



ZIMBABWE

MINISTRY OF PRIMARY AND SECONDARY EDUCATION

CURRICULUM DEVELOPMENT AND TECHNICAL SERVICES

METAL TECHNOLOGY AND DESIGN

SECONDARY SCHOOL LEVEL

FORM 1 - 6

2015-2022

TEACHER'S GUIDE

Curriculum Development Unit
P.O.BOX MP133
Mount Pleasant
Harare

© All Rights Reserved
Copyright 2015

ACKNOWLEDGEMENTS

The Ministry of Primary and Secondary Education (MoPSE) would like to thank the following for their contribution to the writing of this teacher's guide:

- CDTS Staff
- Technical and Vocational Education Panelists
- UNICEF for funding

TABLE OF CONTENTS

CONTENTS.....	PAGE
ACKNOWLEDGMENT.....	2
PREAMBLE.....	4
RATIONALE.....	5
PART A: CRITICAL DOCUMENTS.....	6
UNIT 1 CURRICULUM FRAMEWORK.....	7
UNIT 2 SYLLABUSES.....	10
UNIT 3 SCHEMES OF WORK.....	20
UNIT 4 LESSON PLAN.....	23
UNIT 5 RECORDS.....	25
PART B: CONTENT, METHODOLOGIES, ASSESSMENT AND EVALUATION.....	27
UNIT 6 METHODOLOGIES.....	27
UNIT 7 INSTRUCTIONAL (TEACHING AND LEARNING AIDS).....	29
UNIT 8 CLASS MANAGEMENT.....	30
UNIT 9 EVALUATION.....	31
UNIT 10 TOPICS COVERED IN THE SYLLABUSES.....	32

Preamble

This teachers' guide was created to guide you the teacher as you embark on teaching Metal Technology and Design in the revised curriculum. We hope that it will make your undertaking easier and clarify most aspects in the Metal Technology and Design syllabus. This teachers' guide is divided into two sections; Part A which covers Critical Documents and Part B which covers Curriculum Delivery (content, objectives, methodologies, media, assessment and evaluation.)

This teachers' guide aims to assist you the teacher to:

- interpret the national syllabuses and translate them into meaningful and functional school syllabuses, schemes of work and record books
- prepare relevant daily teaching notes
- appreciate and understand the need to keep and maintain useful, comprehensive and up to date class records
- make and use relevant teaching and learning materials in the delivery of your lessons
- acquire and use effective teaching techniques suitable for the subject and level of learners
- cope with specific problem areas in Metal Technology and Design teaching
- design appropriate strategies for problem solving
- manage your class effectively and be resourceful
- guide learners to study effectively on their own
- objectively evaluate your own teaching and the learners' progress

The guide covers the following aspects:

- Syllabus interpretation Content
- Methodology
- Teaching and learning materials
- Record keeping and Evaluation
- Class management

RATIONALE

This teachers' guide has been produced in order to guide you the teacher in interpreting the revised curriculum syllabus to satisfy its objective of producing learners with the requisite Metal technology and design skills. It helps you to unpack the topics into teachable units and how to scheme and plan for the revised curriculum. You should stimulate in learners, the responsibility to care for the local and global environment and to adopt sustainable systems.

Metal Technology and Design assists in the teaching-learning of other subjects across the curriculum while also offering opportunities for lifelong learning. It helps learners to develop problem solving and critical thinking skills that are necessary for meaningful and active participation in society. Metal Technology and Design develops in learners, qualities which emphasise the learners' role in making and shaping of their environment. It fosters the learner's ability to employ problem solving skills which promotes the application of scientific and technological knowledge. The syllabus promotes entrepreneurial, recreational and other life skills relevant in the contemporary society.

The learning area enables learners to appreciate the dignity of labour, integrity (unhu/ubuntu) and patriotism. It also enables learners to value the use of different materials in design. This allows greater flexibility in solving practical problems encountered in everyday life. An integral part of the syllabus is the development of the learners' appreciation of the significance of the principal raw materials used in the workshop. The learners are made aware of the environmental and economic impact of the learning area and provide solutions. The syllabus seeks to inculcate a culture of maintenance and self-reliance. As such, you the teacher must of necessity, be resourceful to ensure that the objectives of the syllabus and indeed those of the curriculum are achieved. It is hoped that this guide will assist you in this endeavour.

The study of Metal Technology and Design will enhance development of skills in:

- Problem solving
- Critical thinking
- Innovativeness Invention
- Creativity
- Project management
- Value addition and beneficiation
- Intellectual property rights
- Research
- Decision making
- Self-management
- Enterprise

PART A: CRITICAL DOCUMENTS

As a teacher you need to know the critical documents you should have in order to deliver the curriculum effectively. You should have the following:

- Curriculum framework
- National syllabus
- School syllabus
- Scheme-cum plan or schemes of work and lesson plans
- Learner profile guide
- Records

Unit 1

CURRICULUM FRAMEWORK

The Curriculum Framework for Zimbabwe, Primary and Secondary Education, is a policy document that outlines the underpinning national philosophy, principles, learning areas, descriptions and expectations of the Ministry of Primary and Secondary Education (MoPSE). It offers a vision of the education system and the kind of school graduates that Zimbabwe needs. It prescribes what the government expects you to deliver as you go about your duties. You should therefore be familiar with the document. It also informs you where Metal Technology and Design as a Learning Area is placed.

It is important for you to familiarise yourself with the curriculum framework for Zimbabwe Primary and Secondary Education 2015-2022.

Objectives

By the end of this unit, you should be able to:

- familiarise with the revised curriculum framework
- use the goals of the curriculum framework to produce the desired learners interpret the syllabus as expected by the revised curriculum
- teach as expected by the curriculum articulate the parameters of each topic
- break down the national syllabus into a school syllabus

N.B It is mandatory for you to be in possession of the revised curriculum Framework.

Key Elements of the Curriculum

Principles and Values Guiding the Curriculum

- Philosophy Underpinning the Curriculum
- Policy Guidelines
- Generic Principles guiding the Curriculum
- Learner exit profiles

Goals of the Curriculum

- Organisation of the Zimbabwe school curriculum
- Infant school goals
- Junior school goals
- Secondary school goals
- Learning outcomes
- Learning Areas

The learning areas at Infant school level

- Cross cutting and emerging issues at Infant school level

Junior school curriculum

- Phases of development and progression of the learning process

Learning areas at secondary school level (Forms 1 to Form 4)

- Emerging or Cross Cutting Issues at Forms 1 to 4
- Life Skills Orientation Programme (LOP)
- Learning areas at Forms 5 and 6

Teaching and learning Methods

- Principles of teaching and learning
- Approach
- The learning environment

Assessment and Learning

- Assessment of skills, abilities and knowledge
- Relevance of school-based continuous assessment
- Assessment for learning (formative assessment)
- Assessment of learning (summative assessment)
- Assessment as learning
- Characteristics of assessment tools
- Strategies for assessment of knowledge, skills, values, and attitudes
- Relationship between continuous and summative assessment at various school levels

Strategies for effective implementation

- Strategy for implementing the Framework
- The curriculum review cycle
- Stages of Curriculum development cycle

The Future

- Pillars of the curriculum framework
- Summary of exit profile
- Learning areas and outcomes
- Community and stakeholder participation
- Modes of assessment
- Regular curriculum innovation and renewal
- Action

For details on these key elements of the curriculum you are referred to the revised curriculum Framework

UNIT 2

SYLLABUSES

Syllabuses are key documents to you the teacher. There are two types of syllabuses: National Syllabus and the School Syllabus. A syllabus is a plan that states exactly what learners should learn at school in a particular learning area. You are required to teach from the syllabus. Examinations are set from the syllabus.

It is a major curriculum document which:-

- Prescribes what government would like to see taught in all schools as spelt out in the curriculum framework.
- Outlines the experiences that learners should undergo in a particular course of study i.e. infant, junior and secondary.

Syllabus Interpretation is the process of making sense of the syllabus, finding meaning, unpacking the syllabus, analysing it, synthesising it. As a professional teacher you need to learn how to interpret the syllabus correctly. While syllabuses were developed in consultation with several teachers and experts, not every teacher is privy to what the developers intended. Syllabus interpretation therefore helps you the teacher, to share the same meaning with the developers. It also attempts to put all of you teachers at the same level since you hold different kinds of qualifications from different training institutions. Syllabus interpretation prepares you the teacher, for effective syllabus implementation. Syllabus interpretation focuses on the following:

- The national philosophy/vision as spelt out in the curriculum framework.
- The syllabus aims and objectives, what does the syllabus intend to achieve within the learners?
- The content, knowledge, skills and attitudes i.e. competences. Content constitutes the heart of the syllabus. Syllabus interpretation facilitates breaking down of content into teachable units.
- The nature and scope of the content
- It is organized in a spiral approach (Bruner) the same topics taught at every level but gaining in breadth and depth as one goes up the ladder.
- The methods of delivery are learner-centred, hands on approach, experimental learning and problem solving.
- As a teacher, you are a facilitator in the learning process and not the sole fountain of knowledge.
- Evaluation and assessment; as the teacher evaluation gives a basis to check whether indeed learners are benefiting from the syllabus implementation and whether objectives are being met.
- Evaluation/assessment can be in the Form of exercises, tests, projects, group tasks. There are two main types of evaluation:
 - i. **Formative evaluation on-going/ continuous.** Although it is not new to Metalwork teachers, Continuous assessment is a major innovation in the revised curriculum.

ii. **Summative evaluation; coming at the end of the course, terminal**

As a teacher, you constitute the backbone of the education system. Your ability to deliver effective lessons depends on careful planning. Planning begins with syllabus interpretation which forms the basis for:

- development of school syllabus, development of scheme of work, development of lesson plans

Development of a school syllabus involves re-organising the national syllabus, taking into account local factors. Schemes of work are derived from the school syllabus. The daily lesson plan is, in turn, derived from the scheme of work. To interpret the syllabus, you need to identify its components and establish links between and among them

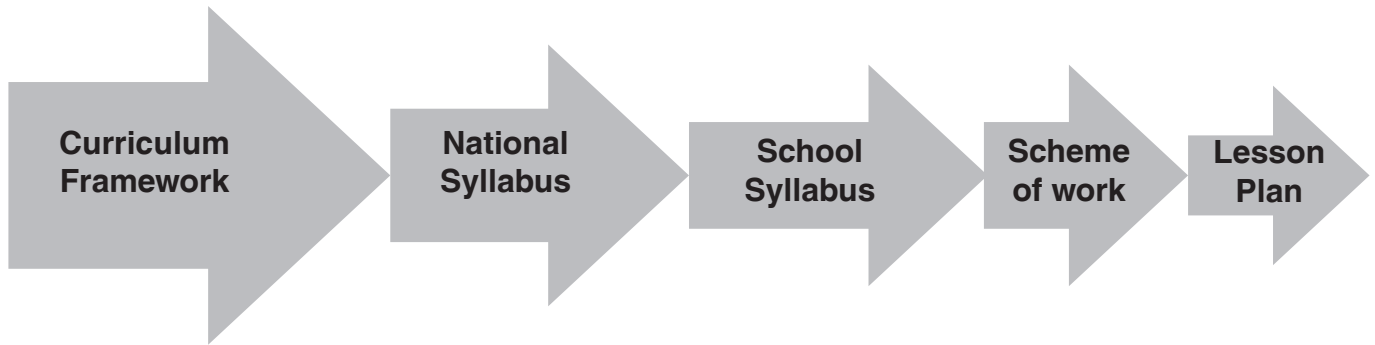


Figure 1 Chain development of key documents.

(a) NATIONAL SYLLABUS

The national syllabus is developed centrally by the Ministry to give direction to the learning process. It is a policy document that outlines and specifies the learning area philosophy, aims and objectives, Learning/teaching content, suggested methodology and assessment criteria at every level. Every teacher must have it to make sure the national goals on education are uniformly achieved. The Metal Technology and Design syllabus consists of:

- Cover page
- Acknowledgements
- Contents page
- Preamble Aims
- Syllabus Objectives Syllabus Topics
- Scope and Sequence Competence Matrix Assessment

1. Preamble

The preamble consists of introductory notes to the syllabus. It has five sub-titles.

- Introduction: Gives a brief introduction to the learning area.
- Rationale: This is a justification of why this particular learning area is included in the curriculum.
- Summary of content: This is a summary of what should be learnt in a particular learning area.
- Assumptions: This is the knowledge that the learners are assumed to already have.
- Cross- cutting themes: These are emerging and contemporary issues that cut across all

learning areas. As a teacher you should find ways of incorporating them in your teaching whenever possible. These are:

- Inclusivity
- Gender equity o Teamwork
- Health and Safety
- Technology and innovation o Intellectual property rights o Environmental issues
- Value addition

NB Not all cross cutting themes can be applied in all Metal Technology and Design lessons, some are more applicable to particular topics than others.

2. Presentation of the syllabus

This is a description of how the Metal Technology and Design syllabus is presented.

3. Aims

These are general statements of what the learning area intends to achieve (major outcomes). They are long term therefore broad. They generally cover the whole learning area e.g. from Forms 1-4. They may differ from level to level for the same learning area. They cover all domains of Bloom's Taxonomy and should cater for all learners. (Inclusivity)

4. Syllabus Objectives

These are specific competencies of the learning area and are derived from the Aims. The Metal Technology and Design learning area syllabus has objectives. These should guide you to develop topic and lesson objectives which are SMART (Specific, Measurable, Achievable, Result oriented and Time framed).

5. Methodology and Time allocation.

This syllabus takes into account learner centred approaches and methods. The choice of teaching methods and approaches should be guided by the principles of inclusivity, relevance, specificity and respect. They are guided by the curriculum framework's thrust i.e. skills or competency based, promoting critical thinking and problem solving.

Time allocation

Reflects the number of periods and their duration allocated for the learning area. Time allocation is determined at policy level and may change accordingly. Learners should go for an educational tour once a year and should exhibit their artefacts at least once a year as prescribed by the syllabus. It is your responsibility to plan for the educational tours and exhibitions and time for these should be provided for within the school calendar.

6. Topics

These are the main pillars of the content for the levels given in itemized Form. They Form the core of a given learning area. In Metal Technology and Design, as a practical learning area, some topics are based on broad skills. Topics are broken down into sub-topics in the competency matrix.

There are eighteen (18) topics in the Forms 1-4 syllabus and eight (8) topics in the Forms 5-6 syllabus.

7. Scope and Sequence

This shows you the breadth and depth of the content. Sequence refers to the ordering of the information. Information is arranged according to logical ordering of the subject matter from simple to difficult concepts. Generally the same concept cuts across all levels differing in depth as learners progress to higher levels. You should understand this spiral approach as it helps you in developing the school syllabus as well as scheming and planning for your work. However, take note that not all concepts cut across from Form one to four. Some concepts may be covered in Forms one and two only therefore may not appear in Forms three and four.

Table 1: Scope and Sequence Chart Sample Forms 1-4 syllabus

TOPIC	FORM 1	FORM 2	FORM 3	FORM 4
7.1 Health and Safety	<ul style="list-style-type: none"> Workshop Health and safety regulations 	<ul style="list-style-type: none"> Workshop Health and safety regulations 	<ul style="list-style-type: none"> Health and safety when using machines and chemicals 	<ul style="list-style-type: none"> Occupational Health and Safety Acts
7.2 Hand Tools and their Applications	<ul style="list-style-type: none"> Classification and uses 	<ul style="list-style-type: none"> Classification and uses 	<ul style="list-style-type: none"> Grinders 	
7.3 Material Science	<ul style="list-style-type: none"> History of production of metals in Zimbabwe Manufacture of ferrous metals Heat treatment of metals 	<ul style="list-style-type: none"> Properties and behaviour of commonly used materials Identification, classification and uses of engineering materials Heat treatment of metals 	<ul style="list-style-type: none"> Types of non-metallic materials commonly used in workshops Types of plastics 	<ul style="list-style-type: none"> Types of non-metallic materials commonly used in workshops Properties of non-metallic materials Types of alloys and alloying elements and their properties Protection of metals against corrosion.

Table 2: Scope and sequence chart sample Forms 5-6 syllabus.**Metal Technology and Design Syllabus Forms 5 - 6****7.0 SCOPE AND SEQUENCE CHART**

SUB TOPIC	FORM 5	FORM 6
7.1 Health and Safety	<ul style="list-style-type: none"> • Waste management • Fire drills • Disaster management • Workshop management 	<ul style="list-style-type: none"> • Occupational health and safety
7.2 Material Science	<ul style="list-style-type: none"> • Solid solution (alloying) • Working properties and characteristics materials 	<ul style="list-style-type: none"> • Application of plastics • Workshop tests of engineering • Material finishes
7.3 Manufacturing	<ul style="list-style-type: none"> • Systems of manufacturing • Industrial manufacturing processes 	<ul style="list-style-type: none"> • Manufacturing • Quality control systems • Automation
7.4 Product Design	<ul style="list-style-type: none"> • Cultural and technological influence on design • Design process models • Intellectual property 	<ul style="list-style-type: none"> • Design process model • Intellectual property

8. Competence Matrix

It is a table that presents you with the concepts/content to be taught or competencies to be acquired. It is developed from the Scope and Sequence. It includes Topic/Skill, Objectives, unit/competence content, suggested learning activities and suggested resources. The table below shows a sample of the Competence Matrix as it is presented in the syllabus.

Table 3: Competence Matrix sample Forms 1-4 syllabus**8.1 TOPIC 1: HEALTH AND SAFETY**

KEY CONCEPTS	OBJECTIVES Learners should be able to:	CONTENT (ATTITUDES, SKILLS AND KNOWLEDGE)	SUGGESTED NOTES AND ACTIVITIES	SUGGESTED RESOURCES
8.1.1 Workshop Health and Safety Regulations	<ul style="list-style-type: none"> • state personal safety rules • observe personal safety rules when using tools and machines • explain the importance of safety in the workshop • classify types of fires and their extinguishers • perform fire drills • dispose waste material in an environmentally friendly way • apply first aid skills 	<ul style="list-style-type: none"> • Health and Safety - Personal - Workshop - Tools - Basic machines - Fire drills - Classes of fire - First aid - Waste disposal 	<ul style="list-style-type: none"> • Conducting fire drills regularly • Classifying types of fires and their extinguishers • Simulating first aid operations • Constructing waste bunkers and ensuring consistent use • Demonstrating the correct use of tools and machines 	<ul style="list-style-type: none"> • First Aid kit • Safety posters • Fire- fighting equipment • Resource persons

Table 4: Competency Matrix sample form 5-6 syllabus

SUB TOPIC	OBJECTIVES Learners should be able to:	CONTENT (ATTITUDES, SKILLS AND KNOWLEDGE)	SUGGESTED NOTES AND ACTIVITIES	SUGGESTED RESOURCES
8.1.1 WASTE MANAGEMENT	<ul style="list-style-type: none"> • identify proper methods of • observe relevant By-laws 	<ul style="list-style-type: none"> • Waste disposal methods • By-laws disposal methods of waste 	<ul style="list-style-type: none"> • Identifying proper waste disposal methods of waste • Observing relevant By- laws • Visiting waste management sites • Watching videos 	<ul style="list-style-type: none"> • ICT tools • Print media • Resource persons • Site visits • Educational Tours
8.1.2 FIRE DRILLS	<ul style="list-style-type: none"> • demonstrate fire drill procedures • identify equipment for use in fire drills • identify emergency exits 	<ul style="list-style-type: none"> • Fire drill procedures • Equipment 	<ul style="list-style-type: none"> • Demonstrating fire drill procedure • Reacting to fire drills equipment 	<ul style="list-style-type: none"> • Procedure manual • Assembly points • Resource persons • Fire-fighting • ICT tools

<p>8.1.3 DISASTER RISK MANAGEMENT</p>	<ul style="list-style-type: none"> • identify equipment • demonstrate procedures 	<ul style="list-style-type: none"> • International Organisation for Standardisation (ISO) equipment/procedure 	<ul style="list-style-type: none"> • Selecting the right 	<ul style="list-style-type: none"> • Regulatory Acts • ICT tools • support the affected Certification • Procedure manual • Resource persons • Standard Association of Zimbabwe (SAZ) • National Social Security Authority (NSSA)
<p>8.1.4 INDUSTRIAL WASTE MANAGEMENT</p>	<ul style="list-style-type: none"> • manage industrial waste • identify disposal methods 	<ul style="list-style-type: none"> • Environmental protection • Disposal methods 	<ul style="list-style-type: none"> • Designing for second use 	<ul style="list-style-type: none"> • Environmental Management Agency (EMA) leaflets • Print media • Disposal sites

9. Assessment

This section gives you information on how the learning area will be assessed, the weighting and skills to be tested, types of questions and duration of each paper. It gives information on how the forms of assessments, namely Formative, Continuous, and Summative will be conducted and the percentages allocated to each. It contains information on profiling, assessment objectives, scheme of assessment, specification grid and assessment model.

The assessment of learners in Metal Technology and Design will be based on 40% Continuous assessment and 60% summative assessment.

(b) SCHOOL SYLLABUS

This is the breakdown of the national or official syllabus drafted at the school and derived from the national syllabus. It is influenced by the following factors:

- level of learner performance -facilities and funds available
- time allocation in the official syllabus
- local conditions that affect choice and sequencing of topics -supply of textbooks and other teaching materials -education technology
- community influence

Conclusion

A comprehensive understanding of the syllabus is mandatory to you so that you facilitate learning and teaching process effectively for the achievement of syllabus objectives as well as learner competencies.

UNIT 3

SCHEMES OF WORK

A scheme of work is a plan for something. Your scheme of work is therefore a plan of action which should enable you to organize teaching activities ahead of time. It is a summarized forecast of work which you consider adequate and appropriate for the class to cover within a given period from those topics which are already set in the syllabus. This important document is drawn from the school syllabus which in turn is drawn from the national syllabus. It outlines what you ought to execute on your day to day teaching and learning activities. The document should therefore be clear in terms of objectives, activities, content and methodologies to be employed. You should draw your scheme of work/scheme-cum plan at least two weeks in advance of the lesson delivery date. (Use of I.C.T tools in drawing up the document is encouraged).

Components of a scheme of work

The scheme of work has the following components which should help you deliver with less challenges.

- **Week ending:** which usually falls on a Friday as the last day of the week. For example 16 June 2017.
- **Topic/Content:** this constitutes the main concept to be covered. For example, Workshop Safety.
- **Objectives:** these are specific teaching/learning objectives. Good objectives provide you with clear delivery focus, provide a means of assessing learner performance, and also allow for your self-evaluation. They should address the 3 Domains that is the Affective, Cognitive and Psychomotor.
- **Competencies:** these are lifelong qualities and skills you want to see in your learners. They include critical thinking, problem solving, creativity, modelling, communication, collaboration, Unhu/Ubuntu/Vumunhu, leadership and technological competencies.

- **Methods and Activities:** learning and teaching methods and activities should be learner centred and should encourage learner creativity.
- **Source of Material (S.O.M) / Reference/Media:** this is an indication of where you are getting your content and the media you are going to use during lesson delivery.
- **Evaluation:** it is a reflection on you, how you have delivered, successes and challenges faced and as well as learner performance.

Table 5: Form one Scheme of work

Topic: Health and safety

Key-concept: Workshop health and safety regulations

Layout is usually horizontal and comprise the following columns:

Week ending	Topic/ Content	Aims: By the end of the week, pupils should be able to:	Competencies	Methods/ Activities	Sources/ References/ Media	Evaluation
16 June 2017	Workshop safety	<ul style="list-style-type: none"> State personal safety rules to be observed in the workshop. Demonstrate practically how to safely carry tools. Explain to visitors how to move safely in the workshop. 	<ul style="list-style-type: none"> communication problem solving unhu/ubuntu/vu-munhu collaboration 	<ul style="list-style-type: none"> learners/teacher discussing safety rules in groups Leanners/teacher taking part in practical demonstrations on how to carry tools safely. Role-play by learners on how to receive visitors to potentially dangerous areas. 	<p>Metal Technology and Design Syllabus page 6</p> <p>Focus on Metal Technology and Design book 1 by Eddie Chinhanho page 14-15</p> <p>Charts</p> <p>ICT tools</p>	

Unit 4

LESSON PLAN

This is a detailed daily plan of what you intend to deliver during the lesson. This is to be used in the event of you having drawn a scheme of work rather than a scheme cum plan. It is your immediate translation of the scheme of work into action, showing us what you are going to teach, for how many minutes, to whom, how and why

EXAMPLE OF A LESSON PLAN

CLASS: Form 1^{a2} **LEARNING AREA:** Metal Technology and Design

DATE: 22 April 2016

TIME: 10:30am – 11:40am

TOPIC: Health and Safety

Number of learners: 18

Key concept: Workshop Safety

Sub-concept:

- Personal safety
- Workshop safety
- Tools safety
- S.O.M.: - Metal Technology and Design (Form 1-4) syllabus page 60-61
- Metal Technology and Design Teachers' Guide Book page 15
- Focus on Metal Technology and Design book 1, Eddie Chinhanho page 14-16

MEDIA: chart illustrating safety, realia such as sharp edged tools, empty bottles of different chemicals, safety clothing.

ASSUMED KNOWLEDGE:

Learners have knowledge on safety from their primary Science and Technology learning area

LESSON OBJECTIVES

By the end of the lesson learners should be able to:

Demonstrate a safe way of using sharp tools such as tin snips Administer First Aid in a working environment

State regulations and precautions to be observed when using different types of tools and equipment

ACTIVITIES

Demonstrating safe movement in the workshop. Demonstrating the safe use of tools.

Discussion on safety rules to be observed in the workshop. Writing notes in note books.

INTRODUCTION: Learners brainstorm the need for safety rules and regulations.

Stage 1: Learners identify the advantages and disadvantages of using tools properly.

Stage 2: Learners in groups demonstrate carrying sharp tools and raking them on workbenches and in the storeroom.

Stage 3: Learners arrange workbenches leaving adequately spaced gangways for easy movement.

Stage 4: Learners come up with proper ways of helping someone who has been injured.

Conclusion: Learners and the teacher summarise their discoveries by discussing the importance of observing safety in the workshop and also the use of first aid kit in schools and institutions

Task: Learners are assigned with questions for further research on health and safety issues.

LESSON EVALUATION:

Strengths:.....

.....

.....

Weaknesses:

.....

.....

Wayforward:.....

.....

.....

Unit 5

RECORDS

Records are critical documents about the teaching-learning process, which you must keep as a teacher. They should be accurate and up to date because you will need them to interpret information to promote learning. They must be kept safely so that the next teacher to take that class will be well and correctly informed. The following are some of the reasons why you should keep records.

- Records guide you on your day to day operations
- Help you track learner performance
- Planning and readjustment of plans
- Source documents for reference
- Basis for profiling
- Basis for counselling
- Basis for remediation and extension

Types of Records

- Curriculum Framework for Primary and Secondary Education 2015-2022
- Syllabuses (national and school)
- Staff and pupil details
- Schemes of work, lesson plans/scheme cum plans
- Class attendance register
- Performance Lag Address Programme (PLAP) record (where applicable)
- Social record
- Progress record
- Remedial record
- Test record
- Supervision record
- Asset and stock control registers
- Teacher's Guide
- Circulars
- Minutes

Learner Profiles

Profile assessment is a quality assessment tool designed for a variety of learners to determine their strengths and identify areas for improvement. As a teacher, you should carry out profiling to track learner behaviour, knowledge, attitudes, aptitudes, values performance and other soft skills on an on-going basis. This assessment informs teaching and learning process and contributes to learner profile.

PART B: CONTENT, METHODOLOGIES, ASSESSMENT AND EVALUATION**Unit 6****METHODOLOGIES**

As a teacher it is important for you to use problem solving and learner-centred approaches. You are the facilitator and the learner is the doer. You should select appropriate teaching methods for your lessons. They should be varied and motivating. The following methods are suggested for you and you should select one or several depending on:

- The subject matter
- Instructional objectives
- The learner
- The teacher
- The time
- Instructional materials
- The environment

It is advisable that the learner be exposed to more than one method in a lesson. Teaching methods can be grouped under three main categories:

- a) Cognitive development methods
- b) Affective development methods
- c) Psychomotor development methods

a) COGNITIVE DEVELOPMENT METHODS These are mainly didactive

- Debate
- Problem solving
- Discussion Method
- Questioning/Socratic Method
- Team Teaching Method
- Recitation Method
- Field Trip/Educational tours

b) AFFECTIVE DEVELOPMENT METHODS

- Modelling Method
- Imitation and Simulation Method - Dramatic Method
- Role-Playing Method - Story telling
- Songs

c) PSYCHOMOTOR DEVELOPMENT METHODS

These are more learner activity based and heuristic

- Imitating or simulation
- Exploration
- Research
- Projects

- Games and quizzes
- Problem solving
- Educational tours
- Drama, song, poetry
- Demonstration
- Group discussion
- Debate
- Gallery walk

UNIT 7

INSTRUCTIONAL (TEACHING-LEARNING) AIDS

These are materials that enhance the teaching- learning process. They assist you the teacher to achieve desired objectives while in learners they help in concretising the concepts. They help learners learn better and faster, motivating them and stimulating interest.

SELECTING APPROPRIATE INSTRUCTIONAL AIDS

When selecting instructional aids, you have to consider the following;

- topic
- level of learners
- available resources
- environment
- number of learners

These teaching-learning aids should be of good quality and user friendly considering the available resources in the school. Examples of teaching-learning aids appropriate in Metal Technology and Design teaching are;

Charts

- ICT tools Textbooks Newspapers Magazines Models
- Mock –ups/Lash-ups Prototypes
- Realia such as tools, furniture, roofs, joinery fittings and other installations.

Instructional aids should be used effectively, they must serve the purpose they are meant for rather than be mere window dressing. You should design your media with the topic in mind. Charts and cards must be clearly written, with visible colours and correct size of script for the level of learners. Electronic equipment should be checked before the lesson so that it is in good working order. If using complicated technical aids, make sure you practice beforehand so that you do not embarrass yourself in front of the class.

UNIT 8

CLASS MANAGEMENT

This is the process of planning, organizing, controlling and leading the class activities to facilitate learning.

CREATING AN EFFECTIVE LEARNING ENVIRONMENT

This covers classroom organization from:

Physical environment

Clean, tidy and airy workshops/classroom and workbenches/furniture arranged carefully for safety, and teaching aids that are visible to learners.

Emotional environment

You need to be firm yet warm and pleasant. As a teacher you must set the right tone, telling your learners what behaviour you expect from them.

Grouping

You may group your learners according to needs, abilities, but never by sex. Encourage them to share ideas in groups.

Class control and discipline

You must be knowledgeable of the school policy on discipline. A teacher must always be firm but fair. Good behaviour must be acknowledged and punishments must be corrective not cruel. You should create an atmosphere of trust and honesty in your class and aim for intrinsic discipline.

Motivation

As a teacher you must make your learners feel important through recognizing and rewarding achievements, and encouraging those who are lagging behind. You should encourage learners to show pride in their work. Rewards should not be food, but positive remarks, or items related to learning like pencils and crayons or even displaying their work. Calling pupils by their names creates good rapport with your class. You should also be a role model to your learners by producing exemplary work which enables learners to see that what you are teaching is achievable.

Supervision

You must check learners' work in order to guide and correct them in all areas from individual projects, group work, assignments, exhibitions, field trips and soft skills.

UNIT 9

EVALUATION

This is the measuring of the success of teaching in terms of teacher and learner performance. It provides you with feedback on the acquisition of knowledge, skills and attitudes by learners. At secondary level, learners will be assessed through continuous assessment and summative assessment. Specific tasks, assignments and projects will be administered throughout the course and the marks collated. Assessment tasks are outlined at the end of the syllabus and include theory, drawing, practical and design exercises and any other appropriate ones depending on your school syllabus.

EVALUATION METHODS

- Assignments Creative work Checklists
- Rating Scale
- Observation Guide Written Exercises Theory Tests
- Projects
- Design work

UNIT 10**TOPICS COVERED IN THE SYLLABUS FORMS 1-4 SYLLABUS**

- Health and Safety
- Hand Tools and their Applications
- Material Science
- Drawing and Design
- Enterprising Education
- Machines and Machining Processes
- Workshop Calculations
- Welding Technology
- Sheet Metal Technology
- Foundry Technology
- Forge Technology
- Electricity and Electronics
- Technology concepts
- Beaten Metal Technology
- Mechanical Joining Processes
- Maintenance
- Material Finishes
- Computer Aided Design and Computer Aided Manufacturing

TOPICS COVERED IN THE SYLLABUS FORMS 5-6 SYLLABUS

- Health and Safety
- Material Science
- Manufacturing
- Product Design
- Systems and Control
- Engineering Science
- Design drawing and Realisation
- Enterprise skills

We hope this guide will help you make a breakthrough into the revised curriculum. It should guide you on interpreting the syllabus, making your own school syllabus, deriving a scheme and a lesson plan or scheme-cum plan, choosing appropriate methods and instructional aids, managing your class and making and maintaining records and finally evaluating yours and your learners' progress.

