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English

Grade R Mathematics Improvement Programme



Workshop 7 Participant's Workbook

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The **Schools Development Unit (SDU)** at the **University of Cape Town (UCT)** is the mathematics technical partner to the Grade R Mathematics and Language Improvement Project. The SDU is a unit within UCT's School of Education that focuses on teachers' professional development in Mathematics, Science, Literacy/Language and Life Skills from Grade R to Grade 12. The SDU offers teacher qualifications and approved UCT short courses, school-based work, materials development and research to support teaching and learning in all South African contexts.

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Overview

Purpose

This is the seventh of twelve Grade R Mathematics Improvement Programme workshops, which form part of the Gauteng Department of Education (GDE) Grade R Mathematics and Language Improvement Project.

The purpose of this workshop is to continue assisting teachers to implement the Maths Programme in their classrooms. Participants will have the opportunity to reflect on their observations. They will explore how the guiding principles of teaching maths in Grade R should inform their planning, teaching and assessment. They will also consider learner progress, and individual developmental and learning needs. The workshop explores the content for Term 3 Weeks 1–3 and its classroom implementation.

References to the Grade R Mathematics Content Areas are taken from the *Curriculum and Assessment Policy Statement (CAPS): Grade R Mathematics (Final Draft)*, 2011, Department of Basic Education, South Africa.

Learning outcomes

- ◆ To reflect on the implementation of Term 2 Weeks 8–10
- ◆ To apply the Maths Programme principles in weekly planning
- ◆ To explore play-based strategies to support teaching maths in Grade R
- ◆ To identify potential barriers to learning
- ◆ To introduce perceptual and motor development
- ◆ To engage with the Maths Programme content of Term 3 Weeks 1–3 (Patterns, Functions and Algebra; Numbers, Operations and Relationships)

Workshop content

- ◆ Opening and reflection (30 minutes)
 - ◆ Session 1: Setting the stage (30 minutes)
 - ◆ Session 2: Play-based teaching and learning (1 hour)
- TEA
- ◆ Session 3: The Grade R maths learning environment (30 minutes)
 - ◆ Session 4: Factors affecting maths learning (30 minutes)
 - ◆ Session 5: Perceptual and motor development (1 hour)
- LUNCH
- ◆ Session 6: Planning for teaching (1½ hours)
 - ◆ Closing activities (30 minutes)

Opening and reflection

30 minutes

The post box

Some of your issues and questions may not be addressed during this workshop. Write down any concerns or questions you may have during the workshop and post them in the post box. Your facilitator will make sure that these are addressed.

Here is the *Take back to school* task from Workshop 6.



Take back to school task (Workshop 6)

1. Use *Activity Guide: Term 2* to plan and implement Weeks 8–10 of the Maths Programme.
2. Write an evaluation of what worked well, what did not work so well and what you could do differently to improve teaching and learning.
3. Bring the evaluation to the next workshop.

It is important for you to reflect on your teaching practices as this will help you to better understand why things happened as they did. You can find ways to do things differently and improve your teaching.

There will be many opportunities during these workshops to reflect on your successes and challenges with implementing the Maths Programme. We would like you to start the reflective process by spending a few minutes sharing your experiences of implementing Term 2 Weeks 8–10 based on the *Take back to school* task.



Activity 1

1. In your group, share your experiences of implementing Term 2 Weeks 8–10.

2. Share your successes and challenges with the large group.

Session 1: Setting the stage

30 minutes

Maths in the school context

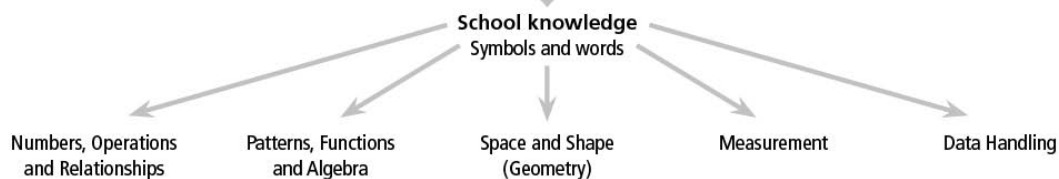
It is important to provide maths' experiences for Grade R learners that relate to their everyday lives.

Read the **context principle** on pages 8–12 of the *Concept Guide*.

The **context principle**: Learning takes places daily in classroom and home situations (contexts) that are meaningful to learners.

Learners come to school with an understanding of the world around them that is based on their own experiences. This is called everyday knowledge. At school, children build on this. We call this school knowledge. Let's look at the diagram below and think more about how learners build on their everyday knowledge.

Everyday knowledge
comparing, sorting, matching,
saying number names, learning
about more/less, bigger/smaller,
light/heavy



Activity 2

1. What everyday knowledge have the learners in your class demonstrated?

2. How have you built on this knowledge in your daily maths programme at school?

Session 2: Play-based teaching and learning 1 hour

The Curriculum and Assessment Policy Statement (CAPS): Grade R Mathematics, encourages a play-based, active approach to teaching and learning. This is in line with current research and understanding about how children learn. The Maths Programme supports the use of play to inform lesson planning and assessment.

The **play principle**: This principle promotes the idea that children learn best in free-play and guided-play activities and encourages indoor and outdoor play-based activities.

Read the **play principle** on pages 14–16 of the *Concept Guide*.



Watch the video of a group of children engaged in different types of play.

Identify the five types of play explained on page 14 of the *Concept Guide*.


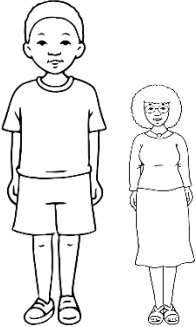
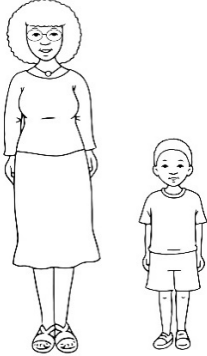

The play continuum

A continuum is a series of things that are slightly different from one another that lie somewhere between two different points.

Play inside and outside the classroom can take different forms, ranging from free play initiated and directed by the learners, to playful instruction that is initiated and directed by the teacher.

A play-based approach to teaching and learning recognises that sometimes children learn best from free-play activities initiated and directed by the child without adult involvement. At other times children learn best from guided-play activities that are directed by the teacher for the whole class or in small groups.

The forms of play described below are closely related. Although they are illustrated as separate, very often one form of play changes into another form as the teacher and the children take on different roles.

 <p>Free play (C)</p>	 <p>Co-opted play (Ct)</p>	 <p>Guided play (Tc)</p>	 <p>Playful instruction (T)</p>
-------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------

Free play (C)

The child initiates and directs all of the play. The child decides and organises when, where, what and how to play, and who is playing. The teacher does not intervene or engage with the playing children. The teacher follows the direction set by the child.

Co-opted play (Ct)

The child initiates and directs most of the play. The teacher occasionally intervenes in the children's play in order to extend the children's learning, e.g., by asking a question, making a suggestion or adding extra apparatus.

Guided play (Tc)

The teacher initiates and directs most of the children's play by setting out specific activities, e.g., creative art, small group activities or an obstacle course. The children have some control because they can decide which activity they want to do or how they would like to do the activity.

Playful instruction (T)

The teacher initiates and directs all the play. The teacher plans the activity with a particular teaching/learning purpose in mind, e.g., a story that teaches listening skills, matching counters to number symbols, or sorting shapes. The child follows the direction set by the teacher.



Activity 3

In your group, discuss the following questions related to play.

1. How does *free play* provide opportunities to extend learning?

2. According to the play continuum, what is the difference between *guided play* and *playful instruction*?

3. Look at the teacher-guided activity of pages 17–18 of *Activity Guide: Term 3*.

- ◆ Discuss how the five activities are intentionally planned around a particular curriculum skill/concept.

- ◆ How does the teacher use questions to prompt the learners ‘playfully’ during the activities?

- ◆ How does this assist the teacher with her observation for informal assessment?

Session 3: The Grade R maths learning environment

30 minutes

The Grade R maths learning environment should support learning through play. A well-planned teaching and learning programme should include a balance of all the different types of play activities.



Activity 4

Look at the photograph of a Grade R classroom.



1. Think about what you know about how young children learn. Discuss whether the learning environment in the photograph is appropriate for Grade R.

2. How could you improve this learning environment?

3. Evaluate your own learning environment.

Tick ✓

Is the classroom inviting?	
Is the space organised so that learners can gather in large groups for whole class sessions, and also work in teacher-guided and other small group activities?	
Are there free choice activity areas where learners can choose their own activities, explore, investigate and solve problems?	
Are learners able to be active in their own learning, and explore things around them through their five senses?	
Are learners able to work together, and talk, listen and learn from one another?	
Are the materials placed so that learners can help themselves?	
Are learners able to move around freely from one activity to another?	
Are the daily programme, weather chart, posters and learners' work displayed at learners' eye level?	
How have you organised the maths environment? Do you have: <input type="checkbox"/> a maths area <input type="checkbox"/> number friezes <input type="checkbox"/> the <i>Poster Book</i> displayed <input type="checkbox"/> a <i>Resource Kit</i> <input type="checkbox"/> tubs for each learner <input type="checkbox"/> the learners' work displayed	
How have you integrated maths in the free choice activities? Do you have: <input type="checkbox"/> construction toys <input type="checkbox"/> books <input type="checkbox"/> fantasy play <input type="checkbox"/> puzzles <input type="checkbox"/> art <input type="checkbox"/> sand and water <input type="checkbox"/> outdoor play <input type="checkbox"/> educational games <input type="checkbox"/> a collection of recycled materials, e.g. plastic tubs and lids Other: _____	
What challenges do you face in setting up your Grade R environment?	
Would you make any changes?	

Session 4: Factors affecting maths learning

30 minutes

The **inclusivity principle**: All learners have a right to feel special, participate and be included in classroom activities and discussions. This includes children who have disabilities, behavioural issues or other barriers to learning.

Barriers to learning maths

Many learners experience barriers to learning maths that are the result of a range of factors. Let's take a closer look at some of the barriers to learning that learners may experience. Look at Figure 29 on page 29 of the *Concept Guide*.



Activity 5

Make a list of the kinds of barriers that learners in your class are experiencing that impact on their learning.

With careful planning and in collaboration with families and other support people, learners with special developmental needs can participate fully in the Grade R programme.



Activity 6

In your group, share your experiences about learners who are experiencing barriers to learning maths. Choose a learner who is not successfully coping with classroom tasks and activities. Attempt to answer these questions.

1. What is the barrier to learning?

2. What are the learner's learning needs?

3. What support is needed?

4. What steps could you take to minimise the barrier to learning so that the learner can participate more successfully in Grade R maths?

5. If you cannot identify the barrier, the learning needs or the support required, who could you consult?

Read some of the ways you can include all learners in the Grade R classroom on page 30 of the *Concept Guide*.

Remember that it is important to identify barriers to learning as early as possible so that a plan can be put in place to address a learner's individual developmental and learning needs. Your ongoing observations of learners' progress will help you recognise any potential gaps in their learning and also help you plan ways to address these.

Session 5: Perceptual and motor development

1 hour

Perception develops through information that is gathered from the senses of touch, sight, smell, taste and hearing, and helps children to learn about the world. Motor development unfolds with perceptual development – as children use their motor skills to move through the environment, they gather information with their senses.

Perceptual and motor skills are very important for learning maths. They include:

- ◆ visual perception
- ◆ auditory perception
- ◆ tactile and kinaesthetic perception.

Visual perception

Visual perception is the ability to use what the eyes see and to interpret this visual information. There are different categories of visual perceptual skills.



Activity 7

The following are scenarios that illustrate visual perceptual skills in young children.

1. Read the information on visual perception on pages 32–33 of the *Concept Guide* and identify which visual perceptual skills the children below are practising.
 - ◆ Welekazi is playing in the fantasy play area. She looks for and finds her favourite red shoes amongst all the other shoes in the wardrobe.

-
- ◆ The teacher makes a pattern of different coloured beads on a string. Leah makes her own string of beads by repeating the pattern her teacher has made.
-

2. What are the kinds of activities you have done in your Grade R class that support these perceptual skills?

Auditory perception

Auditory perception is the ability to use what the ears hear and to interpret this auditory information. There are different categories of auditory perceptual skills.



Activity 8

The following are scenarios that illustrate auditory perceptual skills in young children.

1. Read the information on auditory perception on page 34 of the *Concept Guide* and identify which auditory perceptual skills the children below are practising.
 - ◆ Raiz is playing in the noisy block area. Even though there are many other learners around him talking as they play, he can focus on what his teacher is asking him to do with the blocks.

-
- ◆ Thobeka listens to her teacher as she counts ten counters while placing them on the mat. Thobeka remembers what she has heard and repeats the order of the numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

2. What are the kinds of activities you have done in your Grade R class that support these perceptual skills?

Tactile and kinaesthetic perception

Facilitator's notes

- ◆ Reflect on the sensory experience done earlier as an example of how tactile and kinaesthetic perception work together to provide information to the brain.
- ◆ Discuss examples of tactile and kinaesthetic activities participants have used for teaching and learning maths in Grade R.

These two types of perception go hand in hand. Tactile perception is the ability to notice similarities and differences in the way things feel. Kinaesthetic perception is the ability to use body movements and muscle feelings. Together they provide the brain with information.



Activity 9

How can we help learners develop their tactile and kinaesthetic perception?

Refer to the other activity ideas on page 34 of the *Concept Guide*.

Session 6: Planning for teaching

1½ hours

It is important to plan and prepare thoroughly for each week. This will allow you to feel confident about what you are doing and help you to focus on teaching and working with the learners. As you have already experienced in Terms 1 and 2, the Maths Programme is carefully structured, and the maths content is presented in a progressive developmental sequence. It has been designed to ensure that all the Grade R Mathematics content and skills are covered and learners are well prepared for Grade 1. Teachers need to be cautious about selecting activities from different weeks and leaving other activities out.



Activity 10

Your facilitator will assign each group either Week 1, 2 or 3 of Term 3 to focus on.

1. Look at page 10 of *Activity Guide: Term 3* to identify the Content Area Focus of your week.
2. Find the CAPS content for this Content Area on pages 57–68 of the *Concept Guide*.
3. Read the contents of your assigned week in *Activity Guide: Term 3*.
4. Complete the planning template in Appendix A to capture the focus of the whole class and small group activities. Discuss the following to guide your planning:
 - ◆ The key concepts that learners will be learning in this week
 - ◆ The topic
 - ◆ The new knowledge to be introduced
 - ◆ The skills from previous weeks to be practised
 - ◆ How learners will be taught and will learn during:
 - whole class activities
 - small group activities
 - teacher-guided
 - independent small groups (at the workstations).
5. Identify any potential challenges in implementing the activities for your assigned week. Propose suggestions to resolve or minimise these. Record your points on flipchart paper to share with the whole group.

Closing activities

30 minutes



Activity 11

Workshop reflection: Take a few minutes to reflect on the day. Page through your *Participant's Workbook* to remind yourself of what was covered.

The facilitator will direct the groups to the sheets of paper on the walls. Each sheet will prompt you on how to comment.



Take back to school task

1. Use the Term 3 Weekly Planning Template in Appendix A to plan and implement Term 3 Weeks 1–3 of the Maths Programme.
2. Document how you used the '**Check that learners are able to**' observation list (in the eye box) during each of the teacher-guided activities.
3. Write an evaluation of what worked well, what did not work so well and what you could do differently to improve teaching and learning.
4. Bring your evaluation to the next workshop.

Evaluation

Complete the Evaluation Form.

APPENDIX A: TERM 3 WEEKLY PLANNING TEMPLATE

Term 3: Activity Plan: Week ____

CONTENT AREA:				
TOPIC:				
INTRODUCE NEW KNOWLEDGE:				
PRACTISE:				
Whole class activities		Teacher-guided activity	Workstation activities (independent small group activities)	
Day 1			Activity 1	
Day 2			Activity 2	
Day 3			Activity 3	
Day 4			Activity 4	
Day 5				

Workshop 7 Evaluation Form

1. Did the workshop meet your expectations?

2. What did you learn in this workshop that helped you the most?

3. Was there anything that you did not like or had difficulty understanding?

4. How will you apply what you have learnt in your Grade R classroom?

5. Do you have any suggestions for improving further workshops?
