

# Teacher Training

## Activity Booklet Four

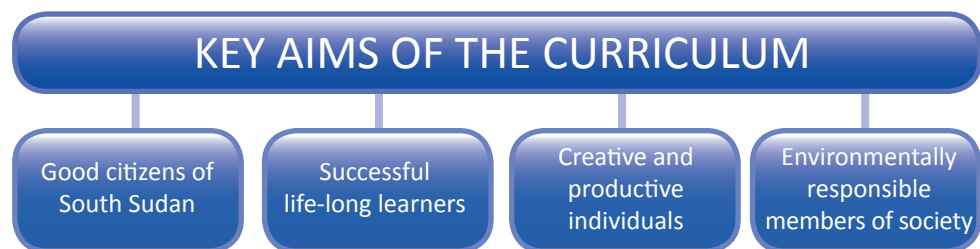
### Secondary

Maths, Physics, Chemistry, Biology, The Arts, PE, ICT.



# The Vision

A new country needs a new curriculum. In setting out this curriculum for our young people, we set out our ambitions for the nation; for peace and prosperity, for growth and development, for harmony and for justice. The education of young people of South Sudan should be firmly rooted in their rich culture and heritage and to enable them to grow into true citizens of the world.



## Student Competencies

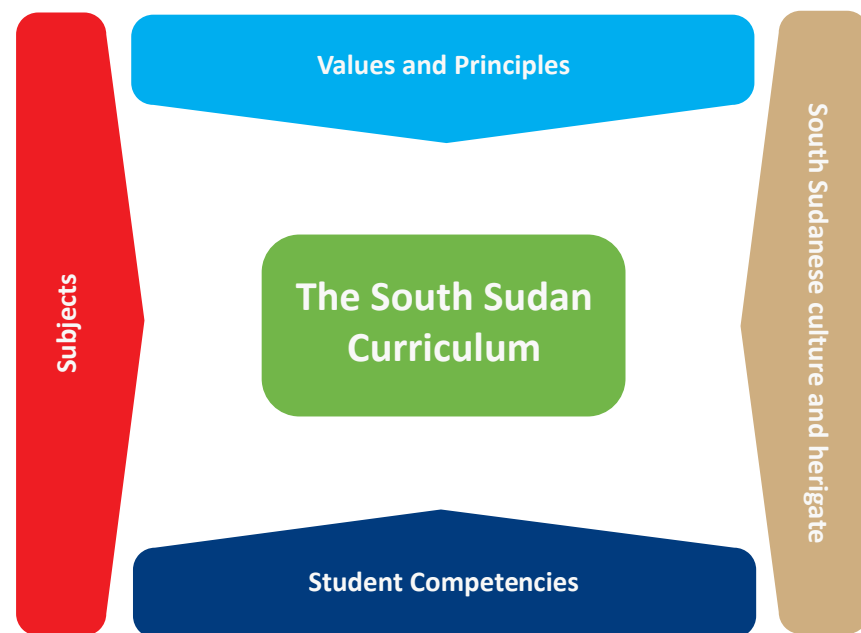


Traditional subjects continue to be important, but young people need to develop a set of competencies that they can apply in all those subjects, and which they can also apply throughout life. These competencies lie at the heart of every subject, and enhance learners' understanding of those subjects. They are also the competencies that are needed for young people to continue to learn, to adapt to change, and to cope with the challenges of life in the 21st Century.

## Vision

If the nation's vision is to become a reality, then we need young people who are knowledgeable about the key subject areas. They also need to possess the skills and the attitudes to make good use of that knowledge and to apply it in the service of the community. The subject knowledge together with the skills and attitudes forms the competencies that will equip learners to become global citizens in the 21st Century.

Citizens of South Sudan also need a clear sense of identity and an understanding and appreciation of the rich culture and heritage of their own country. The curriculum is therefore an association of subjects and competencies, driven by aims, values and principles, and located within the rich culture and heritage of South Sudan.



## Activity 1: Exploring Models

### Developing Student Competencies

# The String Shape Challenge

In this activity, learners are challenged to make different shapes with a variety of mathematical properties. Groups work to create shapes at the request of the teacher and of their peers. Learners should explain their thinking in order to clarify their reasoning and to develop accurate related mathematical vocabulary.

Teaching and Learning Sequence		Learner Competencies
A	Ask learners to arrange themselves into groups of four to six. Provide them with a loop of string about 6m long. Tell them to keep both hands on the string at all times and to stretch out the string into any shape.	Negotiating and coordinating groups. Working collaboratively towards common goals.
B	Call out some of the shape challenges listed below. Encourage learners to narrate their ideas and justify their choices of position and shape.	Thinking critically about how to form shapes accurately and how to respond appropriately to ideas from others.
C	Ask a few learners in each group to volunteer to give shape challenges.	Sharing responsibilities for leading learning. Communicating ideas clearly.
Possible Shape Challenges		
Make a shape with two or more acute/obtuse/right angles. Make a shape with one pair of parallel or perpendicular sides. Make a quadrilateral. Make a shape with one line of symmetry. Make a three-dimensional shape.		

## Additional Ideas

### Secondary 2: Physics

Learners work together using string to illustrate the effects of forces on different objects. Learners devise a number of contexts in which a string model could support younger learners to understand: how forces work together or in opposition; what direction they work in; the difference between balanced and unbalanced forces. Learners create a range of scenarios to illustrate the effects that different forces have on motion.

### Secondary 2: Citizenship

Learners use the string to model the reflection of light on curved surfaces. They work together to explain any research and experimentation they have completed in order to reach their conclusions. They identify possible shiny surfaces that could be used to demonstrate these further, and discuss and question what measurements could be taken in relation to this behaviour of light.

### Secondary 3: Religious Education

In geometry, learners work in groups to create three-dimensional figures. They discuss together the features of angle, symmetry, volume and surface area relating to these figures. Learners challenge each other to create a range of three-dimensional figures related to everyday objects and then to famous buildings, structures in their localities and other more unusual artefacts.

**In Physical Education, learners** use string to measure the distances of, for example, javelin throws. They also use string to create, mark out and measure pitches for a variety of games and sports.

**In The Arts, learners** investigate how string or rope is used in different cultures to create art forms such as woven baskets, rugs and geometric patterns.

# Activity 2: Solving Problems and Making Plans

# Additional Ideas

## Developing Student Competencies

### Planning a Town

In this activity, learners are challenged to work in small groups to plan the design of a town. They are given some specific parameters and some guidance, but the activity promotes the use of all of their competencies.

In the box below, design a town in which the area is divided up as follows:

$\frac{1}{2}$  = Houses

$\frac{1}{4}$  = Parks & Gardens

$\frac{1}{8}$  = Shops

$\frac{1}{8}$  = Factories


Explain why you have arranged the town in this way.

Teaching and Learning Sequence		Learner Competencies
A	Divide the learners into groups of four. Ask them to describe to each other what they believe the task to be.	Communicating and cooperating in order to work towards common goals.
B	Encourage each group to try out a few ideas and to evaluate the effectiveness of their ideas as they work.	Planning and carrying out investigations. Sorting information to come to conclusions.
C	Ask two groups to share their ideas. Tell them to ask each other relevant questions to prompt improvement and clarity. After this, ask each group to complete a final version of their own plan.	Speaking clearly to communicate ideas coherently.

## Secondary 2: Biology

Learners investigate the impact that factories and dense urban areas have on the environment. They connect this impact to climate change and pollution. Learners work together to suggest possible ways of reducing the effects of climate change and pollution. They explore the strategies used in other parts of the world to achieve this.

## Secondary 4: Biology

By conducting a variety of experiments, including the use of choice chambers, learners explore how animals adapt to their environments. Learners consider and describe different environments in a town, making suggestions about which animals and plants may thrive or suffer in these areas.

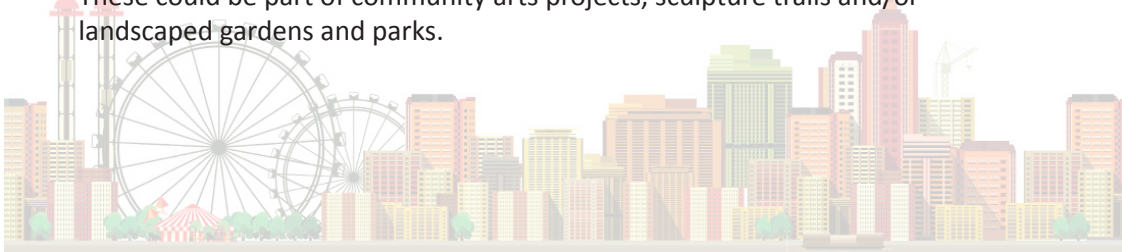
## Secondary 4: Mathematics

Learners work in pairs to develop a grid and related co-ordinates for the town plan. They develop this to explore co-ordinates in three dimensions, constructing models of buildings and other features of the town. Learners compare column and positional vectors related to the town in three dimensions, challenging each other to locate and describe mathematically different features in their model.

In ICT, learners use graphic design programs to map and build a model of a town, comparing their ideas with those of others.

In Physical Education, learners create a game that uses a grid or a court divided into sections. They use what they know about existing games in the format to shape their ideas.

In The Arts, learners design murals or large-scale art works for a new town. These could be part of community arts projects, sculpture trails and/or landscaped gardens and parks.



## Activity 3: Using Images and Objects

### Exploring Group Work

## Sort It!



In this activity, learners are asked to work in groups to sort a number of pictures of animals native to South Sudan. There are various challenges here that require learners to think in different ways and to collaborate effectively as a group. It is important that these kinds of activities are practised regularly, so that learners develop good habits for group work.

Other images to sort and explore include: trees; buildings; rivers; famous people; foods.

Other objects to sort and explore include: leaves; sticks; bottles; books; bags; clothing.

Teaching and Learning Sequence		Learner Competencies
A	Ask the learners to order the animals from, for example, the most to the least beautiful, the most to the least dangerous, their most to least favourite, the fastest to the slowest, and/or the most to the least lazy.	Learners work in groups of four to six and compare and share ideas.
B	Ask the learners to sort the animals into two groups, such as: hot/cold; smooth/rough; happy/sad; rare/common; bright/dull.	Learners work in the same groups and take it in turns to choose animals and explain their views.
C	Ask the learners to challenge each other to create a sequence of pictures that could illustrate a story. Learners choose titles such as: The Hunted; The Chase; Amazed Animals. Learners then narrate their stories.	Learners work in pairs to create a picture sequence and practise narrating a possible story.

### Features of Effective Group Work

- Assign roles: questioner; encourager; leader; reporter.
- Provide a clear description of the expected outcome.
- Create opportunities for creative thinking and problem solving.

Get on  
Respect each other  
On task  
Use quiet voices  
Participate  
Stay in your group

## Additional Ideas

### Secondary 1: Chemistry

Learners explore how to separate mixtures and compounds using a variety of methods. They work in groups to evaluate their ideas, and keep accurate measurements and records in order to make good judgements about the success of their strategies. They compare their results with those of other groups and begin to make links to concepts of separation in industry, especially that of crude oil.

### Secondary 2: Chemistry

Learners investigate and explain what is meant by 'hard water' in relation to calcium ions and magnesium ions. They gather a few samples of different water solutions and compare them using accurate scientific vocabulary. They ask each other questions about these solutions and then explore them further by testing the solubility of salts in them.

### Secondary 4: English

In small groups, learners discuss the use of radioactivity in nuclear energy production. They create a summary of other forms of energy production, such as solar, wind and natural gas, and compare these according to their: cost-effectiveness; impact on the environment; relationship with sustainable development; complexity of production. Learners consult a range of information sources in order to make these comparisons, and evaluate the accuracy and validity of these sources.

**In ICT, learners** gather and compare different computer programs that produce websites or marketing materials.

**In The Arts, learners** select a number of pieces of art in a particular form or around a particular theme and compare their impact. They agree a set of criteria that they will use to make these comparisons. They select a 'favourite' piece of art and re-create it in a different art form.

## Activity 4: Exploring Stories

### Developing Thinking Skills

# Handa's Surprise

This activity is based on the story 'Handa's Surprise' by Eileen Browne.

Handa lives in Kenya. She fills her basket with seven delicious fruits, one for each of her friends. But as she walks, the basket balanced on her head, she is unaware of the crafty animals intent on stealing her fruits! The story is summarised at the back of this booklet.

Other well-known stories can be used as a starting point for many learning activities. The ideas below can be adapted for any story.



Teaching and Learning Sequence		Thinking Skills for Learners
A	Read the story to the learners. Then, ask them to work with a partner to summarise the story in a maximum of 30 words.	Outlining the key features of the story. Selecting appropriate language. Summarising effectively.
B	Ask the learners, in small groups, to compose a simple poem based on the story. Suggest possible titles and phrases for the poems, such as: Bold Bananas Bounce; Magnificent Mangoes Mingle; Outrageous Oranges Ooze.	Generating phrases for the poem, based a language pattern provided. Modifying and revising vocabulary to create the desired effect.
C	In groups, ask the learners to create a short role play or sequence of pictures that show this story taking place in another country or locality.	Selecting key features of the story. Changing them so they match another setting.

## Additional Ideas

### Secondary 1: Mathematics

In pairs, learners collect and **select a range of data** about the foods listed in this story, including their health benefits. **Learners interpret** the data in order to make some decisions about which ways, and in what quantities, these foods could be combined to produce a healthy diet plan or menu. Learners explain their menus to others, **justifying** their food selections and combinations.

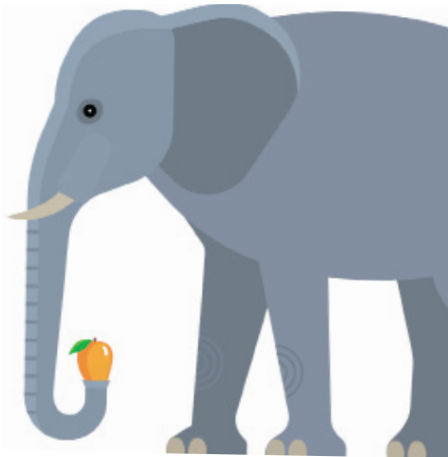
### Secondary 2: Biology

Learners explore and compare the effects of climate change on plants and animals. They work in groups to examine to the extent to which animals and plants are affected by climate change in South Sudan. They go on to compare this to a contrasting country. Learners identify which environmental conditions play a key role in defining the function and distribution of plants.

### Secondary 4: Chemistry

In small groups, learners consider and **explore** how the state of the foods in this story can be changed by: exposing them to heat; combining them with others; attempting to dissolve them in a liquid. Learners use what they learn from this to **conduct further research** in order to explain the energy changes that take place in these chemical reactions. They **identify** the best way to illustrate these changes, choosing the most accurate scientific symbols, vocabulary and diagrams.

**In The Arts,** learners review and compare a range of pieces of music that portray animals. They list and rank features of this music that they believe make them effective and then use these features to compose their own music inspired by a similar theme.





# Handa's Surprise

Handa put seven different delicious fruits in a basket for her friend, Akeyo. Her walk to see Akeyo took her past a variety of animals who found the fruits to be very inviting...

She will be surprised, thought Handa as she set off for Akeyo's village with the fruits in a basket balanced on her head.

Handa wondered which fruit Akeyo would like the best.

Will she like the soft yellow banana thought Handa as a crafty monkey stole the banana,

or the the sweet-smelling guava? An eager ostrich stole the guava too!

Will she like the round juicy orange thought Handa as a quick witted zebra stole the orange,

or the ripe red mango? An excited elephant stole the mango too!

Will she like the spiky-leaved pineapple thought Handa as a grateful giraffe stole the pineapple,

or the creamy green avocado? A greedy gazelle stole the avocado too!

Will she like the tangy purple passion-fruit  
Handa thought as a perky parrot stole the passion-fruit, the last fruit of them all!

Nearby, a goat escaped his tether. He ran towards Handa and bumped into a tangerine tree which sent a shower of fruit into Handa's basket.

Handa wondered which fruit Akeyo would like the best.

"Hello, Akeyo," said Handa. "I've brought you a surprise."

"Tangerines!" said Akeyo. "My favourite fruit."

"TANGERINES?" said Handa. "That is a surprise!"

