



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**National
Curriculum Statement
Assessment Guidelines**

for

**General Education and Training
(Intermediate and Senior Phases)**

Technology

PREAMBLE

The Assessment Guidelines are part of a developmental process that is aimed at increasing the capacity of the education system, teachers, school management teams and departmental officials to enhance the effective implementation of the *National Curriculum Statements and the National Policy on Assessment and Qualifications for Schools in the General Education and Training Band* by developing an authentic assessment system that is congruent with outcomes based education in general and the NCS in particular.

We expect a critical engagement with these documents, as they do not reflect a "zero defect" nor a "one answer" solution and we encourage all who use these documents to alert the Department of Education to any inconsistencies, highly impractical suggestions or any other elements that may detract from the goal of establishing an effective assessment system. We also appeal to you to offer alternative solutions, ideas and suggestions you may have for dealing with issues you may have raised in your input. In particular, examples of good assessment tasks that enhance classroom teaching and learning will be valued.

We encourage you to be as rigorous and as vigorous as you can and have complete faith in your professionalism to expect that your responses, however critical, would be framed in a constructive manner that is geared towards arriving at a shared solution and is not a simplistic listing of problems and concerns.

We look forward to an exciting, growth promoting and stimulating engagement with you all.

Please address any responses you may have to:

Mr R. Kuhles

Department of Education

Private Bag X895

Pretoria

0001

email: Kuhles.R@doe.gov.za

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1. INTRODUCTION TO THE TECHNOLOGY LEARNING AREA

This document provides guidelines for assessment in Technology in the Intermediate and Senior Phases of the National Curriculum Statement. It provides teachers with information on assessment as well as ways of implementing assessment in Technology. The assessment guidelines for Foundation Phase will be a separate document.

This document should be read in conjunction with the Technology Learning Area Statement, the *National Policy on Assessment and Qualification for Schools in the General Education and Training Band*, the *Teacher's Guide for the Development of Learning Programmes in Technology*, *White Paper 6* and other current assessment policies.

2. ASSESSMENT IN THE NATIONAL CURRICULUM STATEMENT

Assessment in the National Curriculum Statement is regarded as an integral part of teaching and learning and should be included at all levels of planning. In the NCS, assessment is not just an add on' or something that happens at the end of the learning process.

The Assessment Standards in each learning area define the minimum requirement for achieving the learning outcome at a specific Grade. We teach towards Learning Outcomes and the activities to achieve a certain Assessment Standard or a group of clustered assessment standards can be varied. At the same time we can assess in many different ways depending on what we would like to find out.

Assessment is a process of making decisions about a learner's performance. It involves gathering and organizing information (evidence of learning), in order to review what learners have achieved. It informs decision making in education, and helps teachers to establish whether learners are performing according to their full potential and making progress towards the required levels of performance (or standards), as outlined in the Assessment Standards of the NCS.

Before addressing the different types of assessment, it is helpful to list some general purposes of assessment. In terms of the National Curriculum Statement, assessment in the GET Band should achieve at least one of the following purposes:

- Develop learners' knowledge, skills and values
- Identify the needs of learners
- Enable teachers to reflect on their practice
- Identify learners' strengths and weaknesses
- Provide additional support to learners
- Revisit or revise certain sections where learners seem to have difficulties
- Motivate and encourage learners.
- Provide information or data to a variety of stakeholders
- Demonstrate the effectiveness of the curriculum or a teaching strategy

2.1 Language

Assessment should always be fair to learners and all barriers preventing learners from expressing their knowledge, skills and values should be considered when assessing. Such barriers may include their inability to express themselves in the language in which the learning, teaching and assessment is done.

Type of assessment	Description and uses
Baseline Assessment	Baseline assessment is assessment usually used at the beginning of a Phase, Grade or learning experience to establish what learners already know. It assists educators with the planning of learning programmes and learning activities.
Formative Assessment	Formative assessment is developmental and is used to inform teachers and learners about their progress. Thus it improves teaching and learning by giving teachers direction and enables them to adapt to learners' needs. Formative assessment, or 'assessment for learning' involves both teacher and learner in a process of continual reflection and self-assessment. Formative assessment is interactive in that the teacher uses thought provoking questions to stimulate learner thinking and discussion.
Summative Assessment	Summative assessment gives an overall picture of learners' progress at a given time, for example, at the end of a term. It usually results in judgements about learner performance and can involve high stakes for learners (e.g. Senior Certificate). There is still a place for summative assessment in the NCS – but its role will be reduced.
Diagnostic Assessment	Diagnostic assessment is similar to formative assessment, but its application will always lead to some form of intervention or remedial action or programme. It shows up either learners' strengths and weaknesses or inappropriate teaching methodology. When it is used to find out about the nature and cause of medical barriers to learning it should be administered by specialists and is followed by expert guidance, support and intervention strategies.
Systemic Assessment	Systemic assessment is an external way of monitoring the education system by comparing learners' performance to national indicators of learner achievement. It involves monitoring of learner attainment at regular intervals, using nationally or provincially defined measuring instruments. This form of evaluation compares and aggregates information about learner achievements so that it can be used to assist in curriculum development and evaluation of teaching and learning. For the General Education and Training Band Systemic Evaluation will be conducted at the Phase exit levels i.e. Grade 3, Grade 6 and Grade 9.

3. THE NATURE OF ASSESSMENT IN THE TECHNOLOGY LEARNING AREA

Technology has existed throughout history. People use the combination of knowledge, skills and available resources to develop solutions that meet their daily needs and wants. Some of these solutions have been in the form of products, (e.g. shaping bones into fishhooks and needles, making clay cooking pots) while some solutions have involved combining products into working systems. Technology e.g. bow and arrow, moving water and a wheel, pestle and mortar. Economic, developmental, social and environmental factors and a wide range of values need to be taken into consideration when technological solutions are developed.

3.1 Technology Education at a Glance

- An ability to solve technological problems by investigating, designing, developing, evaluating as well as communicating effectively in their own and other languages by using different modes;
- A fundamental understanding of and ability to apply technological knowledge, skills and values, working as individuals and as group members, in a range of technological contexts;
- A critical understanding of the interrelationship between Technology, society, the economy and the environment
- Learners learn to manage the technological resources at their disposal when developing products, and they also learn to minimize the potentially negative impact that their solutions could have on the environment and human rights

- Learners are provided with an opportunity to interact with business, institutions, various industries and mines that help them to adapt to changing economic and environmental realities.

3.2 Technology Learning Outcomes and Assessment Standards

Each Learning Outcome is comprised of a number of Assessment Standards. (Refer to Curriculum Documents for details) These Assessment Standards determine the level of complexity and progression from each Grade and Phase. The Learning Outcomes and their respective Assessment Standards are structured such that, integration is unavoidable. The Learning Outcomes and their Assessment Standards could also play a role in the development of assessment tasks and activities. The three Learning Outcomes are complementary to each other and should be given the same weighting.

Integration

Integration is the process of using different Learning Outcomes/ Assessment Standards to enhance the process of teaching, learning and assessment. Integrations promote holistic learning and demonstrate the crosscutting nature of one or more Learning Areas and Learning Outcomes. Teachers are not obliged to assess or even record the Learning Outcomes or Assessment Standards used during integration. Assessment should only focus on the core Learning Outcomes and Assessment Standards.

Categories of integration:

- Integration within the same learning outcome
- Integration within the same learning area
- Integration with other learning areas

3.3 Areas of Knowledge and Skills for Technology Education

Learning Outcome 1: Technological Processes and Skills

The design process provides the methodology for this Learning Area and Learning Outcome 1 deals with the following technological skills:

Investigating – finding out about contexts and needs, evaluating or evaluating existing products and includes relevant science process skills in the investigation.

Designing, making and evaluating – are integrated skills covering different aspects of design in order to reach suitable solutions. Designing is about innovating, creating and thinking up ideas for identified reasons. In Technology a greater emphasis is placed on using the graphic mode when designing. Designing in Technology could also include modeling, simulating, etc.

Communication – includes graphic and written presentations.

Graphical communication:

This is about the use of graphics, i.e. drawings, signs, symbols, flowcharts, etc. to convey design ideas and present / market products or systems.

Technical conventions:

These are a standardized language of symbols, line types, dimensions, units of measurement, surface treatment, process instructions, etc.

Ergonomics:

The study of the design of objects and systems, which allows our safe and efficient interaction with them, is called ERGONOMICS. When designing for people, five main factors should be considered:

- The size of the person who will use the result of the design
- The movements that the person will make
- The reaction of the body to the design through the senses
- The human rights issues e.g. biases that could result from the design
- The impact that the result of the design and the products will have on the environment and society

Aesthetics:

The qualities that make a design attractive to look at or pleasing to experience determine its aesthetic appeal e.g. colour, shape, texture, form, etc. It is through the senses that these qualities can be appreciated.

Learning Outcome 2: Technological Knowledge and Understanding

There are three Core Content Areas – Assessment Standards

Structures

A structure is an arrangement of materials intended to hold its form and to support, bear or withstand applied loads and forces. Knowledge and understanding of types of materials suitable for supporting loads, ways of strengthening structures and different types of structures are covered.

Processing

Materials can be processed in a variety of ways. Raw materials are processed to form finished products of added value. Learners have a knowledge of the different properties of materials, the ways in which they can be processed e.g. combined, extracted, aggregated or crushed and ground, preserved or constructed.

Systems and Control

A system is a set of connected units, which operate together or interact to fulfill a need or achieve a goal. These units may be the ordered steps in a procedure or plan of action or they may be physical entities, each with its own contribution in the execution of the overall task.

Breaking down complex problems into manageable units according to function makes it easier to grasp what needs to be done. Of course, each of the units in a system may also be a system itself. In reality, there is an **input** system, a **processing** system and an **output** system. A pocket calculator, for instance, needs a unit for us to feed in the information and give our instructions (**input**), a unit for carrying out those instructions (**process**) and a unit for presenting the result in a form we can understand (**output**).

Learning Outcome 3: Technology, Society and Environment

The achievement of this Learning Outcome will ensure that learners are aware of:

- indigenous technology and culture: changes in technology over time, indigenous solutions to problems, cultural influences
- impacts of technology: how technology has benefited or been detrimental to society and the environment and
- biases created by technology : the influences of technology on values, attitudes and behaviour (e.g. around gender, race, ethics, religion and culture)

4. CONTINUOUS ASSESSMENT IN THE TECHNOLOGY LEARNING AREA

4.1 Continuous Assessment in Technology Education

Continuous assessment is the ongoing process of collecting, synthesizing and interpreting information. The purpose of assessment in the National Curriculum Statement is to gather information about the learner's development. Since assessment is integral to teaching and learning and teachers are dependent on assessment for the improvement of their practice, assessment needs to be continuous. Learning is a continuous process and learners learn in different ways and at different paces. We will only get a good picture of the learner's development if we assess the learning process on an ongoing basis informally and formally. And, as learners, teachers and parents we are interested in finding out how the learner is progressing in the learning area in terms of their development of skills, knowledge and values.

Continuous assessment (CASS) is school-based and must be managed and designed by the Learning Area teachers using the National Curriculum Statement (GET: Grades R to 9), as well as these national assessment guidelines.

4.1.1 The characteristics of continuous assessment

Continuous assessment covers all outcomes-based education assessment principles and ensures that assessment:

- ▶ Takes place over a period of time.
- ▶ Supports growth and development of learners.
- ▶ Provides feedback from learning and teaching.
- ▶ Uses strategies that cater for a variety of learners needs.
- ▶ Allows for summative assessment.

Below is a simplified framework illustrating the differences between Grade 9 and other Grades in the Intermediate and Senior Phase.

Below is a simplified framework illustrating the differences between Grade 9 and other Grades in the Intermediate and Senior Phase.

Table 1: CASS Framework

Grade	CASS component school-based	Common task for assessment externally set
Grade 4 to 8	100%	Not applicable
Grade 9	75%	25%

4.1.2 Continuous assessment in Grade 4–8

In Grade 4–8 CASS comprises 100% of the final Technology mark or level of achievement. Formal recorded tasks are used to determine progression to the next Grade. The assessment tasks should give learners the opportunity to explore varied knowledge, skills and values embodied within the Technology learning area over a year.

4.1.3 Continuous and external assessment in Grade 9

In Grade 9, the CASS component consist of tasks undertaken during the school year and counts 75% of the final Grade 9 mark or level of achievements. The other 25% is made of externally set assessment tasks or Common Tasks for Assessment. CASS in Grade 9 comprises two different, but related, activities: informal daily assessment and daily assessment and a formal Assessment Programme for Technology. The formal Assessment Programme comprising various forms of appropriate assessment in Grade 9 should be reflected in the teacher portfolios.

Within Technology CASS in Grade 9 will consist of 3 tasks i.e. that is 1 task per term. The CTA will be administered during the fourth term in addition to the 3 tasks that learner would have completed.

Term 1	Term 2	Term 3		Term 4
Task	Task	Task	CASS	CTA
CASS	CASS	CASS	75%	25%
Total			100%	

The **Common Tasks for Assessment (CTA)** is an external assessment tool intended to sample learner performance against the learning outcomes. The CTA, in all Learning Areas, should consist of both performance-based tasks and pen and paper tasks. The pen and paper task will be conducted under controlled conditions and schools will follow a national timetable. The performance-based tasks should be designed in such a way that they are completed or administered over a period of time and not as a once-off event.

These performance-based tasks should form the integral part of the normal teaching and learning school programme. These could be done in the classroom or as homework. These tasks could include projects, oral pen and paper activities, in pairs and some in groups. All Grade 9 learners in ALL schools will be assessed through the CTA in all the 8 Learning Areas including the Additional Language, during the fourth term.

Roles and responsibilities of the teacher when administering the CTA

Learners bring valuable experiences into the classroom. The teacher's role is to initiate discussion and reflection, in which learners' prior knowledge is acknowledged, and then valued. Teachers also need to challenge learners with new ways of making meaning through the arts.

In a CTA, the teacher will:

- ▶ contextualise the CTA
- ▶ discuss the flow chart with the learners
- ▶ explain the criteria for assessment to all learners before the commencement of each activity
- ▶ guide brainstorming sessions
- ▶ organise manageable groups
- ▶ help allocate group roles
- ▶ ensure the activities are completed within specified time frames
- ▶ supervise the process
- ▶ intervene and troubleshoot where and when necessary
- ▶ be responsible for the inclusion of tasks and the various forms of assessment in the learners' portfolios
- ▶ engage interactively with learners
- ▶ *Distribute the worksheets provided to learners per activity*
- ▶ *Mark the relevant sections of the CTA*

4.2 Informal and Formal Continuous Assessment

Both informal and formal assessment is used in CASS, but it is formal tasks or activities that are recorded for purposes of progression and promotion. The characteristics of informal and formal assessment are described in paragraphs 9–10 (page 24) of the *National Policy on Assessment and Qualification for Schools in the General Education and Training Band*. Informal assessment is very important, therefore it should be used to inform formal assessment. It is used for formative purposes to support teachers in their daily planning and to assist teachers in making professional judgments on learner performance.

4.2.1 Informal daily assessment

The importance of informal assessment in Technology

The purpose of informal assessment is mainly formative and for this reason it is important that time be set aside for the reflection on the results gathered by the assessment. During reflection the teacher should discuss the assessment with the learners and questions like the following can be asked:

- ▶ What does the assessment task show about what I have learned?
- ▶ How can I improve my learning?

The teachers should also think about how they could improve their teaching to enhance the learning.

Learner progress should be monitored during daily learning activities. This informal daily monitoring of progress can be done through **formative** question and answer sessions; **formative** reflection, informal classroom interactions, learner-teacher conferences, observations, short assessment tasks completed during the lesson by individuals, pairs or groups or homework exercises. Lesson planning should incorporate such informal assessment tasks and activities.

Self-assessment, peer assessment and group assessment actively involve learners in assessment. This is important as it allows learners to learn from and reflect on their own performance. The results of informal daily assessment tasks are not formally recorded unless the teacher wishes to do so. In such instances, a simple checklist may be used to record this assessment. However, teachers may use learners' performance in these assessment tasks to provide verbal or written feedback to learners, the School Management Team and parents. This is particularly important if barriers to learning or poor levels of participation are encountered. The results of these assessment activities are not formally recorded for promotion purposes but may be considered when a teacher has to make a professional judgement about the progress of a learner.

Informal assessment is particularly useful to assess the attitudes of learners and those skills that are difficult to assess in a formal task. Such attitudes and skills could be:

- ▶ Attitude to Technology
- ▶ Working in a group
- ▶ Application of Technology learnt to real contexts
- ▶ Attitudes to constitutional values such as equality, equity and democracy

4.2.2 How do I implement informal assessment?

It is important to remember that **formative assessment is not an unstructured, unplanned activity**. Informal assessment usually probes the levels of learning taking place in the classroom. Questioning is the most common and also most effective way to assess informally. Open-ended questions lead to further questions, both from the learners to the teacher and from learners to other learners. Critical questions lead to further thought and extended responses. The process results in learners and teachers:

- ▶ thinking more deeply about their own thinking and knowledge
- ▶ realising their strengths and weaknesses in their skills and knowledge
- ▶ self expression
- ▶ having dialogue and collective reflection

Through observation of learners, important information can be gathered for informal assessment. The teachers can observe how the learners do their tasks and what they are struggling with. The teachers can also observe how the learners work together and how the learning tasks could be changed to maximise learning.

4.3 Formal Continuous Assessment

Continuous assessment, whether formal or informal, is an ongoing continuous collection of information which provides teachers with a systematic way of evaluating how well learners are progressing in a grade. Formal continuous assessment provides regular feedback through tests,

written investigations, oral presentations and demonstrations, planned in a structured and systematic manner. The frequency and type of feedback should be carefully planned and spaced at regular intervals.

Assessment tasks provide learners with an opportunity to demonstrate their acquired competencies in Technology. Collectively over the year the Assessment tasks should enable the teacher to make informed judgments about various levels of performance and learner competence in Technology.

Table 2: Number of formal recorded assessment tasks for Grades 4–6

Learning Area	Term 1	Term 2	Term 3	Term 4	Total
Technology	1	1	1	1	4

Table 3: Number of formal recorded assessment tasks for Grades 7–8

Learning Area	Term 1	Term 2	Term 3	Term 4	Total
Technology	1	1	1	1	4

Table 4: Number of formal recorded assessment tasks for Grade 9

Learning Area	Term 1	Term 2	Term 3	Term 4	Total
Technology	1	1	1	CTA	4

5. PLANNING FORMAL ASSESSMENT TASKS

5.1 Assessment Task Planned over the Year

This provides teachers with a systematic way of evaluating how well learners are progressing. This recorded evidence will be used to decide whether learners should progress or be promoted to the next grade.

The Policy: Assessment and Qualification for the GET Band describes an assessment task as 'an assessment activity or activities that is/are designed to assess a range of skills and competencies'.

From this we see that a task will consist of **one or more** forms of assessment. Some tasks will involve more than one form of assessment and possibly a number of activities that support the form/forms of assessment used. It is suggested that each task consists of at least two activities in Technology. For example a **performance-based task** might involve a **project** that includes **investigation, models** and a **presentation**. Groups or individuals would engage in a number of activities that support the design and the final model and the preparation for the presentation. Over the year the assessment tasks in a learning area must reflect varied forms of assessment and assess a variety of skills (informed by the assessment standards in that Grade). The assessment tasks must be weighted collectively to cover all the LOs & ASs for the Grade.

Assessment tasks, by their definition, range from being fairly short in time and content that can be completed within a period, to being considerably longer, involving a number of activities. It is most important that the assessment tasks are appropriate for the age and Grade of the learners being assessed. Assessment Standards will inform the appropriateness of the assessment tasks. The results from the assessment of these tasks will be used for formal recording of the learners' progress.

Assessment can be done using a different forms or types. Teachers can select these depending on the purpose of assessment. These will also depend on a specific learning area. Chosen methods, tools and techniques must provide a range of opportunities for learners to demonstrate attainment of knowledge, skills, values and attitudes.

It is of outmost importance that the form used should be appropriate for the target or outcomes being assessed. In order to administer any good assessment, you must have a clearly defined purpose. By answering these questions, you can decide what type of activity best suits you assessment needs. Thus, you must ask yourself several important questions:

- What concept, skill, or knowledge am I trying to assess?
- What should my students know?
- At what level should my students be performing?
- What type of knowledge is being assessed: reasoning, memory, or process (Stiggins, 1994)?

An important part of the planning is to decide at the Learning Programme Level what type of assessment will be used, and decide on the range of tasks to be assessed.

Each school should have a **School Assessment Programme**, which outlines how CASS is planned and implemented. It includes:

- How records are kept, stored and accessed
- Assessment codes
- Internal verification
- Moderation
- Frequency and method of reporting
- Monitoring of assessment processes
- Training of staff

Each school should also have a **School Assessment Plan**, which is a compilation of all the grade assessment plans. Each teacher should also have a **Teacher Assessment Plan**, which is derived from the Work Schedules and indicate the details of assessment per grade.

The following section describes the various forms/types of assessment that could be used by the educators to assess learning achievement. The different learning areas have used a variety of these forms.

5.2 Planning for Different Types of Assessment

The educator's choice of methods/technique depends highly on what is to be assessed. The following are some of the ways/methods/techniques in which learners can be assessed:

- Project work
- Collage
- Tests
- Research project
- Assignment
- Investigation
- Survey
- Debate/argument
- Role-play
- Interview
- Drama
- Presentation
- Panel discussion
- Practical demonstration
- Construction
- Music/songs
- Poetry/Rhymes
- Story telling
- Model making/plans/design
- Drawings/graphs
- Brainstorming / Mind mapping
- Game design
- Physical activities
- Maps
- Posters
- Charts
- Tables
- Written presentation e.g. reports, essays
- Oral presentation
- Worksheets
- Questionnaires
- Cassettes
- Exhibitions
- Self-reporting and answers by learners
- Conferencing
- Sculpture/paintings
- Simulations
- Project Portfolios

Investigation:

Investigation is a form of assessment that allows for a holistic appraisal of learners' abilities to combine knowledge, skills and values in undertaking investigations. Criteria should be set for the different stages of the investigation process. There are many different types of practical work, e.g. demonstrations, fieldwork, practical exercises, open investigations.

An investigation process can be divided into some or all of these 4 categories:

- Focus and plan investigation
- Gather and manipulate data
- Analyse data
- Communicate findings

Example of peer evaluation of a toy with a moving part – rubric

Grade 6 or 7	Class:
Group names:	
_____	_____
_____	_____
_____	_____

- Score the toy according to the given criteria
- Use the assessment rubric to help you in your scoring
- Add up the total score

Criteria for the assessment of the toy	1	2	3	4
Working Mechanism				
Materials				
Adherence to Safety				
Durability (Will it last?)				
Aesthetics (Does it look good?)				
Total				

Assessment rubrics for investigating a mechanical toy		
Mechanism	No mechanism in toy	1
	Does not move correctly	2
	Well made but does not move easily	3
	Well made mechanism used correctly for smooth movement	4
Materials	Poor choice – not suitable	1
	Suitable but expensive – not recycled	2
	Good choice – not expensive	3
	Good choice; mostly recycled – not expensive	4
Safety	Sharp edges and small parts that could be swallowed; dangerous for child	1
	Sharp edges or small parts	2
	No sharp edges or loose parts but finish toxic paint	3
	Completely safe	4
Durability	Falls apart during testing	1
	Fragile – will break soon	2
	Good – should get several hours of fun	3
	Very good and strong	4
Aesthetics/Appearance	Toy sloppy; unattractive	1
	Untidy; unattractive colour;	2
	Tidy; good colour; average design	3
	Tidy; good colour; appealing design	4

Project

A project is any exercise or investigation in which the time constraints are more relaxed. Like investigation activities, projects allow for a holistic assessment of learners' abilities to apply knowledge, skills and values in the context of a project. You can assess different stages of the project separately, or the entire project.

- A project in Technology will have the following elements:
- Be problem-orientated with opportunities to analyse problems or case studies.
- An investigation or a research
- Projects are:
- Practical
- Comprehensive and open-ended
- Tackled without close supervision, but with assessor guidance and support

Projects can involve individuals or a group of learners. The assessor directs the choice of the project, usually by providing the learner with a topic or brief for the investigation.

A project can have different forms. The following are just some of the activities that can be part of a project:

- Assignments
- Research
- Excursions
- Site visits
- Demonstrations
- Exhibitions
- Case studies

Possible uses:

- Comprehensive range of skills can be assessed
- Integration of activities

Example of a Project Portfolio – Grade 9

Design and make a model of a low-cost house

Name:

Group:

	Possible mark	Your mark
<p>Cover page and presentation Must be typed, in a flip file and show effort. Include title of project, group name, group members, name of school, class, year</p>	15 5	
<p>Contents page List contents in correct sequence</p>	5	
<p>Chapter 1 – Group Scenario – describe problem Design brief Specification and constraints Research on</p> <ul style="list-style-type: none"> ▪ Low cost housing ▪ Suitable materials 	5 5 5 5 5	
<p>Chapter 2 – Individual Individual work of each group member to be include the following: Rough ideas x 3 including labels; 3 D view in colour Orthographic view (front, top and side)</p>	15 10 15	
<p>Chapter 3 – Group Group work to include the following: Evaluation of each group member's design Chosen design in 3D and reasons for choice 2D drawings of choice List of materials needed List of tools needed Flow chart showing sequence of work</p>	10 10 15 5 5 10	
<p>Chapter 4 – Group Evaluation of the following: Preparation Workstation neatness and order Group co-operation Time management</p>	10	
Total	150	

Assignments

An Assignment is a problem-solving exercise with clear guidelines and a specified length. It is more structured and less open-ended than projects, but they do not necessarily involve strict adherence to a prescribed procedure and they are not concerned exclusively with manual skills. They include short exercises used formatively to assess learners' skills development.

Possible uses:

- Problem-solving around a particular topic.

Tests

Tests could be used for summative or formative purposes. They usually consist of a range of questions. Learners are required to respond to questions within a specified time. Tests are usually used to assess the recall of information and cognitive skills such as problem solving or analyses etc. For a paper and pencil test **objective tests and essay tests** could be used.

The objective tests could include multiple choice, matching, true or false, short answer completion etc.

- Alternative response questions
- True/False; Yes/No questions
- Recall of information / Ability to discriminate
- Multiple-choice questions

Multiple-choice questions consist of an incomplete statement or a question, followed by plausible alternative responses from which the learner has to select the correct one. Outcomes involving higher order analytical skills are probably more validly assessed by means of free-response assessment instruments such as extended response questions, but multiple choice questions can be useful if carefully constructed.

Possible uses:

- Recall of information
- Check understanding; analyses

Example of test for Grade 8 or 9

1. Identify the type of structure in each example:

- a. Cool drink can.....
- b. Thatched roof.....
- c. Telephone pole.....
- d. Sugar bowl.....
- e. Pylon.....

(5)

2. What do you understand by the following:

- a. System.....
- b. Gear.....
- c. Cantilever.....
- d. Processing.....
- e. Primary raw material.....

(10)

3. Identify the different types of processing of the following items by placing a tick in the correct column:

(10)

	Combination	Extraction	Crushing / Grinding	Preservation	Construction
Making samp					
Pickling onions					
Making fig jam					
Filtering water					
Dyeing a cloth					
Traditional herbal remedy					
Making a basket					
Knitting					
Varnishing wood					
Making a cake					

4. A bird's nest is a structure. Explain why it cannot be accurately described as technology, even though it is a structure.

(5)

.....

.....

.....

.....

.....

Total: 30

Essay tests

In essay tests learners are required to construct a response that would be several sentences to several pages in length.

Hints for the teacher:

The following suggestions would strengthen the construction of essay items:

- ▶ Construct the item to elicit the identified skills to be assessed. For example if the purpose is to assess reasoning the following item stems could be used; Compare, indicate the cause and effect, *Summarise, Generalise, Make inferences, Classify, Create, Apply, Analyse, Evaluate etc.*
- ▶ Write the item so that learners clearly understand the task i.e. avoid ambiguity. Another way to clarify to the learners the nature of the task is to indicate the scoring criteria. This indicates to the learners what you will be looking for when grading the answers.
- ▶ Avoid giving learners options as to which essay questions they will respond to.

The following is a checklist for scoring essays

- Is the answer outlined prior to testing learners ?
- Is the scoring method (i.e. whether it is holistic or analytical) appropriate?
- Is the role of writing clarified? (i.e. it should be made clear to the learners whether they will be penalised for spelling errors, incorrect sentence structure etc.)
- Are items scored one at a time?

Assertion/reason questions

Consists of an assertion and supporting explanation. The learner has to decide whether the assertion and explanation are true, and if true, whether the explanation is a valid reason for the assertion.

Possible uses:

- Ability to weigh up options and to discriminate

Performance-based assessment

This type of assessment emphasizes the learners' ability to use their knowledge and skills to produce their work. This includes project portfolios, presentations, research work, investigation , demonstrations, exhibitions, presentations, etc.

This type of assessment requires learners to demonstrate a skill or proficiency by asking the learners to create, produce or do something, often in a setting that involves real world applications. The educators should not only assess the end product but also the process that the learners use to complete the task.

When learners are required to complete a task, the description of a task should:

- Include outcomes to be assessed
- Include description of what the learners are required to do
- Indicate group or individual help that is allowed
- Indicate the resources needed
- Indicate the role of the teacher

- Indicate the administrative process
- Indicate the scoring procedure or the criteria that will be used to evaluate the final product

The following checklist could be used to evaluate the design of performance-based tasks

- Does the task include an integration of knowledge, skills and values?
- Does it address a variety of outcomes?
- Is the task based on real life context?
- Is the task doable?
- Are multiple solutions possible?
- Is the nature of the task clear?
- Is the task challenging and stimulating to the learners?
- Are criteria for scoring included?

Interview

An interview is probably the oldest and best-known means of eliciting information directly from learners. It combines two assessment methods, namely observation and questioning. An interview is a dialogue between the assessor and the learner, creating opportunities for learner questions.

Possible uses:

A range of applications using different forms of questions, particularly

- open-ended questions

Questionnaires

A questionnaire is a structured written interview consisting of a set of questions relating to particular areas of performance. Unlike a personal interview, it is administered and judged under standard conditions.

Possible uses:

- Assessment of outcomes particularly concerned with attitudes, feelings, interests and experiences

Structured questions

A structured question consists of a stem (which describes a situation), followed by a series of related questions. The stem can be text, a diagram, a picture, a video, etc.

Possible uses:

- Recall of information
- Application of knowledge and understanding
- Analyses
- Debates
- Arguments

Case studies

A description of an event concerning a real-life or simulated situation, usually in the form of a paragraph or text, a video (description of the picture for the blind/captions for the deaf), a picture or a role-play exercise. This is followed by a series of instructions to elicit responses from learners. Individuals or small groups may undertake case studies.

Possible uses:

- Analysis of situations
- Understanding values (LO 3)
- Drawing conclusions
- Reports on possible courses of action

Example of Case Study Assignment (Extract from magazine article) Grade 9

Half the inhabitants of the earth cook over wood fires. Nearly half of the world's wood supply is used as fuel. And now more than 2 billion people face a shortage of firewood. Deforestation leads to soil erosion, floods and climate change, severe environmental degradation and increasing poverty and hunger.

The main victims of the firewood crisis are the women and children as the search for fuel consumes time and energy and affects the health of women through spinal column damage through carrying heavy loads and through lung infections. Solar box cookers produce no smoke and pollution. This would save respiratory infections from the smoke causing the death of 5 million children per year and would save lung cancer found in young children under the age of 5. Another serious problem is that girls are kept out of school to help gather fuel, thus depriving them of an education.

A simple solution to the problem is the solar box cookers that cost very little and are made from cardboard cartons. It would save millions of trees and costs very little. Research has found that 36% of the world's firewood needs would be met (350 million tones of wood per year according to UNICEF) and this would save 500 kg of wood per family per year. In fact the positive effects on people is so great that the government should make it illegal to burn firewood in homes and encourage the use of the solar box cooker.

- Identify the need or the problem (2)
- What are some negative effects on people when gathering and burning firewood? (4)
- What are some negative impacts on the environment when gathering and burning firewood? (3)
- Identify any form of bias as indicated in this article. (3)
- What are some positive effects of using solar box cookers? (3)

Total: 15**Practical exercises/demonstrations**

A practical exercise is an activity that allows learners to demonstrate manual and/or behavioural skills.

The assessment may be based on the end-result of the activity (the product), or the carrying-out of the activity (the process), or a combination of both.

Possible uses:

- Demonstration of skill

Example from Grade 7 – making a pizza (in two parts)

Part A – Practical Assessment by teacher of manual and behavioural skills

Part B – Peer evaluation of the product

Part A – Teacher Assessment

Names									
		2	3	5	5	5	5		30
Sipho									
Mpho									
Lucky									
Zanele									

Part B – Peer Evaluation of Product

Class: Grade 7

	5 Brilliant	4 Good	3 OK	2 Oops!	1 Where's the dog?
Group 1					
Appearance					
Taste					
Texture					
Tidiness					
TOTAL					
Group B					
Appearance					
Taste					
Texture					
Tidiness					
Total					

etc. for other groups.....

Role plays

Learners are presented with a situation, often a problem or an incident, to which they have to respond by assuming a particular role. The enactment may be unrehearsed, or the learner may be briefed in the particular role to be played. Such assessments are open-ended and are person-centered.

Possible uses:

- Assessment of a wide range of behavioural and inter-personal skills

Simulations

Simulations mirror actual activities or conditions.

Possible uses:

- Assessments where demonstrations and observation will provide reliable and valid results, but where, for a number of reasons, it is difficult or not practicable to assess under actual conditions.

Aural/Oral Questions

These are mainly used to generate evidence on learners' ability to listen/sign, interpret, communicate ideas and sustain a conversation in the language of assessment. Oral questions include oral examinations, interviews, conferences or other conversations in which information is obtained about student's learning.

Possible uses:

- Interpretation of ideas
- Expression of ideas
- Completion questions/short answer questions
- Accommodations for the Deaf, Blind, LD, etc.

Observations

This is the type of assessment that is commonly used by the teachers without the learners being aware of it. The teachers constantly observe learners informally to assess their understanding and progress. Teachers watch learners as they respond to questions or as they study. The teacher listens to them as they speak and discuss with others in groups. Observation is also used extensively in performance-based assessment and may be informally or formally recorded.

Example Group Participation – Grade 5 or 6					
	Sizwe	Sazi	Pretty	Jane	Mbali
Group 1					
Gives ideas					
Listens to others					
Peacekeeper					
Collaborates					
Compromises					

Example Assessment Rubric of Group Participation – Grades 7–9	
Level	Descriptors
4	<p>Thorough understanding</p> <ul style="list-style-type: none"> ■ Consistently and actively works toward group goals. ■ Is sensitive to the feelings and learning needs of all group members. ■ Willingly accepts and fulfills individual role within the group. ■ Consistently and actively contributes knowledge, opinions, and skills. ■ Values the knowledge, opinion and skills of all group members and encourage their contribution. ■ Helps group identifies necessary changes and encourages group action for change.
3	<p>Good understanding</p> <ul style="list-style-type: none"> ■ Works toward group goals without prompting. ■ Accepts and fulfills individual role within the group. ■ Contributes knowledge, opinions, and skills without prompting. ■ Shows sensitivity to the feelings of others. ■ Willingly participates in needed changes.
2	<p>Satisfactory understanding</p> <ul style="list-style-type: none"> ■ Works toward group goals with occasional prompting. ■ Contributes to the group with occasional prompting. ■ Shows sensitivity to the feelings of others. ■ Participates in needed changes, with occasional prompting.
1	<p>Needs improvement</p> <ul style="list-style-type: none"> ■ Works toward group goals only when prompted. ■ Contributes to the group only when prompted. ■ Needs occasional reminders to be sensitive to the feelings of others. ■ Participates in needed changes when prompted and encouraged.

Self-report assessment

In self assessment learners could be asked to complete a form or answer questions to reveal how they think about themselves, or how they rate themselves. Attitude surveys, socio-metric devices, self-concept questionnaire, interest inventory are some of the examples that are used in self-report assessment.

Design and make a toy for a child – Grade 5 or 6

What I had to do	I could do it very well. I am ready to move on.	I could not do it well. I need more practice.
Investigate types of toys for children		
Draw/label the design		
Write out what I needed before beginning		
Measure and mark accurately		
Cut the material		
Join or assemble the parts		
Paint/finish the toy		
Check if it works well		

5.3 Planning for Assessment at Learning Programme Level

Planning for assessment happens at all three 3 levels of planning: Learning Programme; Work Schedule and Lesson Plan.

Planning for assessment in the **Learning Programme** should give you a good indication of the **resources and time** needed for assessment in that phase. To do this teachers will need to know what **knowledge, skills and values** learners are expected to learn so that they can integrate the assessment programme into the teaching and learning activities.

In planning for assessment at **Learning Programme level** teachers need to:

- List the main forms of assessment they are likely to use in determining the achievement of Learning Outcomes and to meet the Assessment Standards in Technology. Choose from the suggested list of Assessment Tasks in 5.1.
- List the key resources they are likely to need
- Consider the context in which they are taught and the core knowledge and concepts that need to be learned
- Indicate the time that will be required for appropriate and authentic assessment.
- Ensure tasks are fairly distributed so as not to overburden learners.

5.4 Planning for Assessment at the Work Schedule Level

How do I plan for assessment in the Work Schedule?

When Technology teachers of a particular grade meet to plan their work schedules they need to plan the formal assessment tasks that the learners will do for the year as part of the work schedule. This plan is called the **Teacher Assessment Plan**.

When teachers plan assessment at this level, they should consider the following questions:

What is the purpose of assessment in the task?

As a teacher, one always wants to find out how your learners are progressing and how you could assist them to improve learning. For this reason all assessment is to a greater or lesser extent always formative. But the formal assessment tasks are designed for summative purposes so we can report to parents, the school administration as well as the learner on his/her progressing.

Which Learning Outcomes and Assessment Standards will be assessed by the activities?

The NCS policy document states that all Learning Outcomes and Assessment Standards need to be actively pursued. This means that at the end of the year you should have taught towards all Learning Outcomes addressing all Assessment Standards. For this reason it is advisable to assess all Assessment Standards, **BUT** it is not necessary to include all Assessment Standards in formal assessment tasks, thus learners are assessed against all Assessment Standards, but not all are recorded. Some Assessment Standards may be assessed informally.

Which task(s) will the teacher do in his/her class?

The Teacher Assessment Plan for Technology, which is part of the work schedule, should reflect the formal assessment tasks in one year. When conceptualizing the Technology assessment tasks for the year, consider the full scope of content (SKVs), Learning Outcomes with Assessment Standards and the different forms of assessment.

What will be the focus of the assessment task?

Examine the core knowledge within Technology, and decide what core knowledge the assessment task will focus on. The assessment tasks over the year should reflect the full scope of the Technology learning area capturing learner competence in the core areas of Technology. The contexts of the schools and the learners in the grade should also be considered when developing selecting foci.

The focus can also be linked to:

- The context of the school (e.g. HIV/AIDS, 2010 World Cup; Clean water, etc)
- Specific Knowledge, Skills and Values in the Learning Area
- Previous activities you want to strengthen, extend or wrap up
- Introduction to new set of lessons

Which form of assessment will suit the contents?

Across the tasks for the year, teachers should use varied forms of assessment. Ensure that the forms selected suit the task and learners' context.

When you select a form, please consider:

- That you have to use three to five different forms.
- What you want to assess
- Why you want to assess
- How you would conduct assessment

When will the assessment task be done and how long will it take?

The teacher should discuss with his/her colleagues when the different tasks should be done. The load on the learners should be considered so tasks from the different learning programmes should not take place at the same time but should be spread over the year. Consider the resource needs of a task when scheduling e.g. seasons, plants in season, link to special days, environmental days (water week in March), if learners need to do research allow time (holiday/long weekend) so all learners can go a library. The NCS requirements for notional time spent in Technology should also be considered.

Some Technology Tasks will have to reflect all of the following:

- Research skills
- Analytic skills
- Designing skills
- Development skills
- Management skills
- Communication skills
- Evaluation skills
- Presentation skills

Here are examples of the 5 forms of assessment you might choose at Work Schedule Level.

Forms of assessment	Evidence
Research	Research reports, questionnaires, surveys, observation sheets, case studies, interviews, etc.
Assignments	Practical tasks, drawings, acquisition of knowledge, skills development, etc.
Case Study	Simulations, observations, interviews, etc.
Project	Project portfolios: This is a presentation of the Technological Process using multimedia.
Tests/Examinations	Written, practical, oral, audio-visual <ul style="list-style-type: none"> ■ Tests are to be incorporated within projects. ■ Tests can be done individually or in a group. ■ Practical tests are used to assess the manipulation skills of activities. ■ Tests should be used to assess overall understanding of skills, knowledge, values and attitudes. ■ Tests can be used to moderate projects.
See Annexure C	
<p>The following should be noted when planning for Technology assessment Task(s):</p> <ul style="list-style-type: none"> ■ Establish a clear purpose for each task developed ■ Ways in which assessment is going to be conducted ■ Ascertain how the tasks are going to be conducted (research, excursion or site visit) ■ Determine the availability of resources and technical support ■ Consider whether the task makes the class more or less interactive? <p>Should the tasks involve a site visit, the necessary preparation such, as</p> <ul style="list-style-type: none"> ■ booking a time or an interview and preparation of a worksheet ■ Whether the planning accommodates barriers to learning (learners who are physically challenged) ■ Whether the task integrates with other learning areas ■ What type of assessment instrument should be developed for the assessment of the task(s) <p>Whether the task takes into account learning experiences of the learners (RPL)</p>	

5.5 Planning for Assessment at the Lesson Plan Level

Designing an assessment task in Technology

Working from the Teacher Assessment Plan in the Work Schedule, assessment tasks are developed into more detail. When developing individual tasks for formal recorded assessment, the following could be useful in structuring your assessment task,

- Review the selected context, the prescribed content, the Learning Outcome and Assessment Standards to be assessed
- Unpack the Assessment Standard, it will give you all the vital information you need. Knowledge, skills and values to be assessed. Make links between these and the context and content.
- From the unpacking of the AS, decide on the most appropriate form of assessment, assessment tool, assessment method

- Develop the teaching and learning activities, providing clear guidelines to the learners of what they are required to do. Indicate resources for all activities. The assessment task should be appropriate to the age of the learners, consider what barriers to learning exist and how can they be optimized and which resources are available to learners and teachers.

Examine all the different elements/smaller activities that the assessment task is comprised off, and decide for each activity;

- Who assess (peer, self, teacher)
- Role of the teacher and role of the learners
- Form of assessment
- Type of evidence generated (e.g. planning mind map from first activity which is kept in learner portfolio; research report for second activity; presentation for third activity)
- Appropriate scoring procedure or the criteria that will be used to evaluate the final product e.g. provide the learners with a rubric (where applicable) for discussion

Note: This planning will highlight the various roles of the teacher throughout the assessment task. This should go into the teacher portfolio as it provides important details and information.

5.6 Record Learner Performance

Recording sheets selected by the Technology teacher must include the following:

- Names of learners
- Date of assessment task
- Forms of assessment used
- Learning Outcomes LOs/ASs covered in the task
- Learner achievement in code or percentage against the assessment task,
- Support comments, which clarify and expand on assessment given.

The comments should be developed from and reflective of competence in ASs. The completed tasks should also be kept in the learner portfolio. All evidence of learner engagement could be kept as evidence in the portfolio.

Record the learner's performance against the assessment task commenting on the knowledge, skills and values embedded in the Assessment Standards. Teachers will only report against the Assessment Standards used in formal assessment tasks. Each learner's performance is recorded as a mark and/or code for the assessment task, along with an indication of the Learning Outcomes being addressed. Comments may be written for support purposes when and where appropriate. The formal assessment tasks are kept in the learner's portfolio.

The learners' portfolios, as described in the assessment policy, are a collection of all formal assessment tasks as well as selected informal assessment tasks. The informal assessment tasks only support the formal assessment tasks.

Codes and percentages for recording and reporting in Grades 7–9

Rating code	Description of competence	Percentage
7	Outstanding achievement	80–100
6	Meritorious achievement	70–79
5	Substantial achievement	60–69
4	Adequate achievement	50–59
3	Moderate achievement	40–49
2	Elementary achievement	30–39
1	Not achieved	0–29

5.7 Report on Learner Performance

Reporting is a process of communicating learner performance to learners, parents, schools and other stakeholders as the Technology educator is responsible for reporting on learner progress to all relevant stakeholders (learners, parents) This can include report cards, parent meetings, school visitation days, parent/teacher conferences, phone calls, letters, class or school newsletters. Discussion could include

- The form of assessment used
- The levels at which learners have attained the outcomes set
- Comments on learner achievement for all Learning Outcomes (LOs) – developed from AS showing what learner is competent in and where there are gaps.
- The time period on which the educator is reporting

This reporting will:

- Inform learners for developmental purposes
- Inform parents/guardians/caregivers of the progress
- Give information to schools/district/regional offices on current level of performance of learners.

5.8 Reflect on Learner Performance

Reflect on the learning process and **follow up with interventions** where necessary. If learners are experiencing serious difficulties in achieving the Assessment Standards, you may need to seek additional support with **follow-up interventions**. Reflect on how the learners performed and why. Adjust your teaching and assessment accordingly. Follow-up interventions may include:

- Creating more opportunities for learning
- Giving learners more examples
- Building on prior activities
- Giving learners more exercises to achieve certain skills

Reflect on your practice and consider if the form of assessment and tools you used gathered the evidence you wanted to gather.

Process questions to reflect on:

- ▶ Does the evidence collected reflect learner competence?
- ▶ Is the form of assessment used appropriate for the information to be gathered?
- ▶ Does informal assessment corroborate formal assessment?

ANNEXURES

ANNEXURE A

Assessment planning for the Work Schedule should reflect the following (Grade 9 Example)

ANNEXURE B

Rubric for Assessment

ANNEXURE C

An example of a Lesson Plan for Technology

ANNEXURE D

Evaluating evidence gathered from Assessment Task: 1

ANNEXURE E

Generic Assessment Rubric

ANNEXURE F

An example of a Learning Area recording sheet

ANNEXURE G

Example of a Progression Schedule

ANNEXURE H

Example of a Report Card

ANNEXURE A

Assessment planning for the Work Schedule should reflect the following (Grade 9 Example)

Term 1	LA and AS	Assessment task	Focus	Form of assessment	Context	Time	Resources
Task 1	LO 1 Technological processes and skills	Technology: Investigate how mining could impact on the natural resources and the physical environment.	What is the mining impact caused by the chemicals used in mining.	Research	Mining	3 weeks	Teachers
	LO 2 Technological knowledge and Understanding	Investigate how mining influence the life of the community	Chemicals used in the mines (processing)	Assignments			Nearby mining industry Library
	LO 3 Technology, Society and the Environment.	Investigate how materials can be processed (e.g.) galvanized, frozen, dried, painted, vanished, electro plated to change or improve properties.	Social responsibility of the mines (human rights and social justice)				
Task 2	LO 1 Technological processes	Investigate the types of out door sitting chairs used by different cultures	Different out door sitting structures	Project	Building/ construction	4 weeks	Learners Teachers
	LO 2 Structures	Design ideas and communicate those through sketches and drawings	Cultures	Assignments			Parents Library Waste materials
	LO 3	Develop a model					

Term 1	LA and AS	Assessment task	Focus	Form of assessment	Context	Time	Resources
Task 3 a	LO 1 Technological processes and skills LO 2 Systems and Control	Investigate the solar powered energy that could be used either for transport, water or cooker	Energy generation	Research Assignments	Energy usage	3 weeks	Library Home Parents
Task 3 b	LO 1 Technological processes and skills	Design and make a device that can be used by people with disabilities to improve the quality of their lives	Raising the awareness of different needs of people living with disabilities	Research and project	Mechanical systems	4 weeks	Timber Aluminum rods Rubberized joints

ANNEXURE B

Rubric for Assessment

	Problem/Question	RESEARCH SKILLS Information Seeking/Selecting and Evaluating	ANALYTIC SKILLS Analysis	DESIGN AND DEVELOPMENT SKILLS Synthesis	COMMUNICATION SKILLS Product/Process
4	Student(s) posed a thoughtful, creative question that engaged them in challenging or provocative research on their energy source. The question breaks new ground for learners on energy issues.	Student(s) gathered information from a variety of quality electronic and print sources. Sources are relevant, balanced and relate to the problem. Primary sources were included (if appropriate).	Student(s) carefully analysed the information collected and drew appropriate and inventive conclusions supported by evidence. Voice of the student as writer is evident.	Student(s) developed appropriate structure for communicating product, incorporating variety of quality sources. Information is logically and creatively organized with clear connections.	Student(s) effectively and creatively communicated their conclusions and demonstrated thorough, effective research techniques. Product displays creativity and originality.
3	Student(s) posed a focused question involving them in challenging research.	Student(s) gathered information from a variety of relevant sources – print and electronic	Student (s) product shows good effort was made in analyzing the evidence collected	Student(s) logically organized the product and made good connections among ideas	Student(s) effectively communicated the results of research to the audience.
2	Student(s) constructed a question that lends itself to readily available answers from given materials.	Student(s) gathered information from a limited range of sources and displayed minimal effort in selecting quality resources	Student(s) conclusions could be supported by stronger evidence. Level of analysis could have been deeper.	Student(s) could have put greater effort into organizing the product	Student(s) need to work on communicating more effectively
1	Student(s) relied on teacher-generated questions or developed a question requiring little creative thought.	Student(s) gathered information that lacked relevance, quality, depth and balance.	Student(s) conclusions simply involved restating information. Conclusions were not supported by evidence.	Student(s) work is not logically or effectively structured.	Student(s) showed little evidence of thoughtful research. Product does not effectively communicate research findings.

ANNEXURE C

Research Plan for Technology	
Learning Outcome	<p>LO 1: Apply technological process and skills ethically and responsibly using appropriate information and communication</p> <p>LO 2: Demonstrate an understanding and apply relevant technological knowledge ethically and responsible</p> <p>LO 3: Demonstrate an understanding of the interrelationships between science, technology, society and the environment</p>
Assessment standards	<p>Investigate: Use a variety of available technologies and methods to collect information, compare, verify and evaluate</p> <p>Processing: Demonstrate knowledge and understanding of how materials can be processed (. e.g. galvanized, dried, frozen, painted, vanished, electroplated) to change or improve properties (life span), and how recyclable materials can be re manufactured.</p> <p>Impact of technology: Recognizes and identifies the impact of technological development on the quality of people's lives and on the environment in which they live, suggest strategies for reducing any undesirable effects.</p>
Assessment form	<i>Written report on the discussions</i>
Knowledge Skills Values (derived from teacher assessment plan)	<p>Knowledge of: different types of chemicals, knowledge of different types of products produced during mining process (gold, coal, asbestos)</p> <p>Skills: data collection skills, analysis skills, critical thinking.</p>
Assessment Task	Investigate the types of chemicals used in the mining industry for the production of coal, gold, asbestos and the dangers posed by those products to human life
Role of the teacher in the task	<ul style="list-style-type: none"> ■ Teacher assists the learners in the development of the mind map using key words from assessment standards in the development of the mind map ■ Providing learners with resources based on the task ■ Guiding the learners in the development of questionnaires for the collection of information ■ Assist the learners to group themselves into a group of three, and choose what area they would like to focus on, e.g. coal, gold or asbestos ■ Assist the learners as to how the subject could be researched, and suggest the relevant resources that could be used for the research purposes ■ This activity lends itself to both science and technology, in the instances where science is mostly emphasized the teacher would need to seek help from teachers with a science interest.
Activities (gathering evidence)	<p>Activity 1: Make a mind map using the focus words from the assessment standards. () The teacher could give learners the following instructions: Use the key words that have been extracted from the assessment standard and have been given you. Develop a mind map focusing on the value of the mining industry, social responsibilities, economic impact and negative impact. Learners should not limit themselves to the four issues they might like to include more aspects on the activity.</p> <p>Activity 1.1 This is a group activity where learners gather the group's collective information about mining and health implications for people.</p> <p>When the learners have developed the mind map the groups could present it to the whole class. The teacher then need to define the criteria's assessing the mind map.</p>

Activities (gathering evidence)	<p>As a teacher define for yourself:</p> <ul style="list-style-type: none"> ■ What information is required about mining, social responsibility and the health implication of mining to make it a solid mind map? ■ In producing the mind map, what expectation do you have of the learner's ability to work together? ■ Can the learners develop a research question from the knowledge gathered in the mind map? <p>Before learners move on, the teacher could consolidate this activity by probing questions, this would create synergy and continuity for previous and next activities. Show the learners how each activity progresses to the next activity.</p> <ul style="list-style-type: none"> ■ How did the learners find the exercise of developing the mind map? ■ As the teacher, assess whether the learners were able to conceptualise the four aspects assigned to them ■ Using the activity as an example, verify from the learners, how group work has impacted on their learning experience <p>Activity 2: Mining industry could be using different types of chemicals for the production of coal, gold and asbestos. It is those chemicals used during the production process that might be harmful to humans and the environment. Investigate any effect on the people or the environment.</p> <p>Activity 2.1 As a teacher you would explain how certain materials are processed, and how they change from one form to another.</p> <p>Allow the learners to investigate the types of chemicals that are used when processing certain products and allowing those products to change from one form to another. (Galvanised and change or improve properties)</p> <ul style="list-style-type: none"> ■ Learners should investigate the chemicals used in different mining industries. ■ Learners investigate how those chemicals could be harmful to the environment and human life ■ As a teacher take into account that the activity is more scientific than technological, you might like to explain to the learners the relationship between science and technology and how important it is for this activity. ■ Allow learners to provide examples of situations in mining industries where peoples' lives were placed at risk. ■ As a teacher explain how you would assess the activity and the kind of evidence you are expecting <p>Activity 3 In the past few years and recently, there have been a number of demonstrations from people who are claiming compensation from a number of companies and mining industries. Those people allege that the management of the mining industries has treated them unfairly.</p> <p>Activity 3: 1 Your creativity as a teacher would be required in this activity, you need to make this activity as inter active as possible. The critical thinking skills of the learners are put to test.</p> <p>Assuming that your learners are responsible citizens of the country, how would they avoid those situations such as demonstration by present and past employee from mining industries no longer occurs. Allow the learners to use their previous activities as the basis to respond to some questions.</p> <p>You could also be resourceful to the learning environment by providing relevant resources and newspaper cuttings where learners could extract information from.</p> <p>The teacher could develop guiding questions for this activity. As a teacher you need to think about the curriculum and its underlying principles (social justice, human rights, healthy environment and inclusivity).</p> <ul style="list-style-type: none"> ■ The teacher could allow learners to role-play this activity. ■ In wrapping up you could give your learners an assignment on "The two sides of Technology". ■ You should be aware that this is an open ended questions try to think as to how the activity would be assessed
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Who assesses?	Activity 1 Peer assessment Teacher assessment Group assessment Self assessment	Activity 2 Peer assessment Group assessment Teacher assessment Self assessment	Activity 3 Peer Group Teacher Self assessment
Barriers	Teacher could be a barrier. Teacher poor planning could be a barrier Teacher lack of understanding of the subject matter could be a barrier Lack of referral resources Abstract language used Poor management of the process <i>and</i> Lack of enthusiasm and commitment on the part of learners		
Resources	Teachers Parents Media (electronic and printed media) Peer		

ANNEXURE D

Evaluating evidence gathered from Assessment Task: 1

Evidence generated	Evaluating the evidence	Instrument used
Activity 1: <ul style="list-style-type: none"> ▪ Mind maps and lists generated by groups can be put into the learners' portfolios. ▪ Discussion from groups 	<ul style="list-style-type: none"> ▪ Teacher assesses the mind map developed by learners ▪ Teacher assesses the relevancy of the mind map to the task ▪ Teacher assesses the group inputs and participation 	<ul style="list-style-type: none"> ▪ Rubric ▪ Teachers' notes to be reflected in the teachers' portfolio ▪ Checklist for group and peer discussion
Activity 2: <ul style="list-style-type: none"> ▪ Research report generated ▪ Process of discussions and inputs from groups and peers 	<ul style="list-style-type: none"> ▪ Research reports analysed by the teacher ▪ Teacher analyses the flow of the discussion 	<ul style="list-style-type: none"> ▪ Teacher could use informal observation method. ▪ Teacher develops a questionnaire to lead discussions and encourage inputs, during reflection
Activity 3: <ul style="list-style-type: none"> ▪ Group discussions ▪ Learners form round the table debate ▪ Presentation 	<ul style="list-style-type: none"> ▪ Observation ▪ Guidance 	<ul style="list-style-type: none"> ▪ Memorandum ▪ Questionnaire ▪ Scoring sheet

NB: Throughout the process the teacher assumes a facilitation role and guides the process of learning. It is important the teacher mediates and is used as a resource.

The task and the activities carefully analyses and evaluates the impact of existing technology products. These activities could be a challenge to learners because the responses require a background of scientific knowledge. This is where teacher intervention matters most. The activities provide better opportunity for integration of relevant learning areas and learning outcomes.

From all the evidence above, the teacher then makes an informed judgement to reflect the learner's performance.

ANNEXURE E

Generic Assessment Rubric

Criteria	1	2	3	4
1. Content: Knowledge of chemicals and development in SA, understands sources, can make feasible suggestions for the use of chemicals in SA.	Recalls content	Recalls relevant content	Recalls relevant content accurately with understanding	Applies relevant content to gain new understanding
2. Organization and Clarity: Viewpoints and responses are outlined both clearly and orderly.	Unclear in most parts	Clear in some parts but not over all	Most clear and orderly in all parts	Completely clear and orderly presentation
3. Use of Arguments: Reasons are given to support viewpoint.	Few or no relevant reasons given	Some relevant reasons given	Most reasons given: most relevant	Most relevant reasons given in support
4. Use of Examples and Facts: Examples and facts are given to support reasons.	Few or no relevant supporting examples/facts	Some relevant examples/facts given	Many examples/facts given: most relevant	Many relevant supporting examples and facts given
5. Use of Rebuttal: Arguments made by the other teams are responded to and dealt with effectively.	No effective counter-arguments made	Few effective counter-arguments made	Some effective counter-arguments made	Many effective counter-arguments made
6. Presentation Style: tone of voice, use of gestures, and level of enthusiasm are convincing to audience.	Few style features were used; not convincingly	Few style features were used convincingly	All style features were used, most convincingly	All style features were used convincingly

ANNEXURE F

An example of a Learning Area recording sheet																
Learning Area: _____										Grade: ____		Class: ____		Example 1		
Date of recording																
Learning Outcome(s)																
	Learner's result										Comments		Final rating			
Name of learner																
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

Level 1 = 1–34%; Level 2 = 35–49%; Level 3 = 50–69%; Level 4 = 70–100%

ANNEXURE H

Example of a Report Card					
Name of school:	Name:	Grade:	Class:		
	Birth date:	Year:	Term:	1	2
School opening: Date: ___ Time: ___	School opening: Date: ___ Time: ___	Days absent:			
			3	4	

Explanation of National Codes			
1	2	3	4
Not Achieved	Partially Achieved	Satisfactory Achievement	Outstanding/Excellent Achievement
1–34	35–49	50–69	70–100

Learning Areas	Result	Comments
English – Home Language		
Afrikaans – First Additional Language		
Sesotho – Second Additional Language		
Technology		
Natural Sciences		
Technology		
Life Orientation		
Economic and Management Sciences		
Social Sciences		
Arts and Culture		

	Signature	Date	Comments
Principal			
Teacher			
Parent			

