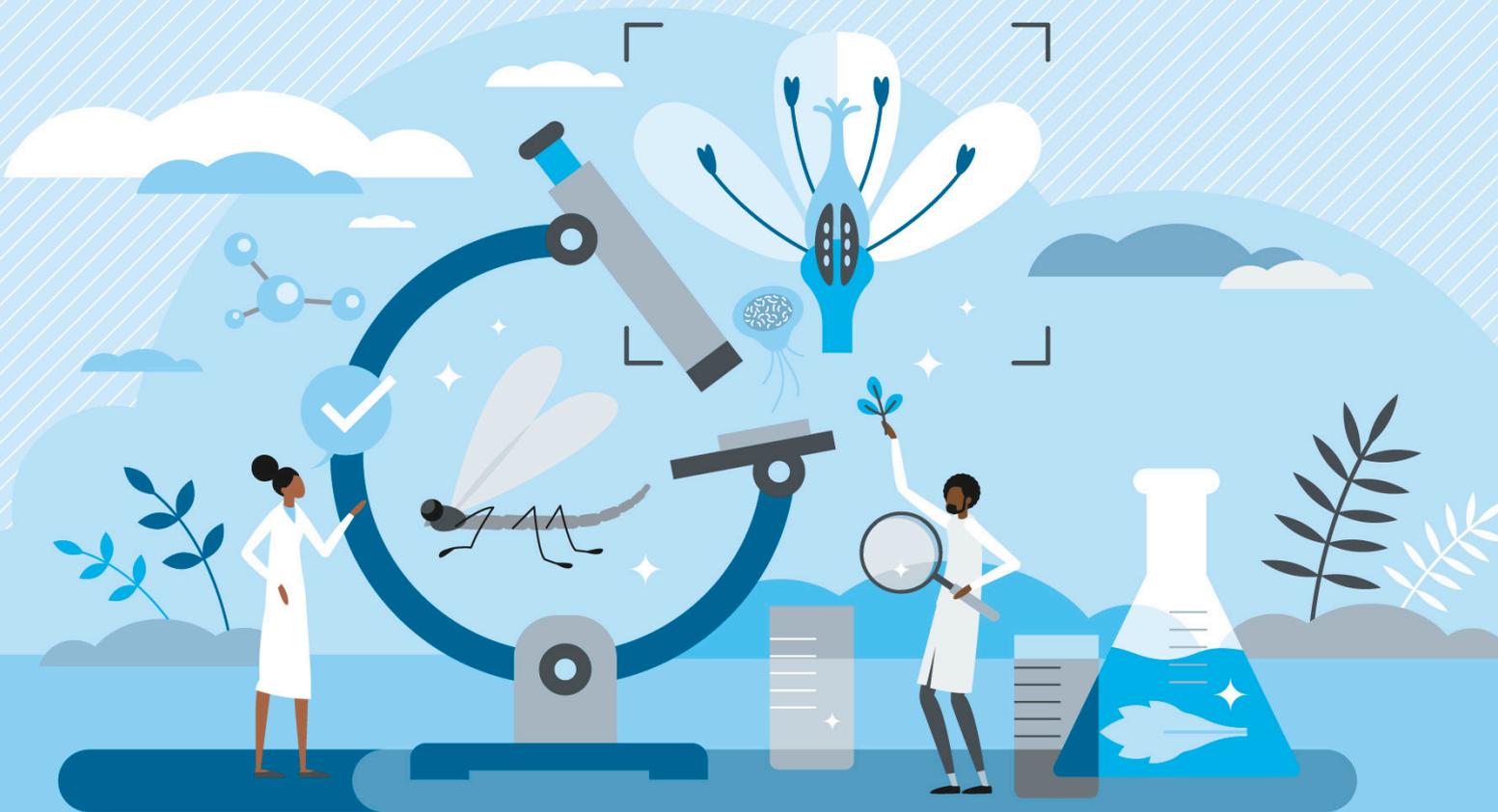


PARTICIPANT'S HANDOUT

2015 TERM 1 TRAINING WORKSHOP
NATURAL SCIENCES



GRADES 8-9

PILO
IMPROVING LEARNER PERFORMANCE



education

Department:

Education

PROVINCE OF KWAZULU-NATAL

Just-in-Time Training Workshop Term 1

Participants' Handout

Grades: 8 & 9

Subject: Natural Sciences

Endorsed by:



Jika iMfundo
what I do matters

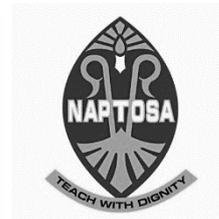


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1. Introduction

This manual is designed to assist HODs to track the work done by Grade 8 and 9 Natural Sciences educators during the first term. It does this by linking it to both the Grades 8 and 9 Natural Sciences trackers. Examples used in this manual will be taken from both Grade 8 and Grade 9 CAPS. What is important to note as an HOD is that whatever example used taken from Grade 8 is equally applicable for Grade 9, e.g. if an activity requires you to use the tracker to find the work which a Grade 8 teacher should be doing in week 3, the same process can be used to find the work that a Grade 9 educator should be doing in week 3.

The tracker provides details of what should be taught each day of the term for all Grades. You as an HOD is now in a position to monitor curriculum coverage as you will be aware as to what each educator in your department should be doing each week.

While this manual may assist Natural Sciences educators in terms of their classroom practice, its design focus is never meant for that. The focus of the manual is to assist HODs to track the work done by educators in their department through the following:

- a) Assisting the HODs to know if curriculum coverage is on track
- b) Providing HODs with a better understanding of what the definition of 'science' is, as this has a bearing on how teachers teach science in the classroom. With a better understanding of nature of science the HOD will be in a position to support and enhance the development of teachers in his/her department. Hence facilitating the improvement of the teaching of science which entails among other things distinguishing between the teaching of science content and the teaching of the process of science.
- c) Providing information on the number and nature of assessment tasks to be completed during the first term. By noting the date when each assessment is completed the HOD can see whether work done is on track or not. If the work is not on track, then the HOD should discuss strategies on how to catch up with the teacher.
- d) Use of the tracker by the teacher to reflect on his/her work on a weekly basis. An HOD could read these reflections to evaluate the teachers' work focussing on effectiveness and areas of weakness. Such reflections could be shared with colleagues during department meetings.

1.1 How do you track curriculum coverage?

- a) Schools use different approved CAPS aligned textbooks. By using the tracker with the textbook, the teacher should be able to cover the curriculum in the allocated time. The tracker provides the page numbers as per the teacher guide and learner book that the school uses. The teacher knows exactly where the content he/she is going to teach is, in terms of page numbers. Once completed the teacher can fill in the date on which the teaching of a section was completed.
- b) The tracker makes provision for reflection on a weekly basis, where the teacher is afforded an opportunity to reflect on experiences of the past week. The HOD will then check that the date completed column has been signed and the reflection part has completed. The HOD then signs the page and fill in the date on which the tracking was done.

- c) The tracker indicates within a series of lessons, where the CAPS assessment tasks are to be done. It is suggested that teachers in the science department discuss their assessment with colleagues teaching other subjects in order to avoid the learners having to write several tests on the same day.
- d) The tracker provides a resource requirement for each session. In addition suggestions for alternative equipment and resources have been made. The teacher should be in a position to plan resources needed in advance ensuring that they are readily available when needed.

Activity A

[10 minutes]

The teacher is preparing to teach about the test for starch and lipids (an example, grease). The teacher uses the tracker and the Grade 9 Top Class Natural Sciences book to enter the relevant page numbers in the table below, as per row 1.

- a) Use the tracker to fill in the page numbers the teacher would have filled in the table below if he/she were using **Step by Step Sciences**. The content is still the same which is the test for starch and lipids.
- b) Do the same exercise for the other activities from 3 to 5 using the grade 9 books provided in the table below.

No.	Name of text book	Grade 9 Top Class Natural Sciences					
		Week #	Teacher Guide, Page #	Learner Book, Page #	Learner Book, Activities	CAPS, Page #	Date completed
1	Conducting starch and grease (lipid) tests	9	34	80	Act. 5.1	62	
		Grade 9 Step by Step Sciences					
2	Conducting starch and grease (lipid) tests						
		Grade 9 Successful Natural Sciences					
3	Gaseous exchange in lungs						
		Grade 9 Pelican Natural Sciences					
4	Purpose of reproduction						
		Grade 9 Spot On Natural Sciences					
5	Conducting starch and grease (lipid) tests						

1.2 Planning

School Calendar: 2015

Week No.	Term 1	Term 2	Term 3	Term 4
1	19 (21) – 23 Jan	13 – 17 Apr	20 – 24 Jul	12 – 16 Oct
2	26 – 30 Jan	20 – 24 Apr	27 – 31 Jul	19 – 23 Oct
3	2 – 6 Feb	28 – 30 Apr	3 – 7 Aug	26 – 30 Oct
4	9 – 13 Feb	4 – 8 May	11 – 14 Aug	2 – 6 Nov
5	16 – 20 Feb	11– 10 May	17 – 21 Aug	9 – 13 Nov
6	23 – 27 Feb	18 – 22 May	24– 28 Aug	16 – 20 Nov
7	2 – 6 Mar	25 – 29 May	31 Aug – 4 Sep	23 – 27 Nov
8	9 – 13 Mar	1 – 5 Jun	7 – 11 Sept	30 Nov– 4Dec
9	16 – 20 Mar	8 – 12 Jun	14–18 Sept	7 – (11) 9Dec
10	3 – 27 Mar	17 – 19 Jun	21 – 23 Sept	
11	30 Mar –1Apr	22 – 26 Jun	29 Sep – 2 Oct	

1.3 School days: 2015

Term	Duration	Number of weeks	Number of days	Public holidays	Actual No of school days
1	(19)21 Jan–1Apr	11	53 (51)	0	(53) 51
2	13 Apr – 26 Jun	11	55	27 Apr - Freedom day 1 May – Worker’s day 15 Jun – School holiday 16 Jun – Youth Day	51
3	20 Jul – 2 Oct	11	55	10 Aug – Public Holiday 24 Sep – Heritage day 25 Sep – School Holiday	52
4	12 Oct – (11) 9 Dec	9	45 (43)	0	(45) 43
	Total	42	(208) 208	7	(201) 203

Activity B

[5 minutes]

Use the school calendar provided above, and the Grade 8 or Grade 9 tracker to answer the following questions:

- How many hours of teaching are available for teaching Natural Sciences in Term 1 in 2015?.....
- How many formal assessment tasks are prescribed for Term 1 in 2015?
- In which term is the project due for submission?
- Can learners start working on the project during term 2?

2. The nature of science

For teachers to do justice to their classroom practice, it is imperative that they have a good understanding of what 'science' is.

Activity C

[8 minutes]

- a) What is science and what is your understanding of the nature of science or the components of the nature of science. Write your answer in the space provided below.

- b) Discuss your responses with your neighbour identify similarities and or differences.

2.1 Nature of science knowledge

Your answers to the questions above are a reflection of what you think about the knowledge of science and how it is acquired. And so your thinking does influence how you teach science.

The Natural Sciences (CAPS document, page 8) gives the definition of science and gives advice that careful selection of content and use of a variety of approaches to teaching and learning science should promote understanding of:

- a) Science as a discipline that sustains enjoyment and curiosity about the world and natural phenomena
- b) the history of Science and the relationship between Natural Sciences and other subjects
- c) the different cultural contexts in which indigenous knowledge systems have developed
- d) the contribution of Science to social justice and societal development
- e) the need for using scientific responsibly in the interest of ourselves, of society and the environment
- f) the practical and ethical consequences of decisions based on Science.

It is important to note that the nature of science refers to a number of aspects not mentioned above: tentative nature of science, objective/ subjective perspective, the role of laws and theories, scientific methods, observations and inferences and empirical evidence. A teacher who is knowledgeable with regard to the nature of science should be able to address societal issues such as those listed above.

2.2 Laws, Models and Scientific Theories in Science

In the CAPS mention is made of theories that were used by our fore fathers with regard to cause and effect in relationship to events in the environment they lived in.

Activity D

[10 minutes]

Answer the question below in the space provided.

What is your understanding of the roles played by theories, laws and models in science?

a) The role of theory is

b) The role of a law in science is

c) The role of a model is



2.3 How learners view a Scientist and Science

We will explore learners' perceptions of science in this section. It becomes virtually impossible to influence learners to change negative perceptions when you don't have a background of what they think about science. Motivation is crucial but also essential in this case. Have you tried to find out what learners think about science? Consider the diagram A and B below and figure out what your grade 9's think about when asked what it is to be a science student, researcher etc.?

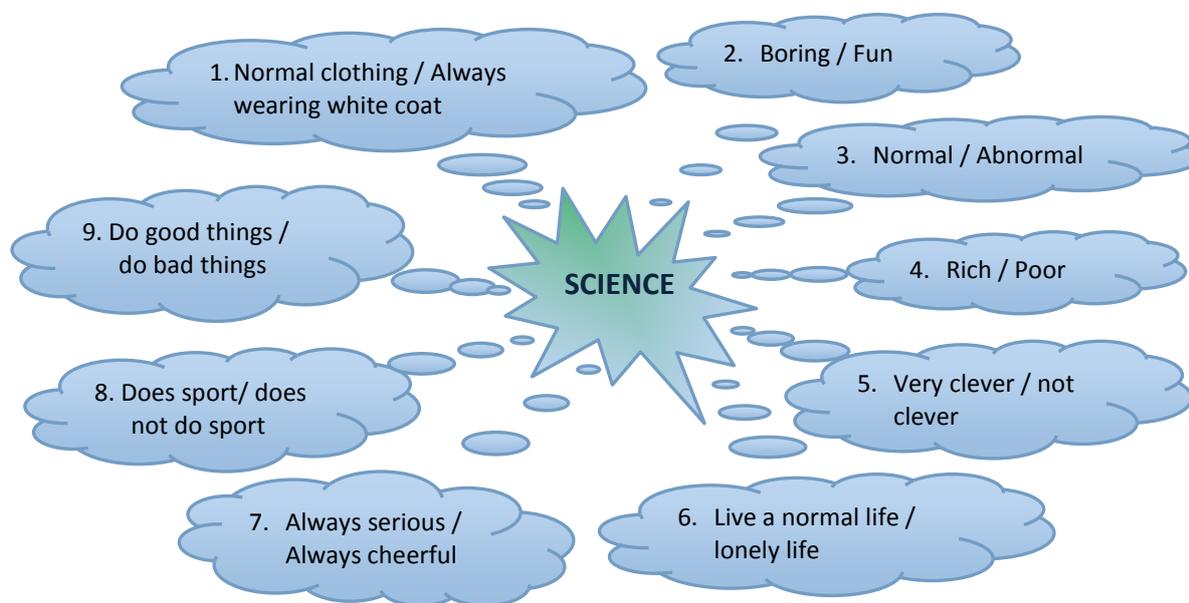


Diagram A

Activity E

[5 minutes]

Have you ever inquired from your learners about what they think a scientist is, how s/he lives, how it comes about that a person becomes a scientist etc. If yes, draw a summary of about 5 points of what these perceptions are. If no, look at the clues in diagram A above and speculate what you think your grade 9s think a scientist is. Refer to diagram A.

2.4 How do Science Teachers View the Task of Teaching Science

It is acceptable knowledge that there is a general perception among learners that science is a difficult subject. This makes teaching science a challenge for teachers. This perception among other actions should be explored with learners and discussed to change this perception. This will require a changed perception from the science teacher/HOD. This part of the workshop seeks to explore the teachers' view of science, the view of the task of teaching school science as well the task of assessing science activities.

Participants in the workshop will refer to the suggestions depicted in diagrams A & B as well as the Senior Phase CAPS.

2.5 The task of the HOD

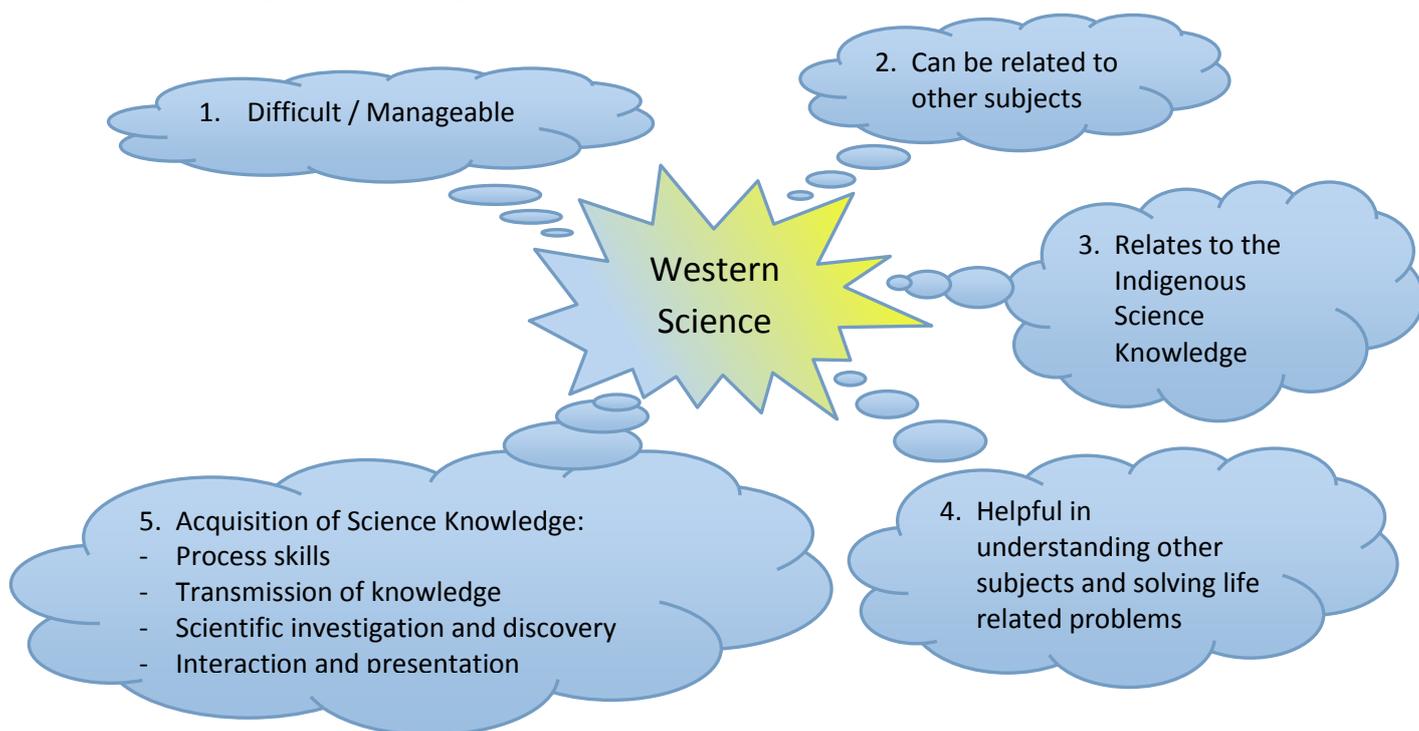


Diagram B

You have identified “potential science researchers” in your grade 9 class. You are challenged to think differently about the approach that you are using to teach science and motivate learners to learn science.

Activity F

[10 minutes]

What efforts could you put into developing a positive attitude towards teaching and learning science subjects? Refer to:

- a) Diagrams A and B.
- b) CAPS, pages 4-5.
- c) Specific Aims of Teaching Natural Sciences on page 10.

2.6. The science knowledge we teach in school

Activity G

[10 minutes]

Read the extract from CAPS below. Discuss with your neighbour the importance of the extract in the teaching of Natural Sciences, especially the words underlined. Write a summary of your discussion on the space provided.

Science is a systematic way of looking for explanations and connecting the ideas we have. In Science certain methods of inquiry and investigation are generally used. These methods lend themselves to replication and to scientific inquiry that attempts at objectivity. The methods include formulating hypotheses, and designing and carrying out experiments to test the hypotheses. Repeated investigations are undertaken, and the methods and results are carefully examined and debated before they are accepted as valid

The science knowledge we teach at school is not in doubt – most of it has been tested and known since the 1800s – but a good teacher will tell the learners something of the arguments and confusion among the people who were the first to investigate this knowledge such as: Why is climate changing around the world? What is making the universe expand? What causes the earth's magnetic field to change?

As with all knowledge, scientific knowledge changes over time as scientists acquire new information and people change their ways of viewing the world. See CAPS, page 8

3. The scientific process

This process is a way of investigating phenomena about the world. Scientists use this process to find out about the world and to solve problems (CAPS, page 11). The steps that make up the process, (CAPS, pages 11-12) not necessarily in sequential order, may include:

Step 1: Identify a problem and formulate a question of what you want to find out. This should be written in the form of a question.

Step 2: Formulate of a hypothesis. A hypothesis is an idea, answer (written in the form of a statement), or prediction about what will happen and why (if..., then statement).

Step 3: Design of an activity or experiment. Something has to be done to test the hypothesis or the prediction to see if it is acceptable or not.

Things you will need

- a) Calcium hydroxide (also called slaked lime or pickling lime)
- b) Clean glass jar
- c) Water
- d) Test tube
- e) Rubber syringe
- f) Test tube stopper
- g) Short plastic tube

Testing procedure

- a) Add 1 teaspoon of calcium hydroxide to the clean glass jar, then fill the jar with water. Screw the lid on tight and shake the jar to dissolve the calcium hydroxide in the water, then allow it to stand for several hours. The solution should be clear and transparent.
- b) Pour some of the solution from the glass jar into the test tube until it's about one-fourth full. Insert one end of the plastic tube into the test tube.
- c) Pump the sample of gas you want to test into the plastic tube using the rubber syringe so that it bubbles through the solution. Cap the test tube with the stopper and shake it carefully.
- d) Observe the test tube. If carbon dioxide is present in the sample, it will have reacted with the calcium hydroxide to form calcium carbonate, which is insoluble in water; the water will turn a cloudy color. If no carbon dioxide was present the water will remain transparent as before.

Warning

- Calcium hydroxide is an eye, skin and respiratory tract irritant. If ingested it can potentially cause vomiting, diarrhea and collapse. Calcium hydroxide poisoning can potentially be fatal. Do not eat calcium hydroxide; do not drink solutions containing calcium hydroxide; do not bring it into contact with your eyes or skin.
- Calcium hydroxide is a strong base that can react vigorously with acids; it should always be kept separate from them

Activity J

[5 minutes]

- a) What is the need for the information provided in the background information about carbon dioxide in the box above the things you need to conduct the investigation?

- b) What is the aim of the investigation?

c) What is observed in this investigation when the gas is bubbled through lime water?

d) What causes the observation referred to above?

3.3 Testing for starch

Introduction to iodine test for starch

Starch: Plants store glucose as the polysaccharide starch. The cereal grains (wheat, rice, corn and oat) as well as potatoes are rich in starch.

Iodine test for starch is used to test for the presence of starch in the given food material. When iodine solution is mixed with starch it turns from brown to dark blue. As this happens with very small amounts of starch, iodine test is a sensitive one. Iodine solution penetrates into the starch most easily when the cell walls have been destroyed and it reacts most readily when the starch grains are swollen.

The iodine test for starch requires the following:

- Test tubes
- Test tube rack
- Glass rod
- Spatula
- Mechanical grinder or pestle and mortar
- Dropping pipette
- White tile
- Eye protection glass

Requirements for Iodine Test for Starch

- Food samples, fresh and cooked
- Iodine solution
- Distilled water

Procedure for Iodine Test for Starch

1. If the food to be tested is liquid, go to 2. If the food to be tested is solid, make an extract. Grind crush or chop a small amount and put into a test tube to a depth of about 2cm. Add a similar amount of distilled water and stir with a glass rod. Allow to stand for a few minutes.
2. Draw up some of the clear liquid into a pipette and then either transfer it into another test tube or put drops onto a white tile.
3. Add on the clear liquid a drop of (brown) iodine solution on the tile and look for a colour change.

The iodine test for starch has following steps;

Observation: A blue-black colour indicates the presence of starch.

Precautions: While performing the iodine test for starch we need to follow following precautions;

- Iodine solution must be handled with care.
- Wear eye protection glass.
- Do not consume any food in the laboratory because it may contaminate the food

Activity K

[3 minutes]

a) What is the aim of the investigation?

b) What is observed when drops of iodine are added to the clear liquid?

c) What causes the observation in (b) above?

Activity L

[4 minutes]

Answer the following question in the space provided:

- a) What are the similarities and or / differences among the four activities above?

- b) Would you consider test for starch a scientific investigation? Justify your response.

3.4 Assessment of an investigation

When assessing an investigation, the steps involved in conducting an investigation that need to be considered are:

- a) the formulation of an hypotheses,
- b) the design of the investigation which involves the identification of variables (dependant, independent and controlled), the choice of resources to be used to conduct the investigation and the method to be used to conduct the investigation.
- c) the actual gathering and processing of data and the presentation format used to present the data .
- d) the interpretation of data and drawing of a conclusion.

Activity N**[10 minutes]**

Use the CAPS document and the teacher guide and learner books to fill in the page numbers where each concept and content is. The number of weeks allocated to each activity has been provided.

Grade	Term 1 Life and Living	Weeks	Pages TG	Pages LB	Pages CAPS
8	Photosynthesis and respiration -- Photosynthesis -- Respiration	2	3	1-2	35
	• Interactions and interdependence within the environment -- Introduction to ecology -- Ecosystems -- Feeding relationships -- Energy flow: Food chains and food webs -- Balance in an ecosystem -- Adaptations -- Conservation of the Ecosystem	5			
	• Micro-organisms -- Types of micro-organisms -- Harmful micro-organisms -- Useful micro-organisms	2			
		9 weeks			
9	Cells as the basic units of life -- Cell structure -- Differences between plant and animal cells -- Cells in tissues, organs and systems	2			
	• Systems in the human body -Body systems	2			
	• Human reproduction - Purpose and puberty - Reproductive organs - Stages of reproduction	2			
	• Circulatory and respiratory systems - Breathing, gaseous exchange, circulation and respiration	$1\frac{1}{2}$			
	• Digestive system - Healthy diet - The alimentary canal and digestion	$1\frac{1}{2}$			
		9 weeks			

Teachers have the freedom to expand concepts and to design and organise learning experiences according to their own local circumstances.

Examples of indigenous knowledge that teachers select for the study should, as far as possible, reflect different South African cultural groupings. This should also link directly to specific content in the Natural Sciences curriculum.

Notes: * These totals include the **6 hours** per term for school-based assessment but exclude the **2 weeks** set aside for the mid-year and the end of year examinations

General: Time spent on each topic should serve as a guideline for weighting of marks in Tests and Exams. The purpose of using times as guidelines is to ensure that all topics are assessed.

4. The Scope in which Natural Sciences is taught

Activity O

[5 minutes]

The Senior Phase Natural Sciences content is subdivided into four knowledge **strands**, according to the four terms of the year. Work in pairs to do each of the following activities below. Write your answers in the table supplied.

- 4.1 Refer to Section B of the tracker document or Section 2. 4 of the CAPS document to identify those four knowledge strands.
- 4.2 Each of the four knowledge strands mentioned in (a) lays a foundation for specific science discipline(s) of the FET Phase. Refer to Section 2.3 of the CAPS document and Section B of the tracker document to match each of the four strands to those FET Science disciplines.

Term	Strands	FET Science discipline
1		
2		
3		
4		

5. Assessment

“Assessment is a continuous and planned process of identifying, gathering, interpreting and diagnosing information about the performance of learners. All forms of assessment involve generating and collecting evidence of achievement, evaluating this evidence and using this information to understand and thereby assist the learners’ development and the teaching process” (CAPS, p. 85). Assessment is therefore mainly classroom based and continuous in nature. The leading person in the execution of this imperative aspect of teaching is the HOD of the phase/subject grouping.

Activity P**[5 minutes]**

What are the aims of assessing, recording and analysing science knowledge (Refer to CAPS, page 85)

Activity Q**[5 minutes]**

List the cognitive levels of assessing Natural Sciences at Senior Phase and indicate the percentage proportions of each cognitive level (refer to CAPS, p. 87). For each cognitive level supply at least four characteristic verbs that can be used when setting questions.

Cognitive Levels	Proposed percentage allocation of marks per task	Guideline instructions (verbs) for setting such tasks				
1.		<table border="1"> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> </table>				
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4.		<table border="1"> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> </table>				

Activity R

[5 minutes]

You are supplied with Grade 8 and 9 Term 1 sample tests (Refer to Appendices 2 and 3 of this training manual). Moderate each of the tests, per question, according to the cognitive levels of assessment as prescribed in the CAPS document on page 87. Work in groups to moderate either a grade 8 or grade 9 test. After that each group should report on their findings.

6. The role of HOD

The HOD deemed to be competent in the subject should perform the following duties:

- 6.1 Verifies and quality assures all the tasks to ensure that the level of questioning is appropriate.
- 6.2 Ensures that:
 - a) assessment tasks are within the scope of critical knowledge and skills being assessed,
 - b) assessment tasks are free from bias.
 - c) a marking guideline is compiled that will help teachers to arrive at valid and reliable assessment decisions of learners' performance.
 - d) consistency regarding standards in the internal moderation processes within the school.
- 6.3 Provides feedback to the teachers on the moderation findings with a view to improving the quality of the assessment tasks.
- 6.4 Successfully manages appeals related to assessment decisions.

7. The Subject Teacher

The subject teacher should perform the following duties:

- 7.1 Develop a formal programme of assessment which will then be consolidated into a formal school assessment plan for his/her subject/s.
- 7.2 A sample of marked learner evidence of performance together with the teacher record of assessment (file) must be presented for moderation both at school and the district upon request during district moderation at the school or at a pre-communicated venue.

8. Daily lesson planning and preparation

Activity S

[10 minutes]

Lesson planning and preparation requires thorough knowledge and understanding of the subject content. Use the grade 8 or 9 tracker to answer the following questions individually.

- 8.1 Which section of the tracker deals with lesson planning and preparation?
-

8.2 How many topics are covered in the section mentioned in (a) above?

8.3 Briefly explain what the meaning of each of the following terms:

a) Content knowledge

b) Pedagogical knowledge

c) Pedagogical content knowledge (PCK)

8.4 What does Pedagogical content knowledge (PCK) entail in Natural Sciences?

8.5 How does it link to lesson planning in Natural Sciences?

It is important to note that your responses to the above reflect your knowledge of the particular demands teaching and learning demands of a particular Natural Sciences topic. They are an indication of your knowledge about strategies or approaches that should be employed in teaching that could bring about the best learning experience for every learner.

In the Natural Sciences (CAPS, page 10) a discussion of a range of process skills that learners will develop if appropriate strategies or approaches are employed during teaching and learning of Natural Sciences is presented.

Activity T

[10 minutes]

Refer to the CAPS document page 10 to answer the questions below. Work in groups.

You ask your learners to do an investigation to find out that leaves produce starch. They soak the leaf in boiling water, extract chlorophyll using ethanol or methylated spirits and then add a few drops of iodine solution.

a) What specific aims are you addressing?

b) Which process skills do you want learners to develop?

c) What language skills will they acquire as they do the investigation?

d) What resources would they need in order to be able to conduct the investigation?

9. Teaching strategies

Section 2.3 on page 8 of the CAPS document discusses the importance of using a variety of approaches to teach the Natural Sciences content. Developing and using a **concept map** is a type of a **teaching strategy** used to help students organise and represent knowledge of a subject. The key steps to be followed to generate a concept map are presented below.

a) Start with a main idea, topic, or issue to focus on.

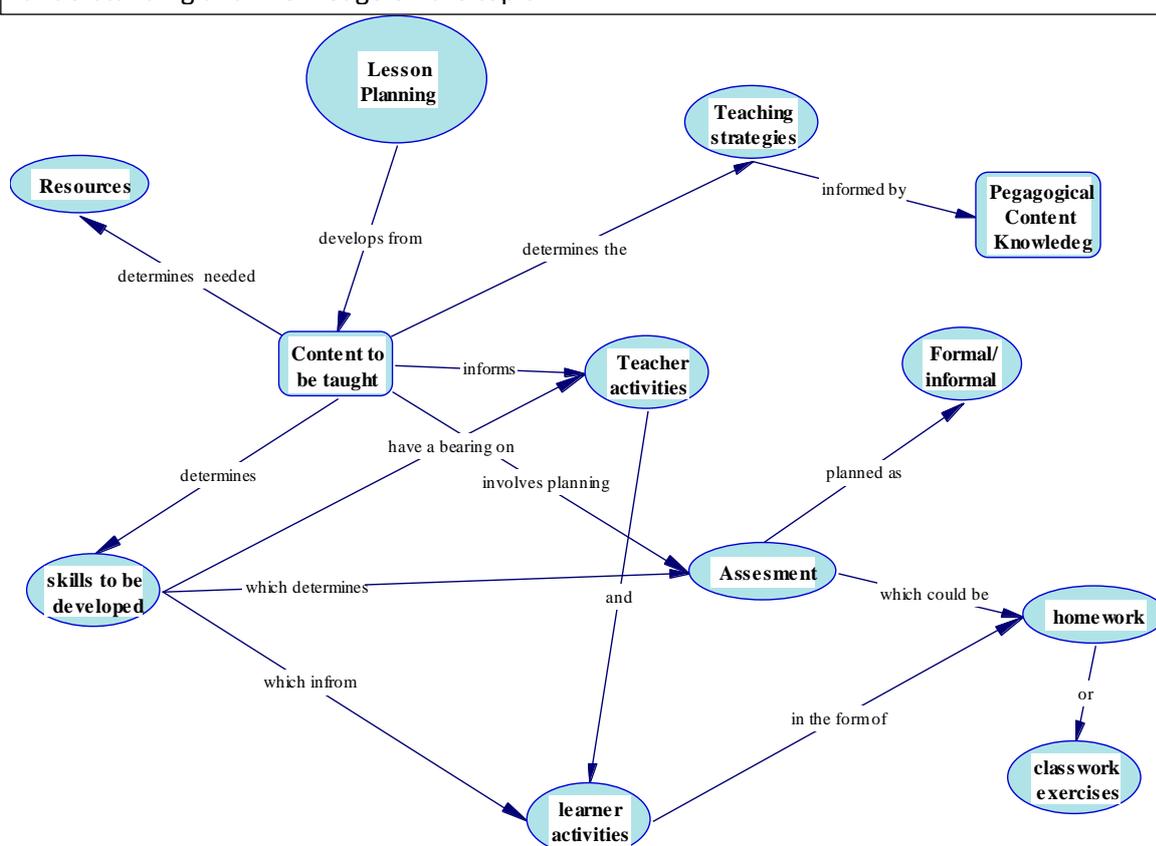
A helpful way to determine the context of your concept map is to choose a focus question—something that needs to be solved or a conclusion that needs to be reached. Once a topic or question is decided on, that will help with the hierarchical structure of the concept map.

b) Then determine the key concepts

Find the key concepts that connect and relate to your main idea and rank them; most general, inclusive concepts come first, then link to smaller, more specific concepts.

c) Finish by connecting concepts--creating linking phrases and words

Once the basic links between the concepts are created, add cross-links, which connect concepts in different areas of the map, to further illustrate the relationships and strengthen student's understanding and knowledge on the topic.



Activity U

[10 minutes]

Refer to the above notes on concept maps to develop a concept map on Micro-organisms. For more information on Micro-organisms (refer to Grade 8 CAPS document, p. 14, 39, and Grade 8 tracker, pp. 91–93). Use the space provided below to write your own map.



10. Other teaching strategies

The word method originates from a Latin word which means mode or way. In the teaching of science, method refers to the way of delivering knowledge and transmitting scientific skills by a teacher to his learners and their comprehension and application of these in the process of studying and learning science. Teaching and learning is a complex process involving teachers, learners, instructional and illustrative material and a congenial learning atmosphere within the classroom.

Knowledge of different methods of teaching helps a teacher to manipulate these factors suitably so that there is maximum benefit for the learners. Hence it is essential that every teacher should have knowledge of different methods of teaching.

Activity V

[10 minutes]

- a) In your groups list at least 4 other teaching methods that can be used in the teaching of Natural Sciences topics/concepts.

- b) Subsection 3 on page 9-10 of the tracker discusses baseline assessment and remediation of misconceptions. Which section of the tracker lists additional activities that can be done to address some of the misconceptions that learners may have?

- c) How do the suggested activities in the section mentioned in (b) above link to CAPS?

- d) Look at the main topics of the section mentioned in (b) above. How do they link with CAPS?

Appendix 1

Assessment rubric of an investigation

Assessment Criteria	Rating			
	0	1	2	3
Hypothesis	Limited	Incomplete Unacceptable	Practical	Testable Acceptable
Variables identified	No evidence of understanding	Shows limited understanding dependent and independent variables	Shows some understanding of the relationship between variables	Clearly distinguishes the relationship between variables
Method	Inadequate Missing steps	Incomplete steps	Most steps are complete and acceptable	Logical Acceptable.
Results (in tables, graphs etc.)	Data has not been recorded or displayed in an organised way.	Incomplete set of results are presented Results provided but not in an organised form	Data is recorded and displayed but may lack some organization. Adequate results provided in an organised form but not complete	Data is accurately recorded and displayed using the most relevant and organized methods.
Conclusion	The conclusions are somewhat inadequate or inconsistent with the analysis of results.	The conclusions are somewhat inadequate or inconsistent with the analysis of results	The conclusions are consistent with the analysis of results	The conclusions are consistent with the analysis of results.
<p>Marks obtained:</p> <p>Total: 17 marks</p>				

Note: Numbers in **bold** indicate the total marks for each question.

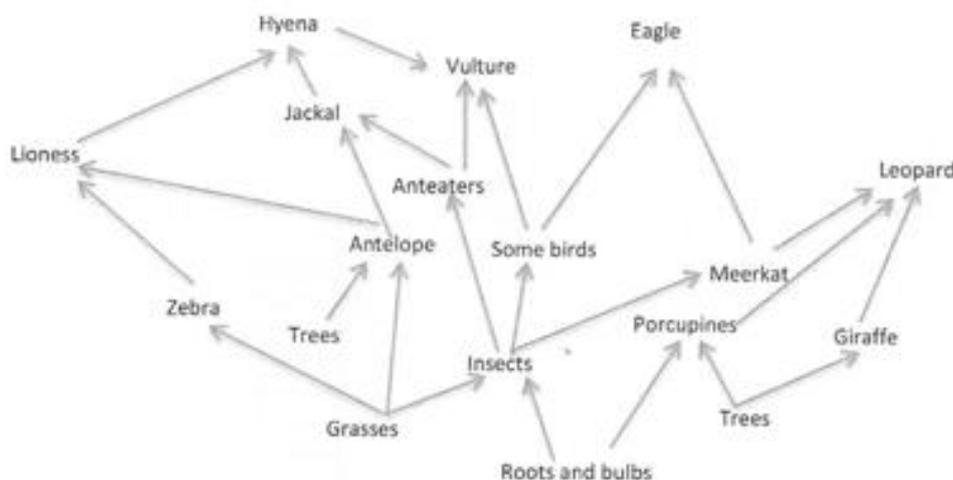
Question 1

This question refers to *photosynthesis* and *respiration*. Copy the table below. In Column Two, write one word as follows: write *photosynthesis* if the statement applies to photosynthesis; write *respiration* if the statement applies to respiration; write *both* if the statement applies to photosynthesis and respiration; write *neither* if the statement applies to neither photosynthesis nor respiration. The first one has been completed as an example. **(4)**

Column One	Column Two
Requires chlorophyll	Photosynthesis
Releases energy	
Requires carbon dioxide	
Occurs all the time	
Occurs only in animals	
Requires light energy	
Releases water vapour	
Does not occur in mushrooms	
Releases oxygen	

Question 2

This question refers to aspects of the ecosystem.



The figure above represents a food web in southern Africa. Study the food web and answer the questions that follow.

- 2.1. List four organisms which occupy the second trophic level. **(2)**
 - 2.2. Imagine that for some reason, all the secondary consumers were removed from the ecosystem. Write a short paragraph explaining **all** the consequences of such a removal. **(5)**
 - 2.3. What should the people of South Africa do to maintain the balance in our grasslands? **(5)**
- (12)**

Question 3

This question refers to *microorganisms*

3.1. Write the letters A to D, one below the other on your answer page. Beside each number write *Bacteria*, *Protists*, *Fungi* or *Viruses* to show what type of microorganism is involved in each of the following statements:

A Used for making bread;

B Are not considered alive;

C One of these causes malaria;

D One of these causes tuberculosis (TB). (4)

3.2. Your friend from another school has written you a letter in which she states that she is afraid of bacteria because they all cause terrible diseases.

Write her a short note explaining that her statement is not correct, and give examples of bacteria which are not harmful and can be quite useful. (5)

(9)

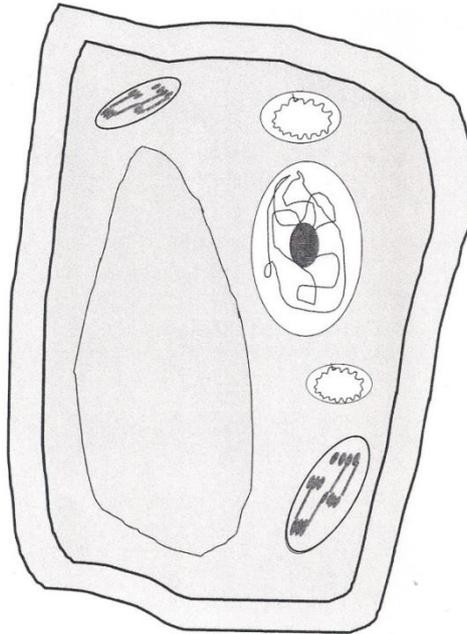
Total marks: 25

Note: Numbers in **bold** indicate the total marks for each question.

Question 1

This question refers to the *cell structure*.

- 1.1 On the drawing of a cell below, **label** each of the following structures with the number in brackets and their correct names:



- a) The structure that absorbs light energy;
 b) The structure that controls the cell's function;
 c) The structure that stores water;
 d) The structure that provides support;
 e) The structure that is involved in respiration;
 f) And (g) label any two additional structures not mentioned above. (7)
- 1.2 Is the drawing a plant cell or animal cell? (1)
- 1.3 Give two reasons for your answer to question 1.2 above. (2)
- [10]**

Question 2

This question refers to the *systems of the body*.

Write the letters A to J below the other in your answer book.

Then **write down** the systems to which each of the following organs belongs, next to the correct letter. (1 mark each)

- A. kidney
- B. brain
- C. skull
- D. vein
- E. lung
- F. tendon
- G. stomach
- H. eye
- I. placenta
- J. urethra

[10]

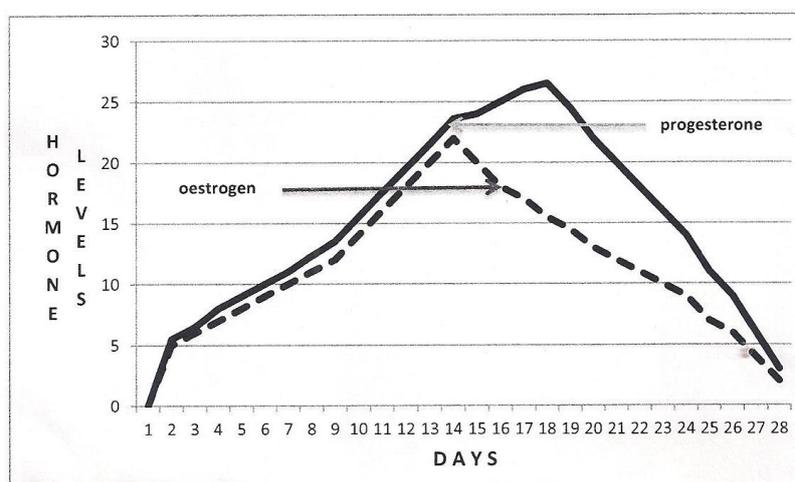
Question 3

This question refers to the *reproductive system*.

3.1 Imagine that you are a health worker and that a pregnant woman who lives far away has written to you. In her letter, she asks you for advice on matters concerning her own health and that of her unborn child. **Write** a reply back to her giving her your best advice. The following words (and others) should be included in your letter:

eating plan, alcohol, smoking, exercise, drugs, fresh air (6)

3.2 Study the figure below.



Use your knowledge and understanding to answer the following questions:

- Provide a heading for the figure; (1)
- On which day is the hormone oestrogen at its highest? (1)
- On which day is the hormone progesterone at its lowest? (1)
- On which day does ovulation occur? (1)
- What happens in the female body during ovulation? (1)
- What do you think is the function of progesterone? (2)
- What do you think will happen if the production of oestrogen stopped? (2)

[Total marks: 35]

Terminology		Explanation
10.1.	Assessment	The gathering of evidence to make a judgment or describe the status of learning of an individual or group. Assessment should be linked to learning and teaching and not be viewed or conducted in isolation. The main aim of assessment is not only to judge the outcome of learning, but also to provide a supportive and positive mechanism that helps learners to improve their learning, and teachers to improve their teaching.
10.2.	Assessment Task	This is an assessment activity that is designed to assess a range of skills and competencies.
10.3.	Bias	Prejudice in favour of or against one thing, person, culture, gender, race or group compared with another, usually in a way considered to be unfair/unfavourable.
10.4.	Evidence of learner	Means the learner's work that is used to compile his or her internal assessment mark.
10.5.	Fairness	An assessment should allow for learners of both genders and all backgrounds to do equally well. All learners should have equal opportunity to demonstrate the skills and knowledge being assessed. The fairness of the assessment is jeopardized if bias exists either in the task or in the individual doing the rating. For a task to be fair, its content, context, and performance expectations should: reflect knowledge, values, and experiences that are equally familiar and appropriate to all learners; tap knowledge and skills that all learners have had adequate time to acquire; be as free as possible of cultural, ethnic, and gender stereotypes. The assessment conducted should not disadvantage any learner on the grounds of race, gender, age or social background.
10.6.	Irregularities committee	Means the body established by the school/district to deal with all irregularities identified during the examination and formal assessment.
10.7.	Moderation	The process of verifying results of School Based Assessment and the external assessment.
10.8.	Reliability	An indication of the consistency of scores across evaluators or over time. How consistently a measurement of a skill or knowledge yields similar results under varying conditions. That is the extent to which measurements are consistent, therefore it refers to whether the assessment was consistent or not.
10.9.	School Based Assessment	Any assessment task, instrument or programme where the design, development, administration, marking, recording and reporting has been initiated, directed, planned, organized, controlled and managed by an educational body, i.e. school, district, provincial department.
10.10	Teacher file	Means the recording and planning documents used by the teacher, namely the formal programme of assessment, evidence of learner assessment/ performance, all formal assessment tasks and marking guidelines, annual teaching plan/work schedule, textbook used and other resources.
10.11	Transparency	Learners must be informed of the nature of the tasks and the criteria used to assess.
10.12	Validity	An indication of how well an assessment actually measures what it is supposed to measure. The accuracy of the measurement that is whether or not it measures what it is supposed to measure. Particularly relevant is content validity, which pertains to the extent to which the content of the test matches the instructional objectives.
10.13	Verification	Confirmation of truth or authority together with the evidence for such a confirmation. A formal assertion of validity.