

**NECT**  
**GRADE 4 – 9**  
**NATURAL SCIENCES**  
**TERMS 1 & 2 2019**  
**TRAINERS GUIDE**

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## Workshop Objectives

**By the end of this training session, participants will:**

1. Be aware of the programme for this training session
2. Be informed of the NECT Programme 1 updates
3. Have improved Term 1&2 pedagogical content knowledge.
4. Be fully oriented to the Trainer's Guide that will be used to train teachers on this programme
5. Be motivated to improve their personal facilitation skills
6. Be motivated to improve teaching and learning in their district

## Before the Training

- 1. Be prepared to model excellence in training and facilitation.**
2. Prepare the venue as best as possible, to ensure that participants are comfortable, that they can all see the presenter, and that the setup is conducive for discussion.
3. Be prepared to show the slide show and videos. Deal with technical issues before the training.
4. Be fully prepared, have all of your materials laid out in an orderly fashion.
5. Display the objectives of the workshop, and go through these with participants.
6. Display an 'agenda' – a chart listing every activity that will be completed, together with the planned time allocation.
7. At the end of every training day, reflect on the objectives and agenda, and tick off what has been achieved that day.
8. **DISPLAY ALL RELEVANT RESOURCES THAT HAVE BEEN PRODUCED BY THE NECT FOR CLASSROOMS, I.E.: POSTERS; RESOURCE PACK ITEMS; ETC. (Make an effort to properly prepare these items to present them in a way that models good practice and will protect resources from wear and tear.)**

## Tone of the Training

1. Remember that you are training TRAINERS and TEACHERS. Please ensure that you address participants correctly.
2. Be polite, patient and RESPECTFUL at all times. This is possibly the most important aspect of being a trainer.
  - Participants will generally be open to you and to the programme if they are treated with respect.
  - Arrive early and be prepared – for every session!
  - Greet participants by name whenever possible, and ensure that names are pronounced correctly.
  - Do not be dismissive of a participant's concern. If you do not have time, or if you know that the issue will be addressed later in the session, create a PARKING LOT. Write down the query, and stick it in the parking lot to be addressed later.
  - Do not be dismissive of participants' knowledge, skills and experience. As much as possible, allow participants to contribute to discussions.
3. Remember that humour is always a good strategy – try to add some fun to the training, in a way that does not make anyone uncomfortable.
4. Please remember to use icebreakers and energisers when required – it is important to keep the mood and energy of the training positive.

**NECT****GRADES 4 - 9 Natural SCIENCE****TERM 1&2 2019 TRAINING PROGRAMME**

	<b>TIME</b>	<b>ACTIVITY</b>	<b>TRAINER WORKSHOP</b>	<b>TEACHER WORKSHOP</b>
1	15 minutes	Welcome, housekeeping and updates		
2	30 minutes	Pre-training Activity		
3	1 hour	Guidelines for facilitators and participants: Importance of Critical Outcomes/Cross Curricular skills		
4	30 minutes	Introductions, reflections and agenda		
5	1 hour	Orientation to lesson plans (including CAPS and the lesson plans)		
6	1 hour	Content Development: Explaining and implementing the scientific method		
7	1 hour	Conceptual Activity 1: Food Webs		
8	1 hour	Conceptual Activity 2: Photosynthesis		
9	1 hour	Conceptual Activity 3: The Periodic Table		
10	1 hour	Reading for Meaning		
11	1 hour	Questioning at Different Levels		
12	1 hour	Lesson Demonstration: Briefing and Preparation		
13	2 hours	Lesson Demonstrations		
14	30 minutes	Orientation to the trainers guide		
15	30 minutes	Final questions and answers		
16	30 minutes	Training of teachers: planning session		
17	30 minutes	Post Test		
18	15 minutes	Closure and evaluation		

## What you will need for this training:

ITEM	QUANTITY	CHECK
Flipchart stand and paper	1	
Kokis	10	
Blank A4 paper	100	
Laptop, data-projector and speakers	1	
USB with all materials	1	
Attendance register	1	
Prestik	5	
Evaluation Forms	1 per participant	
Learning Programmes resource pack	1 per participant	
Science practical kit	1 per participant	
Training handout	1 per participant	
Pre-test	1 per participant	
Post-test	1 per participant	

## Training Activities

1	15 minutes	WELCOME, HOUSEKEEPING AND UPDATES	Facilitator:	What you will need:
				<ul style="list-style-type: none"> <li>Ensure that there is a sign outside your training room</li> </ul>
<ol style="list-style-type: none"> <li>Settle the group in plenary.</li> <li>Welcome participants, and complete the introductions.</li> <li>Start the day with a short message or prayer if appropriate.</li> <li>Share the relevant housekeeping notes, to ensure that participants are clear about the toilet and catering arrangements.</li> <li>Present any relevant updates, or share interesting and successful data or stories.</li> </ol>				

2	30 minutes	PRE-TRAINING ACTIVITY	Facilitator: MQA	What you will need:
				<ul style="list-style-type: none"> <li>Copies of pre-test</li> </ul>
<ol style="list-style-type: none"> <li>Work together to hand out copies of the pre-training activity to participants.</li> <li>Ask participants to not look at the activity yet.</li> <li>Briefly explain the purpose of the pre-training activity, which is to measure the success of the training, not to measure the scores of individuals.</li> <li>Briefly explain the text conditions, i.e.: to work independently and in silence, for a period of 30 minutes. Ask participants who finish before time to please cover their work and wait quietly for others.</li> <li>As participants complete the pre-training activity, walk around and offer practical assistance if needed.</li> <li>Once time is up, help to collect and collate pre-training activities in an orderly fashion.</li> </ol>				

NOTES:

<b>3</b>	<b>30 minutes</b>	<b>GUIDELINES FOR PARTICIPANTS AND FACILITATORS</b> <b>Critical Outcomes/Cross Curricular Skills</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Flipchart papers</li> <li>• Marker pen</li> </ul>
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### INTRODUCTION

1. Ask participants to take a few minutes to think about the Critical Outcomes that underpin all teaching and learning in South Africa. They are presented in the 1<sup>st</sup> chapter of the CAPS documents.

### ACTIVITY 1

2. Ask participants, which Critical Outcomes they can they remember? Give them 5 minutes to write down the Critical Outcomes they can think of.
3. Do a feedback session using Section 1 of the Training Handout: Critical Outcomes.
4. Ask them identify which ones they did not recall.

### ACTIVITY 2

5. Ask participants to work with a partner and discuss:
  - a. Why these Critical Outcomes are so important?
  - b. Can these outcomes be developed in all learning areas?
  - c. Which outcomes can be taught in NS (and Tech)?
  - d. How these outcomes can be taught?

### REFLECTION

6. Call participants to attention, and ask them to share the points they have come up with.
7. Ask participants to share ideas.
8. Document key points on a flipchart.
9. Remind participants that Critical Outcomes are an important part of teaching and learning: they must develop these skills as part of all NS teaching and ensure that they are developing these skills in their learners.

NOTES:



4	30 minutes	INTRODUCTIONS, REFLECTIONS AND AGENDA	Facilitator:	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Flipchart papers</li> <li>• Marker pen</li> <li>• Prepared chart of agenda / programme</li> <li>• Blank A4 papers</li> </ul>
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### INTRODUCTION

1. Settle participants so that you have their attention.
2. If there are any new members of the group, or if you are new to the group, briefly do a round of introductions.

### REFLECTION

3. Next, tell participants that you would like to take some time to get them to reflect on their own experience of the implementation of the training and programme.

### ACTIVITY

4. Make sure each participant has a piece of A4 paper.
5. Ask participants to fold the paper into 4.
6. Next, ask them to do the following:
  - a. In the first square, they must write: their name, position, school or district.
  - b. In the second square, they must write: one thing about the programme that is being successfully implemented in schools. Ask them to please write some details about this, even a short narrative to explain what is happening.
  - c. In the third square, they must write: Something that is still problematic, that the programme has not managed to address. Ask them to write some detail about this, even a short narrative to explain what is happening.
  - d. In the fourth square, they must write: Anything further that they still want from the NECT. Please point out that this cannot be resources.
7. Draw this diagram on flipchart paper to help participants remember what to do:

<p style="text-align: center;"><b>Name</b> <b>Position</b> <b>School or District</b></p>	<p style="text-align: center;"><b>One thing that is working well in schools:</b></p>
<p style="text-align: center;"><b>One thing that is still a problem in schools:</b></p>	<p style="text-align: center;"><b>One thing I think the NECT should do for my subject:</b></p>

**CLOSURE**

- 8. After about 15 minutes, call participants to attention.
- 9. Ask if anyone would like to share ONE point that they have written down. Listen to as many participants as possible.
- 10. Thank participants for their input, and assure them that you will pass their comments along.
- 11. Collect all these sheets – you must collate this information for your report.

**NOTES:**

<b>5</b>	<b>30 minutes</b>	<b>Orientation to the Lesson Plans</b>	<b>Facilitator:</b>	<b>What you will need:</b>
				<ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Posters</li> <li>• Tracker</li> <li>• Training Handout</li> </ul>

## ORIENTATION TO THE LESSON PLANS

IMPORTANT: Section 3 & 4 of CAPS are out for comment. It is suggested that Technology be removed from Intermediate Phase NS and Tech. It has not been removed from the programme as discussions/negotiations with the DBE and stakeholders are still underway.

1. Hand out all of the materials to the participants:

- Lesson plans
- Resource pack
- Planners and trackers
- Posters

2. Explain what materials they are receiving and what materials they will receive at a later stage.

3. Tell the participants that we are now going to explore how these science lessons are structured.

4. Tell participants to turn to Section 1 of the Training Handout: Programme Orientation. Go through the steps /orientation as follows **only** if the participants are new:

- a. Ask a participant to read a section aloud.
- b. Ask participants to look at that feature in the lesson plan.
- c. Explain further or clarify if need be.
- d. Be sure that participants understand the structure of the lesson plans clearly.

5. Note: When you get to the point about the Tracker and the point about the Resource Pack and Poster, show these elements to the participants.

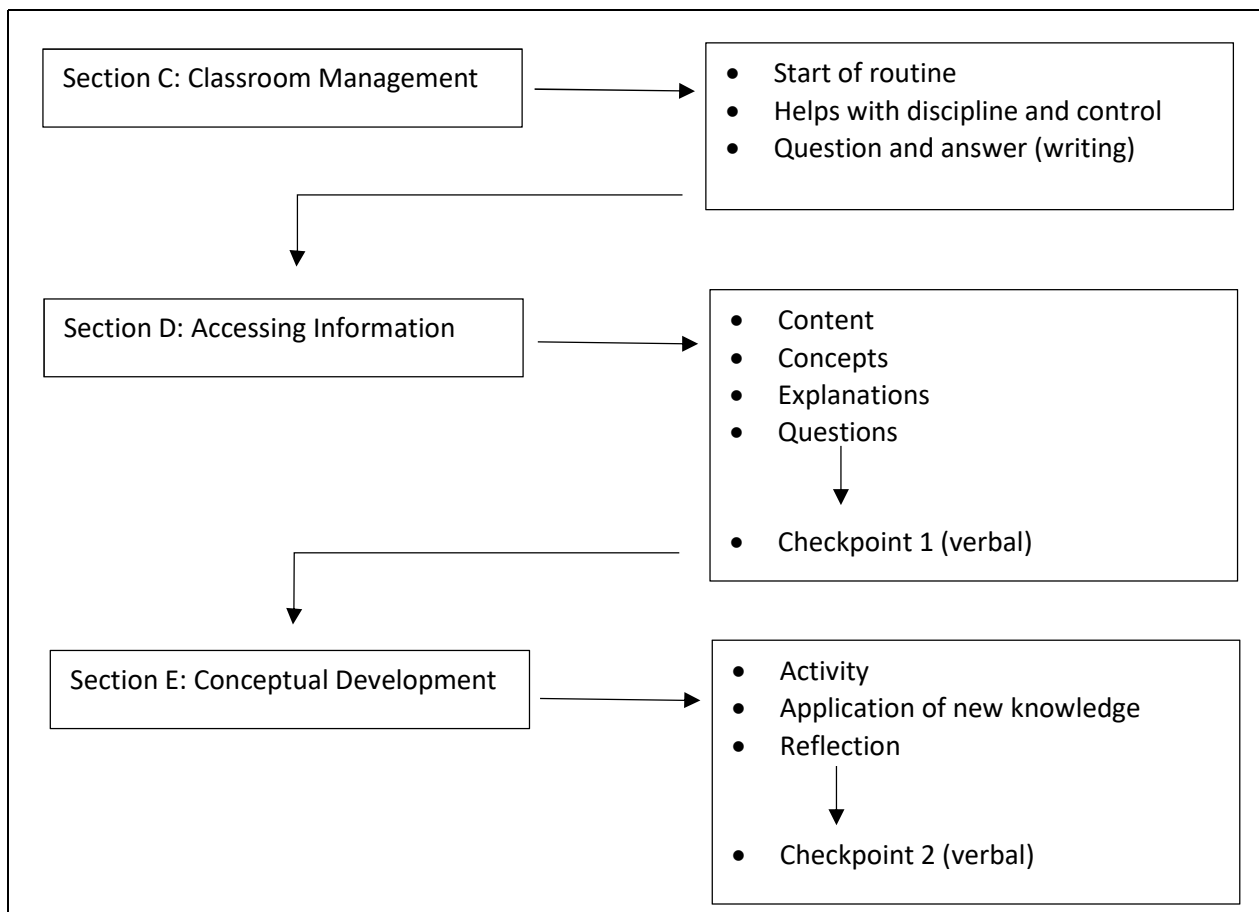
6. After you have been through the notes in Section 1 of the Training Handout, reinforce the following:

- For the **Tracker**, explain how:
  - The tracker is used to track progress on a weekly basis.
  - The dates can be filled in to track progress for each class.
  - There is a space to reflect on the teaching experience for the week.
- For the **Resource Pack**, explain that:
  - There is one resource pack for each grade for each term.
  - The resource pages have been designed to supplement the content in the lesson plans.

- The resource pages can be displayed for the class.
- The resource pages are numbered and these numbers are referred to in the lesson plans (e.g. Resource 3, may not necessarily be on page 3 of the resource pack. The number referred to is the number in the heading).
- Sometimes the resource pages are duplicated for the teacher to use in classwork activities.
- The resource pack should be put away for use in following years.
- For the **Poster**, tell the participants that:
  - There is one poster per grade per term
  - The poster should be displayed on the wall while the topic is being taught.
  - The teacher may choose to leave the poster displayed for the full year.

7. Use Section 2 in the Training Handout: Lesson Plan Routine, to reinforce the routine of the science lessons.

8. Draw the flow chart below onto the flipchart (or 2 joined together) to help with your explanation. Explain that that Section C, D and E are the parts of the lesson experienced by the learners.



9. Ask participants to work in pairs and to explain the routine to each other. (Tell them to close their handouts and conceal the flow diagram).

10. Ask one volunteer to explain the routine to the entire group. Encourage this person to draw their own flow diagram to show the process. Provide support where necessary.

11. Ask participants if they have any questions for clarity.

### **THE LESSON PLANS AND POLICY**

12. Tell participants that in some instances, the lessons plan time allocations will deviate slightly from CAPS. This is because the lesson plan development considered the practical need to revise and prepare learners for tests and exams.

13. Highlight that all content and skills have been included.

14. Tell participants to turn to Section 3 in the Training Handout: *The Lesson Plans and Policy*.

15. Ask the participants to have a look at the grade tables that show the strands and content for Term 1 and then Term 2.

16. Ask participants the following questions:

- a. What are the strands for Terms 1 and 2?
- b. What are the main content / skills areas to be covered in Natural Science in Terms 1 and 2?
- c. What are the main content / skills areas to be covered in Technology in Terms 1 and 2? (only for grades 4 – 6)
- d. Do you notice a progression in content / skills:
  - Within grades; and
  - across grades?
- e. Ask participants to explain some of these.

17. Now ask participants to open the lesson plan booklet for one of the grades. Ask them how many teaching weeks have been provided for in the lessons plans for Terms 1 and 2? Tell them to look at one grade as they are all the same.

18. Make it clear to participants that the learning programme is comprehensive – teachers do not have to teach anything in addition to this programme.

19. Highlight that if teachers are confident they can use other resources like their textbooks.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

1. Each teacher must be given a set of materials for each grade that he/she teaches.
2. Teachers must teach each lesson in the lesson plans, following the routine of:
  - a. Classroom Management
  - b. Accessing Information
  - c. Checkpoint Questions
  - d. Concept Development
  - e. Checkpoint Questions
  - f. Extension (if time allows)
3. Teachers will only be given the materials once, so these materials must be properly stored and looked after.
4. The materials belong to the school, and not to the teacher.
5. The strand for Term 1 is Life and Living and the strand for Term 2 is Matter and Materials .
6. CAPS content and time allocations have informed the development of this programme.

NOTES:

<b>6</b>	<b>1 hour</b>	<b>Content Development</b> <b>Explaining and Implementing the Scientific Method</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Posters</li> <li>• Tracker</li> <li>• Training Handout</li> <li>• videos</li> </ul>
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## **INTRODUCTION**

1. Explain that sometimes science content can be daunting or overwhelming – especially for teachers who were not initially trained to teach science.
2. Explain that it is very important for learners to have a practical knowledge of the scientific method because it is the foundation of all scientific discoveries in science classes. It is also the standard for how scientists conduct their research and resolve problems. Just as importantly, the scientific method enables learners to solve problems on their own and understand their surroundings better.
3. Let the participants have a short discussion with a partner or in a small group, to identify what they know about the scientific method and the steps in the scientific method.
4. Have a plenary session after the discussion to get feedback from the participants.
5. Write up on a flipchart or white/black board the steps that have been identified.
6. Then read an Internet article about teaching the scientific method . Refer the participants to Section 4 in the Training Handout: Explaining the scientific method.
7. Nominate some participants to read sections of the article.

## **ACTIVITY**

8. After reading the article, get the participants to work in groups.
9. Instruct them to use the scientific method to discuss how they would practically teach the topic: The process to purify water (Term 2: Grade 6); or the topic: Acids, bases and Ph (Term: Grade 9). They should use the worksheet: The Scientific Method in Section 4 of the Training Handout.
10. Allow a group for each topic to explain how they would do this.

## **CONCLUSION**

11. Ask participants to reflect on the importance of the scientific method.
12. Highlight that the Internet and YouTube are useful resources for teachers where they can access and learn how to use the scientific method in the classroom.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS: ( 2 minutes)**

1. The steps to follow in the scientific method are very important because they are the foundation of all scientific discoveries and science classes. The scientific method enables learners to solve problems on their own and understand their surroundings better.
2. The learners must be given practice in using the scientific method to solve problems or answer questions in everyday life.
3. Science lessons must include the scientific method wherever possible.

NOTES:



<b>7</b>	<b>1 hour</b>	<b>Conceptual Activity 1: Food Chains and Webs</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Training Handout</li> <li>• Science Practical kit</li> </ul>
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## INTRODUCTION

1. Explain that we are going to do a practical activity on food webs and food chains.
2. Give participants 5 minutes to read through the background information in Section 5 in the Training Handout: Food chains and food webs.
3. Call them to attention after this time.
4. Write these questions onto the flipchart:
  - What is a food chain?
  - What is a food web?
5. Write down the responses of the participants and agree a definition.
6. Now write the following question onto the flipchart: *Why do we need to teach learners about food chains and food webs?*
7. Write down the responses of the participants and facilitate a discussion.
8. Ask participants in what grades food webs and chains are covered in Term 1. (Let them refer to their lesson plans if necessary).

## ACTIVITY 1

9. Ask them to refer to the Training Handout Appendixes pack (Appendix 1 – Food chains and food webs).
10. Explain that there are numerous copies of the images. Explain that they will use one in this activity and the rest are for when they redeliver the training.
11. Tell participants to work in pairs and to complete the activity.
12. Instruct them to cut the images and paste them on an A4 paper to show a food chain or food web.
13. Move around the venue and encourage debate and assist where necessary. Ask them to explain:
  - Energy flow
  - What other animals could form part of this food chain or food web.

## ACTIVITY 2

14. Tell participants to refer to Section 5 in the Training Handout: Food chains and food webs.
15. Tell them to look at Food web 1 and Food web 2 and then answer the questions in the worksheet.
16. Move the around the venue and assist where necessary.
17. Hold a feedback discussion if time allows.

## **CONCLUSION**

18. Hold a plenary discussion and pose these questions to guide the discussion:

- What is the difference between a food chain and a food web?
- What are the different levels in a food chain?
- What kinds of environments do food chains and webs exist in?
- How can we adapt these activities to suit the environments of our schools?

## **SUMMARISE THE MAIN POINTS OF THIS ACTIVITY :**

1. Conceptual understanding is gained through good questioning.
2. Conceptual understanding is reinforced through 'doing' (practical work).
3. Specific concepts can be taught to enhance understanding across a variety of grades and topics.

NOTES:

8	1 hour	Conceptual Activity 2: Photosynthesis	Facilitator:	What you will need: • Training Handout • Science Practical kit
<p><b>INTRODUCTION</b></p> <ol style="list-style-type: none"> <li>1. Explain that we are going to do a practical activity on photosynthesis.</li> <li>2. Write this question onto the flipchart: What is photosynthesis?</li> <li>3. Write down the responses of the participants and agree a definition.</li> <li>4. Now write the following question onto the flipchart: Why do we need to teach learners about photosynthesis?</li> <li>5. Write down the responses of the participants and facilitate a discussion.</li> <li>6. Ask participants in what grades photosynthesis is covered in Term. (Let them refer to their lesson plans if necessary).</li> </ol> <p><b>PRACTICAL ACTIVITY</b></p> <ol style="list-style-type: none"> <li>7. Refer the participants to <u>Section 6 in the Training Handout: <i>Photosynthesis Practical Background</i></u>.</li> <li>8. Read through this information with the participants.</li> <li>9. Discuss photosynthesis with the participants.</li> <li>10. Hand out the practical resource packs.</li> <li>11. Now refer participants to <u>Section 6 in the Training Handout: <i>Photosynthesis Practical</i></u>.</li> <li>12. Tell participants to work in pairs and to complete the activity.</li> <li>13. Move around the venue and encourage debate and assist where necessary.</li> <li>14. Tell participants to document what is happening in the activity.</li> <li>15. Hold a plenary discussion and pose these questions to guide the discussion: <ul style="list-style-type: none"> <li>• What is the process of photosynthesis?</li> <li>• How does lime water show the presence of carbon dioxide?</li> <li>• Why is photosynthesis so important for animals and humans?</li> </ul> </li> </ol> <p><b>CONCLUSION</b></p> <ol style="list-style-type: none"> <li>16. Ask participants to suggest other activities in which they could use the resources provided.</li> <li>17. Facilitate a discussion on this.</li> <li>18. Thank participants for their great practical work and contributions.</li> </ol>				

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS:**

1. Conceptual understanding is gained through good questioning.
2. Conceptual understanding is reinforced through 'doing' (practical work).
3. Specific concepts can be taught to enhance understanding across a variety of grades and topics.

NOTES:

<b>9</b>	<b>1 hours</b>	<b>Conceptual Activity 2: The Periodic Table</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Training Handout</li> <li>• Science Practical kit</li> </ul>
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### INTRODUCTION

1. Explain that we are going to do a practical activity on the Periodic Table.
2. Write this question onto the flipchart: What is the Periodic Table?
3. Write down the responses of the participants and agree on the best responses.
4. Now write the following question onto the flipchart: Why do we need to teach learners about the Periodic Table?
5. Write down the responses of the participants and facilitate a discussion.
6. Ask participants in what grades the Periodic Table is covered in Term 2. (Let them refer to their lesson plans if necessary).

### PRACTICAL ACTIVITY

7. Refer the participants to Section 7 in the Training Handout: Periodic Table Background.
8. Discuss the periodic table with the participants.
9. Hand out the practical resource packs.
10. Now refer participants to Section 7 in the Training Handout: Periodic Table Practical.
11. Tell participants to work in pairs and to complete the activity.
12. Move around the venue and encourage debate and assist where necessary.
13. Tell participants to document what is happening in the activity.
14. Call participants back to attention.
15. Hold a plenary discussion and pose these questions to guide the discussion:
  - What are the parts of an atom?
  - What is the difference between an atom and an element?
  - How are the atoms arranged in the Periodic Table?
  - What do the symbols, words and numbers represent in each box on the table?

### CONCLUSION

16. Ask participants to suggest other activities in which they could use the resources provided.
17. Facilitate a discussion on this.
18. Thank participants for their great practical work and contributions.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

1. Conceptual understanding is gained through good questioning.
2. Conceptual understanding is reinforced through 'doing' (practical work).
3. Specific concepts can be taught to enhance understanding across a variety of grades and topics.

NOTES:

<b>10</b>	<b>1 hour</b>	<b>Reading for Meaning</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Posters</li> <li>• Tracker</li> <li>• Training Handout</li> </ul>
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### INTRODUCTION

1. Tell the participants that in this activity, they are going to think about why Reading for Meaning is so important and what strategies they can use to assist their learners to read with meaning in the content area of Natural Sciences and Technology; and Natural Sciences.
2. Ask the participants to write down a definition of “Reading for Meaning”.
3. Write up as many of the definitions as possible (without repetition) on flipchart paper.

### ACTIVITY 1

4. Ask participants to turn to Section 8 in the Training Handout: Reading for Meaning.
5. Compare the definitions of Reading for Meaning in the Handout with the definitions suggested by the participants.
6. Read through this section with the participants allocating different sections to different participants.
7. Hold a s discussion on the different sub-headings and how they apply to science.

### ACTIVITY 2

8. Get the participants to work in small groups
9. Ask participant’s to read the information titled; What dissolves? in Section 8 in the Training Handout.
10. Then instruct participants to complete the activity: Reading a Science Problem.
11. Explain to the participants that they must consider this activity from the learners’ point of view.
12. You do not have to answer the questions – you must identify which of the skills the learners will need.
  - Look at the reading skills and strategies in the handout.
  - Identify the reading skills and strategies that the learners will need in order to understand the activity and be able to answer each of the questions in the activity.

### CONCLUSION

13. Ask participants to share what they have learnt/ would like to highlight to teachers about reading for meaning.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

1. Learners need skills and strategies in order to read for meaning and comprehension.
2. Learners need to be given lots of opportunities to develop and apply these strategies in order to understand what they are reading.
3. It is the teacher's responsibility to help the learners develop the necessary reading skills.

NOTES:



11	1 hour	Questioning at Different Levels	Facilitator:	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Posters</li> <li>• Tracker</li> <li>• Training Handout</li> </ul>
<p><b>INTRODUCTION</b></p> <p>1. Tell the participants that in this activity, they are going to think about why asking the right questions is so important.</p> <p><b>REFLECTION</b></p> <p>2. Ask participant’s what types of questions they think they can use to assist their learners to better understand science content</p> <p>3. Write up as many of the responses as possible (without repetition) on flipchart paper.</p> <p>4. Ask participants to turn to <u>Section 9 in the Training Handout: <i>Questioning at Different Levels</i></u>.</p> <p>5. Ask participants to discuss low, middle and higher order questioning and the % weighting.</p> <p>6. Ask participants to explain the different cognitive levels of questions.</p> <p><b>ACTIVITY</b></p> <p>7. Get the participants to work in small groups.</p> <p>8. Tell them to choose a topic in NS (and Tech) Gr 4 to 9 and develop 1 question at each of the different cognitive levels.</p> <p>9. When the participants have completed their questions, do a feedback session where each group shares their questions.</p> <p>10. Discuss whether the questions are directly pegged at each level.</p> <p><b>CONCLUSION</b></p> <p>11. Ask participants to share what this exercise has taught them/ highlighted about the importance of questioning at different levels.</p>				

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

1. It is important that different levels of questions are included in all assessments and teaching and learning activities.
2. There are different levels of questions that demand different cognitive abilities.
3. Learners must be exposed to thinking at all the levels.

NOTES:

<b>12</b>	<b>1 hour</b>	<b>Lesson Demonstrations Briefing and Preparation</b>	<b>Facilitator:</b>	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Tracker</li> <li>• Flipchart Paper</li> <li>• Markers</li> <li>• Improvised resources</li> </ul>
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### **BRIEFING AND INSTRUCTIONS**

1. Tell participants that we are now going to really engage with:
  - a. The structure of the lesson plans
  - b. The routines and activities in the lesson plans
  - c. The content in the lesson plans
2. Explain to participants that in the next session they will be presenting demonstration lessons in groups. They have one hour to prepare.
3. Every participant must have his/her lesson plan and resource pack to help them prepare.
  - a. Participants should work alone or in pairs (depending on the size of the group).
  - b. If you put learners into pairs, create pairs that support the phase/ grade that the participant's support.
  - c. Each person/pair must select a lesson in any grade. The lesson should incorporate practical elements. Encourage participants to use the resource pack in different and creative ways.
4. Give each participant/ pair some flipchart papers and markers for their preparation.
5. Tell the participants that they will now prepare a lesson to present to the rest of the group.
6. Explain that they will have the rest of this session for preparation. They need to work quickly and efficiently.
7. Next, explain that groups will have 20 minutes for the actual presentation, which will be followed by a 5 to 10-minute plenary discussion.
8. Explain that when they present a lesson, they must act as the teacher and address the rest of the group as if they are the class. They must actually teach the lesson to the other participants.
9. Ask all other participants to please play the role of the 'class'.

### **PRESENTATION REQUIREMENTS**

10. Tell participants, that because of the time limitations, presentations must be well prepared, concise and to the point. There is no time for greetings or chat – presenters must get straight into the lesson.
11. The presentation will be stopped after the allocated time – use an alarm on your phone to keep time.
12. The presentations must include: (write this onto a flipchart):

- a. **Classroom Management** – one person in the group must write this on a flipchart, and must present this at the start of the lesson. (2 mins)
- b. **Accessing Information** – one person must write this on a flipchart, and must present and explain this information. (7 mins) *The 'class' does not have to copy the information down.*
- c. **Teaching Vocabulary** – one person must be prepared to teach ONE relevant vocabulary word using PATS. This can be done before or after Accessing Information. (4 mins)
- d. **Conceptual Development** – one person must write this on a flipchart, and must teach this section / explain this activity to the 'class'. (7 mins) *If time allows, ask the class to do the written part of this activity.*

13. Explain that in their presentations, participants need to note:

- a. When teaching the conceptual development, they should not provide learners with the answers. Learners should be encouraged to think about the answers. They should be challenged.
- b. It is fine for learners to get things wrong – it is important that they are not criticized for trying and that they are shown how to solve problems and come to an understanding.
- c. They should try to include practical work as it was done the practical demonstrations earlier. They can improvise with available resources at the venue.

14. Tell participants that the other participants will comment on their presentations using the tool in Section 10 in the Training Handout: Lesson Demonstrations and Feedback.

#### LESSON PREPARATION

15. While participants prepare their lessons, move around the venue and assist/ provide guidance wherever applicable or necessary.

16. Ensure that:

- participants are preparing sufficiently
- all participants are involved
- the board work is being neatly prepared
- the presentations look solid and meaningful
- that practical work is included

17. Where possible, remind participants that they need to present model lessons that demonstrates their:

- Concept and content understanding; and
- Understanding of routines embedded in the lesson plans.

18. Remind participants of how much time they have left to prepare.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

**(3 minutes)**

1. It is important to be thoroughly prepared before you teach a lesson.
2. Always write your chalkboard notes up on the chalkboard in advance.  
*(Or, suggest to teachers that they may want to write these as charts, especially if they teach more than one class.)*
3. Make sure that you understand the content and skills thoroughly before you teach the lesson.
4. Teach new vocabulary in a meaningful way, and use the vocabulary in context.
5. It is fine for learners not to get the answers right first time around. It is the teacher's job to stretch them and help them come to an understanding that makes sense to them.
6. It is important to be mindful of time, and to try and complete activities within the prescribed time.

NOTES:

13	2 hours	Lesson Demonstrations and Feedback	Facilitator:	<b>What you will need:</b> <ul style="list-style-type: none"> <li>• Lesson Plan Booklet</li> <li>• Resource Pack</li> <li>• Tracker</li> <li>• Flipchart Paper</li> <li>• Markers</li> <li>• Improvised resources</li> </ul>
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## INTRODUCTION

1. Welcome participants back.
2. Tell participants that you are really looking forward to their presentations:
3. Remind participants of these criteria explained in the briefing yesterday:

Because of the time limitations, presentations must be well prepared, concise and to the point. There is no time for greetings or chat – presenters must get straight into the lesson.

The presentation will be stopped after the allocated time – use an alarm on your phone to keep time.

The presentations must include:

- a. **Classroom Management** – one person in the group must write this on a flipchart, and must present this at the start of the lesson. (2 mins)
- b. **Accessing Information** – one person must write this on a flipchart, and must present and explain this information. (7 mins) *The 'class' does not have to copy the information down.*
- c. **Teaching Vocabulary** – one person must be prepared to teach ONE relevant vocabulary word using PATS. This can be done before or after Accessing Information. (4 mins)
- d. **Conceptual Development** – one person must write this on a flipchart, and must teach this section / explain this activity to the 'class'. (7 mins) *If time allows, ask the class to do the written part of this activity.*

## OBSERVATIONS

4. Tell participants to use the observation tool in the Section 10 of the Training Handout.
5. Explain that they should use the lesson reflection tool to help them evaluate and give feedback on the lesson demonstrations that they watch.
6. Explain that this tool has actually been designed for teachers to reflect on their own teaching. For this reason, they will not use the first section on preparation (\*). They should however, complete all of the other sections.
7. Read through the main headings in the tool with the participants so that they know what to look out for when they observe the lessons.

8. Remind participants that their presentations should take 20 minutes.
9. Stop the presentations after the allocated time. You must be strict with the time, otherwise not everybody will have a chance to present.
10. If a group does not manage to do very much within the time, speak to them about time management. Explain that they will not have much more time than this in class to do these presentations. Discuss how the group could speed up.
11. Ask the group to state the grade, topic and subtopic for the lesson that they will present.

#### **FEEDBACK**

12. After each lesson demonstration encourage conversation for critical and constructive feedback.
13. In addition to the evaluation tool, you should ask questions like:
  - a. Were the presenters well prepared?
  - b. Was the lesson easy to follow? Why/ why not?
  - c. Was the lesson plan followed closely? Why/ why not?
  - d. Would this be appropriate to Grade \_\_\_ learners?
  - e. Were the content and skills easily scaffolded? (Was there a structured transition between accessing information and conceptual development?)
  - f. Did the presenter ask encouraging and critical questions?
  - g. Was the time managed effectively?
  - h. What was good about the lesson?
  - i. How could the lesson be improved?

*Note: These questions are a guide. You cannot ask each group all questions – use the questions that are relevant. Remember to ALWAYS start the discussion / feedback session with a POSITIVE STATEMENT. You want teachers to leave these demonstrations feeling good about themselves, and confident that they can implement the programme.*

14. Hold a discussion on each presentation. Encourage all participants to take part in the feedback session.

**SUMMARISE THE MAIN POINTS OF THIS ACTIVITY FOR PARTICIPANTS AS FOLLOWS:**

**(2 minutes)**

1. Although the lesson preparation has been done for the teacher. They need to take time to prepare thoroughly for each lesson that they teach.
2. Good lessons are those that have been well prepared.
3. Lessons that are well prepared are of greater value and benefit to the learners.
4. It is important to do self-reflection on your teaching practice.
5. Constructive peer review is a powerful professional development activity.

NOTES:



<b>14</b>	<b>30 minutes</b>	<b>ORIENTATION TO THE TRAINER'S GUIDE</b>	<b>Facilitator:</b>	<b>What you will need:</b>
				<ul style="list-style-type: none"> <li>• Training Guide</li> <li>• Handout</li> </ul>

*Note: If you have any extra time, spend it on this activity, particularly points 4 and 6.*

### **INTRODUCTION**

1. Settle participants with all their materials.
2. Give each participant a copy of the **Trainers Guide** and **Training Handout**.
3. Explain to participants that the **Trainers Guide** and **Training Handout** contains all the activities for the Term 1&2 training.

### **PLANNING**

4. Planning the training session:
  - a. Tell participants to look carefully at the programme at the front of the trainer's guide.
  - b. Go through this programme and tell participants which activities to complete when training other trainers.
  - c. Go through this programme and discuss which activities to complete when training teachers. (This will depend on the numbers of hours for this training)

### **ORIENTATION**

5. Orientation to the guide and handout:
  - a. Go through each activity in the trainer's guide, and look at the corresponding resources or section in the training handout.
  - b. Work with participants to summarise the key steps and points of each activity.
  - c. After you have done this for each activity, revise the order of activities, and the main points for each activity. For example:
    - Start with the **Guidelines for facilitators and participants**.
    - You have 30 minutes for this.
    - You must: tell participants to think about when real learning takes place; get them to discuss this with a partner; write a list of key points; discuss what is the same and different between a classroom and an adult training event; create a list of guidelines for facilitators and participants; ask participants to follow guidelines, and commit to following facilitator guidelines.
6. The point of doing this is try and ensure that trainers clearly understand each activity, and internalise as much of the workshop as possible.

### **DRY RUNS**

7. If time allows, allocate different activities to volunteers, and ask them to present a 'dry-run' presentation of the activity. After each presentation, ask the other participants to give feedback based on the following:
  - a. Was the activity presented correctly?
  - b. Did the main points of the activity come across clearly?
  - c. Did the presenter give clear instructions?
  - d. Was the presenter audible?
  - e. Did the presenter interact effectively with participants?
  - f. Did the presenter manage time effectively?

### **CONCLUSION**

8. Finally, thank participants for their presentations, and hold a closing discussion:
  - a. Ask: Which activities are you worried about presenting or facilitating? Why?
  - b. Try to address any concerns that participants may have.
  - c. Wish participants well for their training.

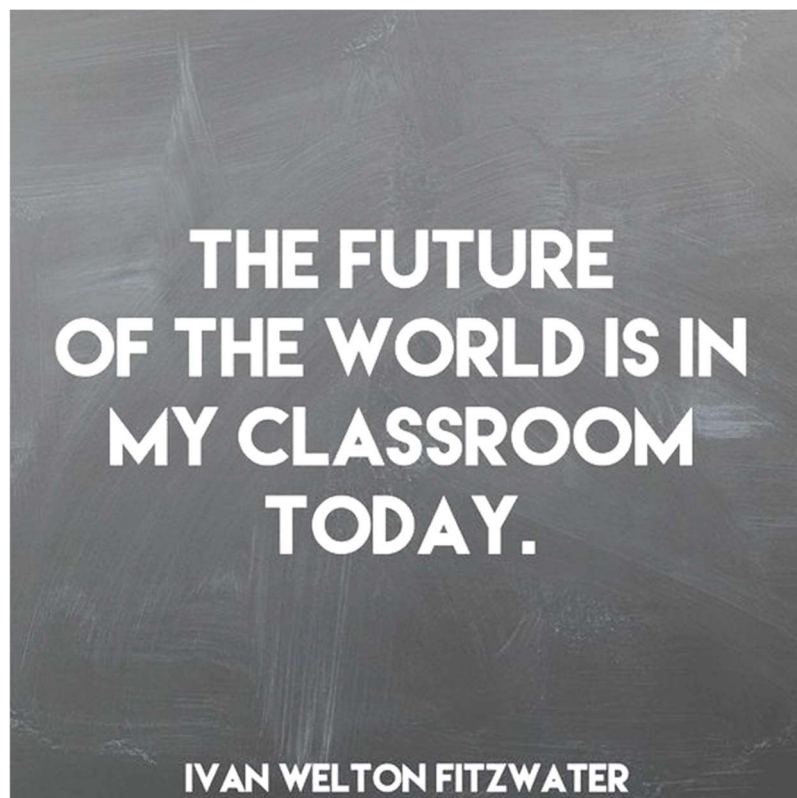
NOTES:

15	30 minutes	FINAL QUESTIONS AND ANSWERS	Facilitator:	What you will need:
				<ul style="list-style-type: none"> <li>n/a</li> </ul>
<ol style="list-style-type: none"> <li>1. Settle participants so that you have their attention.</li> <li>2. Remind participants that we want them to IMPLEMENT THIS TRAINING IN A MEANINGFUL WAY.</li> <li>3. Ask participants to think through all the materials, content, skills and information they have engaged with in this workshop. Give them time to look through materials as they do this.</li> <li>4. Next, ask participants if they have any final questions.</li> <li>5. Answer each question as clearly as possible. Where appropriate, involve participants in answering.</li> </ol>				

16	30 minutes	TRAINING OF TEACHERS: PLANNING SESSION	Facilitator:	What you will need:
				<ul style="list-style-type: none"> <li>Trainer's Guide</li> </ul>
<ol style="list-style-type: none"> <li>1. Explain that this is an opportunity for Coaches and Subject Advisors to work together to talk about the logistics of the teacher training sessions in their district.</li> <li>2. Allow participants to sit together in groups and discuss relevant issues.</li> <li>3. If all the logistics are sorted, then participants should talk about co-facilitation, and who will present which activities.</li> <li>4. They should also speak about resources in their district, like data-projectors and speakers.</li> </ol>				

17	30 minutes	POST TEST	Facilitator:	What you will need:
				<ul style="list-style-type: none"> <li>Copies of post test</li> </ul>
<ol style="list-style-type: none"> <li>1. Work together to hand out copies of the post-test to participants.</li> <li>2. Remind participants that the purpose of these tests is to measure the success of the training, not to measure the scores of individuals.</li> <li>3. Remind participants of the test conditions and available time.</li> <li>4. As participants complete the test, walk around and offer practical assistance if needed.</li> <li>5. Once time is up, help to collect and collate tests in an orderly fashion.</li> </ol>				

18	15 minutes	CLOSURE AND EVALUATION	Facilitator:	What you will need: Evaluation forms
<ol style="list-style-type: none"> <li>1. Settle participants so that you have their attention.</li> <li>2. Give participants an evaluation form, briefly take them through the form, and then ask them to please complete it thoughtfully and carefully.</li> <li>3. Collect the completed evaluation forms.</li> <li>4. Call participants to attention, and ask them to share some of the positives that they take away from this training. This can be absolutely anything: new content that they have learned or clarified; a new skill; a better understanding of the curriculum; new enthusiasm for their job; a closer working relationship with a colleague; etc.</li> <li>5. Document what participants say for your report.</li> <li>6. Thank the participants for their ongoing commitment to education, and to the development of South Africa.</li> <li>9. Wish participants well for their own training.</li> </ol>				



**Thank you for your ongoing dedication and  
commitment to this cause.**