### TEACHERS

**Aim / Purpose / Topic / Content / Concepts / Skills**
(What I am going to teach / guide / support...)

**According to TAP**
- Strong frame structures
  - Struts and frame structures
  - Indigenous structures

**Teaching Methodologies & Classroom Management Skills**
(How I am going to teach / guide / support...)

**NOTE:**
This section of the work is most effective when taught in a practical and hands-on way, i.e. by means of conducting experiments / demonstrations. Teacher should decide on the method due to the available resources / apparatus, but should also improvise where he/she seems fit / possible.

Prior Knowledge: Natural and Man-made structures.
Different structures: Frame
- Solid
- Shell
- Term 1, animal habitats. Revision.
- Term 2, strengthening of structures
Questions and pictures to elicit knowledge.

**PART II**
- **Revision Exercise**
Learners complete activity sheet provided below, with a heading: ‘Strengthening Frame Structures’

**Activity 1**
Think of and look at the houses in the vicinity of the school. Make a list of the materials that were used to build the houses.

1. Draw the structure on a page and list all materials that you can see that were used to build the houses.
2. State if struts, beams, triangulation, columns were used to strengthen the structure. (Use attached page below).

**DATE:** 18 – 22 May 2020

**GRADE** | 4
---|---
**TERM & SEE WCED TAP** | 2
**KNOWLEDGE STRAND** | MATTER AND MATERIALS AND STRUCTURES

**Resources / LTSM**
(What I am going to use to teach / guide / support...)

**Paper based resources**
Refer learners to
1. NST Thunderbolt DBE workbook 4A
2. Natural Sciences Lesson Plan Gr 4, Term 2

Other resources as per requirement in each practical as in the workbook
Big enough pictures or images of various structures.
Prepared activity sheets.

**Digital resources**
[https://www.youtube.com/watch?v=gKmt36dJBrA](https://www.youtube.com/watch?v=gKmt36dJBrA)
Activity 2
There are 4 main shapes that are used to make traditional houses. They are: bee-hive (dome) structures, cylinder structures, cone-shaped structures and square or cube-shaped structures.

- Teacher give few pictures of traditional structures to every group (2 to 4)

- Learners classify what shape each structure represent.

Activity 3
- Teacher hand out reading card with images for learners to read in groups.
  (examples of cards below)
- They read and summarize the information.
- Also state which possible methods were used to strengthen the structure
- Give feedback to rest of class.

Extension:
Screen video on homes; strengthening and materials, either to consolidate or further develop concepts.
### PARENTS

<table>
<thead>
<tr>
<th>Similar to what teachers would teach, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to TAP</td>
</tr>
<tr>
<td>Strong frame structures</td>
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<tr>
<td>• Struts and frame structures</td>
</tr>
<tr>
<td>Indigenous structures</td>
</tr>
</tbody>
</table>

### LEARNERS’ ACTIVITIES

<table>
<thead>
<tr>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete all activity sheets provided.</td>
</tr>
</tbody>
</table>

### Informal Assessment

| Completion of all provided activities. |

### Values taught

| Understand that there are various ways that can be used to strengthen structures. |
| Know that these methods are used in our daily lives. |

### Materials, resources that could be found at home, low cost:

- Scissors, paper sheets, cardboard, tape, glue, straws, scissors, rulers, etc.

### Ensure Access to:

- Science journal / Workbook /writing pad, pencils, Laptop / tablets / smart phones
- Data (if possible)

### YouTube video clips

[https://www.youtube.com/watch?v=gKmt36dJBrA](https://www.youtube.com/watch?v=gKmt36dJBrA)

### LEARNERS’ ACTIVITIES

**Traditional Nama hut – matjieshuis**

The Nama hut or ‘matjieshuis’ is made in a similar way to the Zulu hut, but the materials are prepared differently. Branches from Tamarisk trees are collected by the men. The thorns are removed and the branches are heated over a fire. The bark is then removed. The branches are planted in a circle and bent into the dome shape. When the branches cool down, they stay fixed in the dome shape. The women collect the grass and dry it out in the sun. They weave it into mats and attach the mats to the frame structure using grass ropes.
Traditional Zulu hut: “iQhugwane”
The Zulu hut is made using a bee-hive or dome shape. The structure is established by planting a circle of young, flexible trees. The branches are tied together to form triangles. The men usually build this framework. The women weave grass together to make grass mats and ropes. The mats are tied to the framework using the ropes, from the bottom of the structure to the top.

Traditional Xhosa hut
These traditional Xhosa huts are also known as rondavels. Rondavels are made using cylinder-shaped and cone-shaped structures. To begin with, cylindrical walls are built. Strong, wooden poles are then planted in the ground in the shape of a circle. Planks or laths are attached to the wooden poles. These are the struts that strengthen the framework. The Xhosa people then use stone or rocks to fill in the gaps between the laths. Finally, the wall structure is covered in a mixture of clay and cattle dung. When it is dry, the walls are painted. The roof is made first by securing the wooden poles together in the shape of a cone, and fixing it to the wall structure. The poles are then covered in thatch (long grass) which is tied using grass ropes.
1. Which of the shapes will collapse when you press on one corner? ________

2. How can this collapsed shape be strengthened?
   ________________________________________________
   ________________________________________________

3. Which shape do you think is the strongest? ___________________________

4. How can this structure be strengthened?
   Strengthen the structure by adding to the drawing.

5. What part of our bodies is also a frame structure?
   ________________________________________________

6. Identify materials used in these houses?

<table>
<thead>
<tr>
<th>Traditional Home</th>
<th>Material Used</th>
<th>Beam / Strut / Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Igloo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xhosa Hut</td>
<td></td>
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</tr>
<tr>
<td>Zulu Beehive Hut</td>
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</tbody>
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