL) Purified Water, Food Coloring.

Instructions.

i. Mix flour and sugar together in a medium-sized bowl until well combined.
ii. Mix water and food coloring in a separate bowl,until the color is evenly dispersed.
iii. Add the oil to the water and stir before adding to theflour + salt bowl.
iv. Stir until dough is hydrated and then pour out onto alightly floured surface to knead until smooth and nolonger sticky. Add tiny amounts of flour as needed if the dough is too sticky.

CREATIVE LEARNING PROMPTS

As you are practicing the activities in this book, try asking your students these questions to encourage creative learning.

Can you find another way to make this?
How many other ways can you make this?
How many ways did you have to try before you reached this result?
What was your aha moment?

What was the most interesting moment in thisproject?
Who will you share this with?
What is the story behind your project?
Find a peer who got to the same answer with a different approach or reasoning.

Index of Materials

Practice Guide

This very booklet that you are reading right now! This will help to guide you through what the PlayLabs are about, what materials are contained within them, and how those materials can be. used in activities.

Paper

Paper is a vital material to help us achieve our maximum creativity and unlock novel solutions to problems.

Markers

In the PlayLab we use markers not only to write down our brilliant ideas but also to draw, balance objects, connect things, and more.

Cardboard

Cardboard is an extremely versatile material for building and customizing solutions to tinkering problems.

Plastic Cup

Whether for making the basket for a parachute or as a structural base, cups made of any material can be an important and useful tinkering tool.

Tape

An indispensable tool for tinkering; being removable, it's perfect for testing out placements before committing to it.

Washable Paints

Water-soluble paints are easy to use and easy to clean up after and can be used on a variety of surfaces.

Aluminum Foil

Aluminum foil is a great conductor of electricity and can be used to complete circuits between power sources and the devices they are meant to power.

String

String can be silly, playful, fun, and extremely useful - a must-have for tinkerers!

Scissors

Another staple tinkering material: many materials need to be cut or can be cut to be modified for a bespoke purpose within a project.

Coin Cell Battery

Used as a small, flat, and discrete power source for basic circuitry projects. Warning: only for use with children 8 years and older with adult supervision; this is a very dangerous material for children younger and can cause severe injury or death if ingested.

LED Diodes

A small bulb with a long and short wire coming out from the bottom that can add light to a tinkering project. The long end carries the positive charge (+) and the short end carries the negative charge (-).

clips on each end, providing a much better control between the power supply and the powered device.

Plasticine

Playdough that contains salt as an ingredient that allows for electricity to conduct through it; commercially available play doughs are already conductive, however, our recipe for conductive playdough can be found on page 208.

Hot Glue Gun

Great for quickly and securely adhering nearly any material to any material/ surface. Please use caution and careful adult supervision as these glue guns and the glue itself gets very hot in order to be melted.

Hot Glue Sticks

Refill glue sticks that fit and can be melted by the hot glue gun.

Sticks

Sticks can be anything from a building material to a makeshift spoon.

Scratch

An interlocking block-based programming language and coding environment that is designed to help children aged 8+ learn how to code.

Lego Bricks

The classic building brick sets are perfect for making small STEM builds that can also have electronics integrated into them.

Locally Available Materials

We advise teachers to ask students to bring to the PlayLab locally available materials such as Sticks, rocks, shells, water bottles, leaves, empty food containers, plastic bottle caps, etc. These are.
all materials that are helpful for tinkering activities.
For every mention of a found material in an experiment, there is no singular material that will fulfil the need.
for the purpose of the experiment, any similar material that can be found for little or, ideally, no cost will.
serve the purpose.