

**Technology and Industrial Arts**

# **Textile Technology**

**Senior High  
Grade 12**

**Teacher Guide**

**Standards-Based**



**'FREE ISSUE  
NOT FOR SALE'**

**Department of Education**



# **Technology and Industrial Arts**

## **Textile Technology**

### **Teacher Guide**

### **Grade 12**

### **Standards- Based Curriculum**



**Department of Education**

**Issued free to schools by the Department of Education**

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## Acronyms

AAL	Assessment As Learning
AFL	Assessment For Learning
AOL	Assessment Of Learning
ARS	Audience Response System.
BoS	Board of Studies
CDD	Curriculum Development Division
CP	Curriculum Panel
DA	Diagnostic Assessment
IHD	Integral Human Development
GoPNG	Government of Papua New Guinea
KSVA	Knowledge Skills Values and Attitudes
MTDG	Medium Term Development Goals
NDoE	National Department of Education
OBC	Outcomes-Based Curriculum
OBE	Outcomes-Based Education
PNG	Papua New Guinea
SAC	Subject Advisory Committee
SBA	Standards-Based Assessment
SBC	Standards-Based Curriculum
SBE	Standards-Based Education
SCG	Subject Curriculum Group
STEAM	Science, Technology, Engineering, Arts and Mathematics
SRS	Student Response System
TIA	Technology and Industrial Arts
UOW	Unit of Work

## SECRETARY'S MESSAGE

The ultimate aim of Standards-Based Education in Papua New Guinea (PNG) is to prepare students for careers, higher education, and citizenship. This means that education should focus on developing and equipping students with essential knowledge, skills, values, and attitudes that they can use in all aspects of their lives. Education must also aim to motivate and prepare students to pursue Science, Technology, Engineering, Arts, and Mathematics (STEAM) courses in higher education institutions and pursue careers in STEAM related fields.

The Technology and Industrial Arts subject has 5 strands, which have their own teacher guides developed. This Textiles Technology teacher guide is one of the four developed for grades 9 to 12. Textiles Technology is a significant curriculum course written to develop skills-based proficiencies and competencies in students to be confident, efficient and effective creators and users of textile through better understanding of the content and incorporating the concepts with other technologies, that will provide career opportunities for students to pursue in the 21<sup>st</sup> century.

Textiles Technology embraces the historical and cultural diversity of creating various types of fibres and fabrics, textiles and clothing, absorbing key important aspects of safety, blending these into the modern designing and constructions of garments and fashions and other textile products to meet the needs of today's living.

It is equally important for students to understand textile technology on a larger scale, the perspectives of textile products manufacturing industries, and their impacts on the environment as well as the population globally. Students will make decisive and collaborative decisions to further pursue textile technology more to their advantage and interest.

Technology and Industrial Arts as a subject of which Textile Technology is a strand, is envisioned to benefit students in enabling them to utilise textile technology knowledge, skills, values and attitudes, and systems and processes to solve problems using the design process in a methodical and precise manner to innovate and invent design solutions. The integration of STEAM in the teaching and learning of Textile Technology will instill in students the abilities and capabilities to be highly proficient and competent end users and possibly creators of technology as STEAM is an integral component of the core curriculum.

Teachers are encouraged to read this teacher guide carefully to become familiar with the content so that they can be confident to use the new concepts and strategies as well as teach the content well. They can also adjust to suit the needs of the students.

I commend and approve this Grade 12 Technology and Industrial Arts: Textile Technology Teacher Guide to be used in all high schools throughout Papua New Guinea.



**UKE W KOMBRA, PhD**  
Secretary for Education



## INTRODUCTION

The strand Textile Technology in the Technology and Industrial Arts subject aims to help students become competent and confident users of Textile and technology who can make efficient, effective and creative use of basic application software in their everyday activities. It further encourages them to individually and collaboratively apply systems thinking to monitor, analyse, predict and shape the interactions within and between information systems and the impact of these systems on individuals, societies, economies and environments. It embraces the development in technology and emerging technologies using software and applications, safely, ethically and with greater responsibility.

The study of Textile Technology will enhance the students' knowledge to recognize intellectual property, apply creativity and critical thinking skills, collaboration of design process skills, safety practices, and further identify the impacts of textile technology in society. It also aims to provide lifelong skills and opportunities for students to live a productive life as well as a career or pursuing further learning. In the 21<sup>st</sup> century, it is important to recognise that textile technology has become part of the educational process for all age levels and should be viewed and taught as a tool for problem solving and decision- making.

Students should be encouraged to analyse, synthesise and evaluate situations at home, and school, thereby, apply textile technology knowledge, skills, values and attitudes to efficiently and effectively prepare for the rapid changes and influences that will and may affect textile technology today and beyond. Students' employability will be enhanced through the study and application of STEAM principles. STEAM is an integral component of the core curriculum. It is envisioned that the study of STEAM will motivate students to take up academic programs and careers in STEAM related fields. STEAM has been embedded in the Technology and Industrial Arts: Textile Technology curriculum.

Teachers of Textile Technology strands will plan and program the food and textile strands for 13 weeks on a rotational basis with the other 3 strands as they are taught concurrently, hence the total coverage of learning Technology and Industrial Arts as a subject. The learning integration is more relevant including the STEAM approach to teach the essential knowledge, skills, values and attitudes, and processes. Technology and Industrial Arts: Textile Technology teacher guide must be used in close consultation with the Technology and Industrial Arts grades 11 and 12 syllabuses. It is to be timetabled for 200 minutes (5 periods) per week in senior high school.

## STRUCTURE OF THE TEACHER GUIDE

The Textile Technology Strand Teacher Guide comprises of five main sections that provide essential information that all teachers should know and do to effectively implement the Textile Technology curriculum.

### 1. General Information of the Subject/Strand

The general information section of the Teacher Guide informs teachers on the Textile Technology Strand under the following headings below;

- Introduction of the Strand Teacher Guide
- Structure of the Strand Teacher Guide
- Purpose of the Strand Teacher Guide
- How to use the Strand Teacher Guide

### 2. Teaching and Learning Section

The teaching and learning section of the Teacher Guide informs and guides teachers to apply the teaching and learning theories, principles, pedagogies and practices in planning, programing, teaching and assessing students. They are outlined in the headings bulleted below;

- Syllabus and Teacher Guide Alignment
- Learning and Performance Standards
- Core Curriculum
- Science Technology Engineering Arts Mathematics (STEAM)
- Curriculum Integration
- Essential Knowledge, Skills, Values and Attitudes
- Teaching and Learning Strategies
- Strands, Units and Topics
- Sample SBC Lesson Plans

### 3. Assessment Section

The assessment section of the Teacher Guide informs and guides teachers to plan and program assessment activities, formulate assessment rubrics and apply assessment strategies to assess studies. This section also guides teachers to monitor and report students' progress of learning and performances of the attainment of standards.

### 4. Glossary, References and Appendices Sections

These sections guide teachers to refer to terms and definitions of the strand/ subject content, references outlined to guide the development of this teacher guide And the essential and supplementary information provided to guide teachers on the content and the delivery of this strand/subject.

## PURPOSE OF THE TEACHER GUIDE

This teacher guide describes what teachers should know and do to effectively plan, program, teach and assess grade 12 and Textile Technology content to enable all students to attain the required learning and proficiency standards.

Ample information with thorough guidelines is provided for the teacher to use to achieve the essential Knowledge, Skills, Attitudes and Values (KSAV) embedded in the set national content standards and grade level benchmarks.

The overarching purpose of this teacher guide is to assist teachers to;

- understand the significance of aligning all the elements of standards- based curriculum (SBC) as the basis of achieving the expected level of education quality;
- effectively align all the components of SBC when planning, programming, teaching, and assessing students learning and levels of proficiency;
- effectively translate and align the Technology and Industrial Arts Syllabi and Textile Technology Strand teacher guides to plan, program, teach and assess different Textile Technology Strand Teacher Guide units and topics, and the essential knowledge, skills, attitudes and values (KSAVs) described in the grade – level benchmarks;
- understand the Textile Technology Strand national content standards, grade-level benchmarks, and evidence outcomes;
- effectively make sense of the content (KSAVs) described in the Textile Technology Strand national content standards and the essential components of the content described in the grade – level benchmarks;
- effectively guide students to progressively learn and demonstrate proficiency on a range of Textile Technology Strand skills, processes, concepts, ideas, principles, practices, values and attitudes;
- confidently interpret, translate and use Textile Technology Strand content standards and benchmarks to determine the learning objectives and performance standards, plan and program appropriately to enable all students to achieve these standards;
- embed the core curriculum in the Textile Technology Strand lesson planning, programming, instruction, and assessment to permit all students to learn and master the core knowledge, skills, values and attitudes required of all students;
- provide opportunities for all students understand how STEAM has and continues to shape the social, political, economic, cultural, and environment contexts and the consequences, and use STEAM
- principles, skills, processes, ideas and concepts to inquire into and solve problems relating to both the natural and physical worlds (human –made) as well as problems created by STEAM;

- integrate cognitive skills (critical, creative, reasoning, decision-making, and problem solving skills), high level thinking skills (analysis, synthesis and evaluation skills), values (personal, social, work, health, peace, relationship, sustain values), and attitudes in lesson planning, programming, instruction and assessment;
- meaningfully connect what students learn in Textile Technology Strand with what is learnt in other subjects to add values and enhance students learning so they can integrate what they learn and develop in-depth vertical and horizontal understanding of subject content;
- formulate effective SBC lesson plans using learning objectives identified for each of the topics;
- employ SBC assessment approaches to develop performance assessments to assess students' proficiency on a content standard or a component of the content standard described in the grade –level benchmark;
- effectively score and evaluate students' performance in relation to a core set of learning standards or criteria, and make sense of the data to ascertain status of progress towards meeting grade-level and nationally expected proficiency standards,
- use evidence from the assessment of students' performance to develop effective evidence – based intervention strategies to help students making inadequate or slow progress towards meeting the grade-level and national expectations to improve their learning performances.

### HOW TO USE THE TEACHER GUIDE

The Grade 12 Textile Technology Strand Teacher Guide is an expansion of the content in the Technology and Industrial Art Syllabus. The Syllabus contains the content standards, benchmarks and evidence outcomes which are expanded into teaching and learning Activities in the Teacher Guide. The Teacher Guide provides essential information about what the teacher needs to know and do to effectively plan, teach and assess students' learning and proficiency on learning and performance standards. It should be read in conjunction with the syllabus in order to understand what is expected of teachers and students to achieve the envisaged quality of education outcomes.

Teachers must read and understand each of the sections of the Teacher Guide to help them understand the SBC concepts and ideas. A thorough understanding of these components will help teachers meet the teacher expectations for implementing the SBC curriculum, and therefore the effective implementation of Grade 12 Textile Technology Strand in TIA Curriculum.

The scope of learning is translated and programmed according to the four terms. The suggested teaching and learning strategies and the key important instructions provided for teachers can be used to design and manage teaching and learning activities for the students in the classroom.

Assessment methods, assessment samples, reporting and recording strategies contained in this guide will assist teachers to plan assessment in Strands for the school year.

Based on this understanding, teachers should be able to effectively use the teacher guide to do the following:

The strand teacher guide can be used for developing both classroom learning and professional development activities. The document is a useful resource for developing school and community based in-service programs. Teachers must thoroughly read the contents of the documents in order to develop an understanding and do the following;

#### **Determine Learning Objectives and Lesson Topics**

- The teaching and learning Standards are derived from the Content Standards and Benchmarks in the Syllabus. The Learning Objectives are extracted from the grade-level benchmarks and are used for teaching topics. And lesson objectives are derived from learning objectives and are used for teaching Lessons.

#### **Identify and Teach Grade Appropriate Content**

- Grade appropriate content has been identified and scoped and sequenced using appropriate content organisation principles. The content is sequenced using the spiralling sequence principles. The strand, topics and lesson concepts in the Teacher Guide can be spiralled and taught by Strand, by Topics or by lessons using the Benchmarks. Using the Benchmarks, Content Mapping in Programing will enable teacher to see the content from what the students have already learned in line with current to be taught and link to the next learning content.

### **Integrate the core curriculum in lesson planning, instruction and assessment**

- This sequencing of content will enable students to progressively learn the essential knowledge, skills, values and attitudes as they progress further into their schooling.

### **Integrate cognitive, high level and 21<sup>st</sup> century skills in lesson planning, instruction and assessment**

- Lesson titles in the teacher guide were drawn out from the benchmarks. From the lesson titles outlined in the planning and programming section, the values, the attitude, the skills and the knowledge is identified and the inclusion of 21<sup>st</sup> century skills, creativity, critical thinking collaboration and communication in and where necessary.

### **Integrate Technology and Industrial Arts: Textile Technology Values and Attitudes in lesson planning, instruction and assessment**

- When planning a lesson, it is important that, the values, attitudes, skills and knowledge of the lesson are shown in the teaching and learning activities as displayed in the sample lessons.

### **Identify and use grade and content appropriate, innovative, differentiated and creative teaching and learning methodologies**

- At least one value, one attitude, one skill and one knowledge must be captured in a topic.

### **Integrate Science, Technology, Engineering, Arts and Mathematics (STEAM) principles and skills in lesson planning, instruction and assessment**

- STEAM principles and skills must be effectively taught and learned by students. Teachers should use the teacher guide to help them make informed decisions when selecting the types of teaching and learning methodologies to use in their teaching of the subject content, including STEAM principles and skills.

### **Plan and address the principles of “Inclusive Teaching and Learning**

Teachers are obliged to create an inclusive learning environment to include students with special needs to promote learning for all. These special needs may include students who are gifted or disadvantaged physically, socially, emotionally and intellectually. Students may display combinations of any of these needs and therefore, the teaching and learning activities must have students with special needs to participate to their fullest abilities. The different types of needs in students include;

- Physical disabilities
- Intellectual disabilities
- Hearing impairment
- Sight-vision impairment
- Speech impairment

## Textile Technology

- Behavioral and emotional disorders

It is important that the learning activities for TIA, Textile Technology are inclusive and foster the learning needs of all students.

## SYLLABUS AND TEACHER GUIDE ALIGNMENT

The Grade 12 Textile Technology Strand Teacher Guide is closely aligned and complementary to Technology and Industrial Art Syllabus.

They are the essential focus points for teaching and learning the essential knowledge, skills, values and attitudes.

Syllabus and Teacher Guide Alignment	
Syllabus	Teacher Guide
<p>Outlines the ultimate aim and goals, and what to teach and why teach it</p> <ul style="list-style-type: none"> <li>• Overarching and SBC principles</li> <li>• Content overview</li> <li>• Core curriculum</li> <li>• Essential knowledge, skills, values and attitudes</li> <li>• Strands and units</li> <li>• Evidence outcomes</li> <li>• Content standards and grade-level benchmarks</li> <li>• Overview of assessment, evaluation, and reporting</li> </ul>	<p>Describes how to plan, teach, and assess students' performance</p> <ul style="list-style-type: none"> <li>• Determine topics for lesson planning, instruction and assessment</li> <li>• Formulate learning objectives</li> <li>• Plan SBC lesson plans</li> <li>• Select teaching and learning strategies</li> <li>• Implement SBC assessment and evaluation</li> <li>• Implement SBC reporting and monitoring</li> </ul>

The syllabus outlines the ultimate aim and goals of SBE and SBC, what is to be taught and why it should be learned by students, the underlying principles and articulates the learning and proficiency standards that all students are expected to attain. On the other hand, the teacher guide expands on what is outlined in the syllabus by describing the approaches or the how of planning, teaching, learning, and assessing the content so that the intended learning outcomes are achieved.

This teacher guide should be used in conjunction with the syllabus. Teachers should use these documents when planning, teaching and assessing Grade 12 Textile Technology Strand content.

Teachers will extract information from the syllabus (e.g., content standards and grade-level benchmarks) for lesson planning, instruction and is for measuring students' attainment of a content standard as well as progress to the next grade of schooling.

### Learning and Performance Standards Alignment

Content Standards, Benchmarks and Evidence Outcomes are linked to Learning Objectives, Lesson Objectives and Performance Standards in the Teacher Guide. (see table). There is a close linear relationship between these standards. Students' performance on a significant aspect of a benchmark (KSVA) is measured against a set of performance standards or criteria to determine their level of proficiency using performance assessment. Using the evidence from the performance assessment, individual student's proficiency on the aspect of the benchmark assessed and



progression towards meeting the benchmark and hence the content standard are then determined.

Standards Alignment	
Standards in Syllabus	Standards in Teacher Guide
<ul style="list-style-type: none"> <li>SBC Aims and Goals</li> <li>Content Standard</li> <li>Benchmarks</li> <li>Evidence Outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Learning Objectives</li> <li>Lesson Objectives</li> <li>Essential Knowledge, Skills, Values and Attitude</li> <li>Performance Standard</li> </ul>

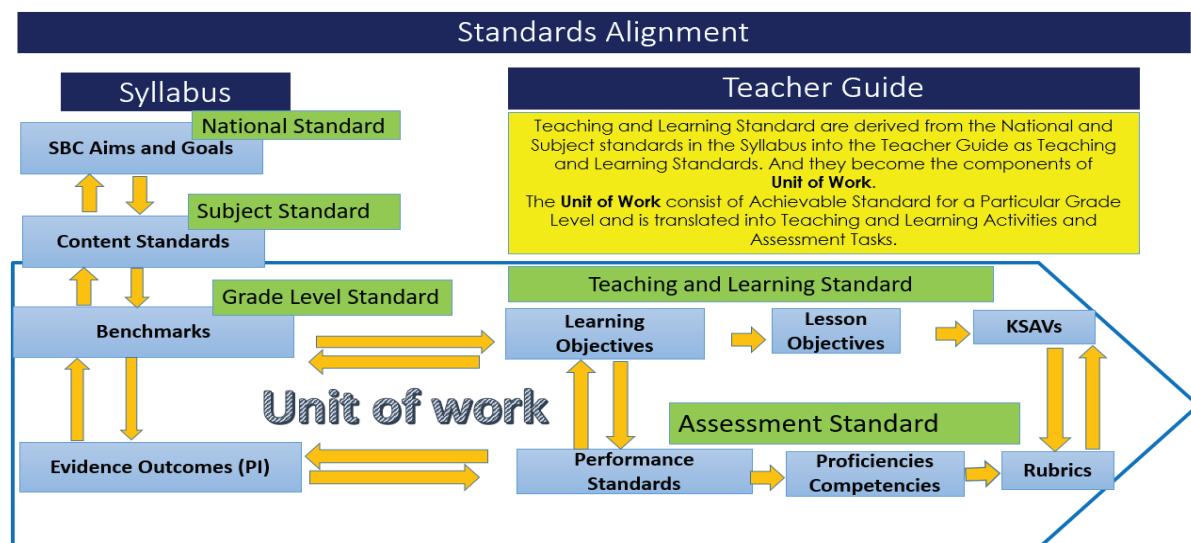
## Standard Alignment

Standard Alignment shows the link between different standards in the Syllabus and Teacher Guide. It begins with SBC Aims and Goals which are National Standards in which the Syllabus Standard are derived from. The Content Standards or Subject Standards are expanded into Benchmarks which are Achievable Benchmarks for particular Grade Levels and are translated into the Teacher Guide as Teaching and Learning Standards and Assessment Standards..And they become the components of Unit of Work (UOW).

The UOW consists of the Achievable Standards for a particular Grade Level and is translated into Teaching and Learning Activities and Assessment Tasks.

It is essential that teachers know and can do standards alignment when planning, teaching, and assessing students' performance so that they can effectively guide their students towards meeting the grade-level benchmarks (grade expectations) and subsequently the content standards (national expectations).

*Below is a diagram to show the relationship between Standards in the Syllabus and the Teacher Guide.*



**Figure 1;** Standards Alignment that shows the alignment of standards in the syllabus and teacher guide

## LEARNING AND PERFORMANCE STANDARDS

Standards define the expected level of education quality that all students should achieve at a particular point in their schooling.

Content standards, benchmarks, and learning objectives are called learning standards while performance and proficiency standards (evidence outcomes) can be categorized as performance standards. These standards are used to measure students' performance, proficiency, progression and achievement of the desired level of education quality. Teachers are expected to understand and use these standards for programming, lesson planning, instruction and assessment.

Student's progression and achievement of education standard(s) are measured using performance standards or criteria to determine their demonstration or performance on significant aspects of the standards and therefore their levels of proficiency and competency. When they are judged to have attained a proficiency on a content standard or benchmark or components of these standards, they are then deemed to have met the standard(s) that is, achieve the intended level of education quality.

### Content Standards

Content standards are evidence-based, rigorous and comparable regionally and globally. They have been formulated to target critical social, economic, political, cultural, environment, and employable skills gaps identified from a situational analysis. They were developed using examples and experiences from other countries and best practice, and contextualized to PNG contexts.

Content standards describe what (content - knowledge, skills, values, and attitudes) all students are expected to know and do (how well students must learn and apply what is set out in the content standards) at each grade-level before proceeding to the next grade. These standards are set at the national level and thus cannot be edited or changed.

Content Standards:

- are evidenced-based;
- are rigorous and comparable to regional and global standards;
- are set at the national level;
- state or describe the expected levels of quality or achievement;
- are clear, measurable and attainable;
- are linked to and aligned with the ultimate aim and goals of SBE and SBC and overarching and SBC principles;
- delineate what matters, provide clear expectations of what students should progressively learn and achieve in school, and guide lesson planning, instruction, assessment;
- comprise knowledge, skills, values, and attitudes that are the basis for quality education;
- provide teachers a clear basis for planning, teaching, and assessing lessons;
- provide provinces, districts, and schools with a clear focus on how to develop and organise their instruction and assessment programs as well as the content that they will include in their curriculum.

## Benchmarks

Benchmarks are derived from the content standards and benchmarked at the grade-level. Benchmarks are specific statements of what students should know (i.e., essential knowledge, skills, values or attitudes) at a specific grade-level or school level. They provide the basis for measuring students' attainment of a content standard as well as progress to the next grade of schooling.

### Grade-level benchmarks:

- are evidenced-based;
- are rigorous and comparable to regional and global standards;
- are set at the grade level;
- are linked to the national content standards;
- are clear, measurable, observable and attainable;
- articulate grade level expectations of what students are able to demonstrate to indicate that they are making progress towards attaining the national content standards;
- provide teachers a clear basis for planning, teaching, and assessing lessons;
- state clearly what students can do with what they have learned at the end of each school-level;
- enable students' progress towards the attainment of national content standards to be measured, and
- enable PNG students' performance to be compared with the performance of PNG students with students in other countries.

## Learning Objectives

Learning or instructional Objectives are precise statements of educational intent. They are formulated using a significant aspect or a topic derived from the benchmark, and is aligned with the educational goals, content standards, benchmarks, and performance standards. Learning objectives are stated in outcomes language that describes the products or behaviours that will be provided by students. They are stated in terms of measurable and observable student behaviour. For example, students will be able to identify all the main towns of PNG using a map.

## Performance Standards

Performance Standards are concrete statements of how well students must learn what is set out in the content standards, often called the "be able to do" or "what students should know and be able to do." Performance standards are the indicators of quality that specify how competent a students' demonstration or performance must be. They are explicit definitions of what students must do to demonstrate proficiency or competency at a specific level on the content standards. Performance standards:

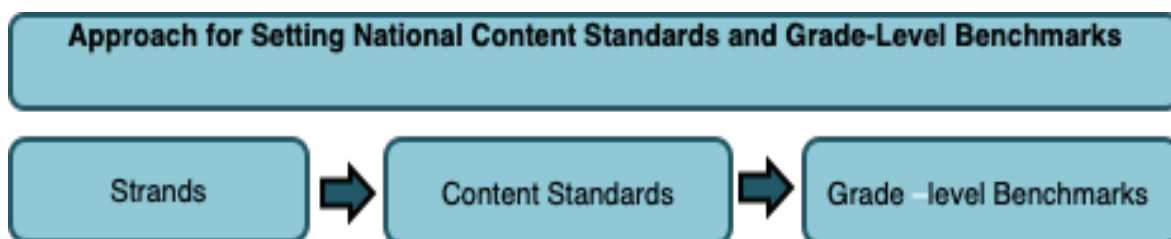
- measure students' performance and proficiency (using performance indicators) in the use of a specific knowledge, skill, value, or attitude in real life or related situations

- provide the basis (performance indicators) for evaluating, reporting and monitoring students' level of proficiency in use of a specific knowledge, skills, value, or attitude.
- are used to plan for individual instruction to help students not yet meeting expectations (desired level of mastery and proficiency) to make adequate progress towards the full attainment of benchmarks and content standards
- are used as the basis for measuring students' progress towards meeting grade-level benchmarks and content standards

### Proficiency Standards

Proficiency standards describe what all students in a particular grade or school level can do at the end of a strand, or unit. These standards are sometimes called evidence outcomes because they indicate if students can actually apply or use what they have learnt in real life or similar situations. They are also categorized as benchmarks because that is what all students are expected to do before exiting a grade or are deemed ready for the next grade.

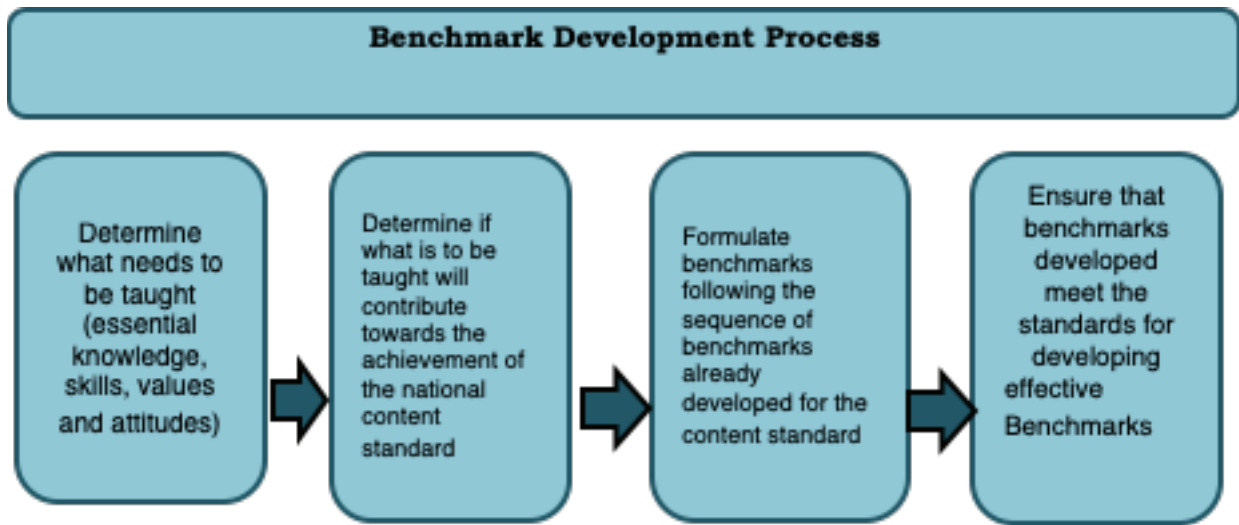
As per presented above, should teachers wish to develop additional benchmarks to cater for their students learning needs. You are encouraged to follow the process below to develop them.



### Development of Additional Benchmarks

Teachers should develop additional benchmarks to meet the learning needs of their students. They should engage their students to learn about local, provincial, national and global issues that have not been catered for in the grade-level benchmarks but are important and can enhance students' understanding and application of the content. However, it is important to note that these benchmarks will not be nationally examined as they are not comparable. Only the benchmarks developed at the national level will be tested.

This does not mean that teachers should not develop additional benchmarks. An innovative, reflect, creative and reflexive teacher will continuously reflect on his/her classroom practice and use evidence to provide challenging, relevant, and enjoyable learning opportunities for his/her students to build on the national expectations for students. Teachers should follow the following process when developing additional grade-level benchmarks



## CORE CURRICULUM

Core curriculum refers to a core set of common learnings (knowledge, skills, values, and attitudes) that are integrated into the content standards and grade-level benchmarks for all subjects. The core curriculum includes:

- Cognitive skills (critical and creative thinking);
- Reasoning, problem-solving and decision-making skills;
- High level thinking skills (analysis, evaluation and synthesis);
- 21<sup>st</sup> century skills;
- STEAM principles and skills;
- Seven Principles for Teaching Procedural and Technical Skills (Plan ahead, Demonstration, Observation of learner in action, provide specific feedback, Encourage self-evaluation, Allow learner practice, Prepare to modify approach)
- Working Diagrams (sketching and technical drawing)
- Reading, writing and communication skills, and
- Essential values and attitudes.

Textile Technology teachers are expected to include the core learning's in their lesson planning, teaching and assessment of students in all their lessons. In addition to these are the essential core curriculums; fabrics and fibres and clothing and textiles. Teachers may include other core curriculum concepts in relation to the subject to cater for students learning needs.

A practical example of integrating core curriculum in Teaching and Learning

Teachers can identify a set of core curriculum to teach in one lesson for example; in Textile Technology students may be posed with an opportunity to find solutions on how technology can be used to utilise one of the core concepts of in their area. The core concepts include; marketing, sales, design and manufacturing, technology, services, operations in textile industries.

Students will be required to use what they learnt in Technology and Industrial Arts about textile technology in people's livelihood in terms of marketing as a quicker and cheaper way of advertising and selling textile products.

They can use STEAM principles and skills in finding cause and solutions, use high level thinking skills to analyse and evaluate the effects and how to improve marketing, use decision making and critical thinking skills to find the solutions for marketing a textile product. They can also use textile technology to design a product for an e-marketing model and be able to confidently and boldly communicate their findings and present intelligent and convincing arguments, which we can conclude that learning of the core curriculum is evident.

If students can be able to demonstrate mastery, proficiency and competency of core curriculum in such a manner, then the learning of core curriculum has been achieved.

### SCIENCE, TECHNOLOGY, ENGINEERING, ARTS, MATHEMATICS

STEAM education is an integrated, multidisciplinary approach to learning that uses science, technology, engineering, arts and mathematics as the basis for inquiring about how STEAM has and continues to change and impact the social, political, economic, cultural and environments contexts and identifying and solving authentic (real life) natural and physical environment problems by nitrating STEAM- based principles, processes, skills, values and attitudes to prepare them for careers, higher education and citizenship.

Business Studies utilises both the goals of STEAM rather than just the goal of problem- solving. This is to ensure that all students are provided opportunities to learn, integrate and demonstrate proficiency on all essential STEAM principles, processes, skills, values and attitudes to prepare them for careers, higher education and citizenship.

#### Objectives:

Students will be able to:

- Examine and use evidence to draw conclusions about how STEAM has and continues to change the social, political, economic, cultural and environmental contexts.
- Investigate and draw conclusions on the impact of STEAM solutions to problems on the social, political, economic, cultural and environments contexts
- Identify and solve problems using STEAM principles, skills, concepts, ideas and process
- Identify, analyze and select the best solution to address a problem
- Build prototypes or model of solutions to problems
- Replicate a problem solution by building models and explaining how the problem was or could be solved.
- Test and reflect on the best solution chosen to solve a problem
- Collaborate with others on a problem and provide a report on the process of problem solving used to solve the problem.
- Use skills and processes learnt from lessons to work on and complete STEAM related projects
- Demonstrate STEAM principles, skills, processes, concepts and ideas through simulation and modeling
- Explain the significance of values and attitudes in problem solving

#### STEAM Problem - *Solving Methods and Approaches*

**Problem** –solving involves the use of problem- solving methods and processes to identify and define a problem, gather information to understand its causes, draw conclusions, and use the evidence to design and implement solutions to address it. Even though, there are many different problems -solving methods and approaches; they share some of the steps of problem-solving, for example:

- Identifying the problem;

- Understanding the problem by collecting data;
- Analyze and interpret the data;
- Draw conclusions;
- Use data to consider possible solutions;
- Select the best solution;
- Test the effectiveness of the solution by trailing and evaluating it, and
- Review and improve the solution.

STEAM problem-solving processes go from simple and technical to advance and knowledge- based processes. However, regardless of the type of process used students should be provided opportunities to learn the essential principles and processes of problem solving and more significantly, to design and create a product that addressed a real problem and meets a human need.

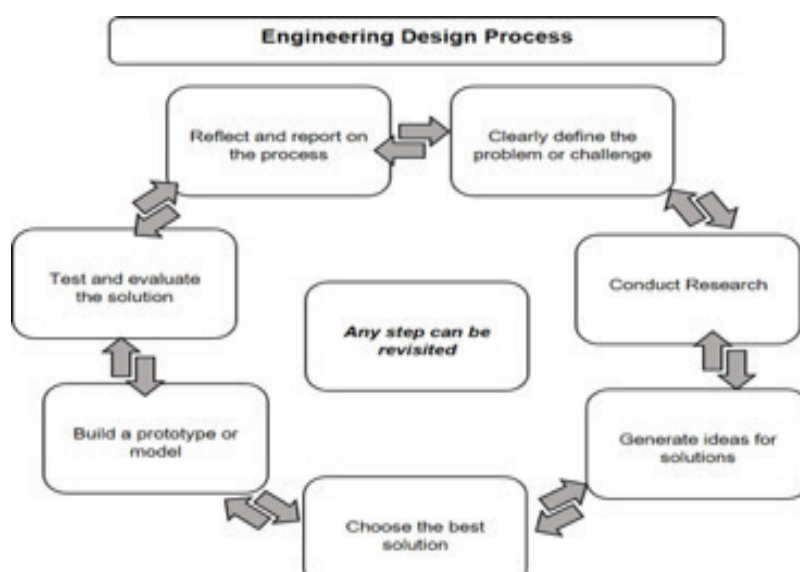
### Engineering Design Process

Technological fields use engineering design process to choose the best solution to solve the problem.

It is an open-ended problem solving process that involves the full planning and development of products or services to meet identified needs. It involves the following sequence of steps:

- Analyse the context and background, and clearly define the problem;
- Conduct research to determine design criteria, financial or other constraints, and availability of materials;
- Generate ideas for potential solutions, using processes such as brainstorming and sketching;
- Choose the best solution;
- Build a prototype or model;
- Test and evaluate the solution;
- Repeat steps as necessary to modify the design or correct faults;
- Reflect and report on the process.

This sequential engineering design process steps described above are illustrated in the diagram below.





Students should be guided through every step of the process so that they can explain it and its importance, and use the steps and the whole process proficiently to identify, investigate and solve problems.

They should be provided with opportunities to practice and reflect on each step until they demonstrate the expected level of proficiency before moving on to the next one.

The sequence of steps is given as a guide below:

- Step 1: Idea Generation
- Step 2: Research
- Step 3: Planning (Design Brief)
- Step 4: Prototyping
- Step 5: Production
- Step 6: Costing
- Step 7: Marketing

### **Step 1: IDEA GENERATION**

- \* Ideation, iteration, and brain storming new product ideas  
Students should be guided and provided opportunities to identify human made, natural and physical environment problems using their five senses and describe what the problem is and its likely causes.

Example: Irregularity of keeping records of stocks of goods and materials

### **Step 2: RESEARCH**

- \* Questionnaires Feedback from a substantial and unbiased audience for product validation  
After the problem is identified and described, several questions will be derived from a main issue question. The questionnaire will be formulated and then will be answered in the survey. This questionnaire will guide the researcher in conducting research and investigation for the appropriate solution to the problem.  
The questions will be targeted towards the usefulness of the product and the interests to purchase the finished product.

Example: Main Question 'How can records of stocks be kept efficiently and managed effectively?'

### **Step 3: PLANNING (DESIGN BRIEF)**

- \* Bring the product to life through sketching, illustrations and working diagrams  
Creating working sketches, illustrations and working diagrams helps the researcher to better understand his or her research problem, refine the research question and decide on investigation approach before the investigation is conducted.

**Example: Description of an Authentic Situation**

The researcher may look into the current practices of stock taking in schools, or other subject areas for tips or conduct online search on how to improve the records of stocks on relevant websites. The researchers may even analyse information and past practices or similar but better regarding the stock taking records keeping.

**Step 4: PROTOTYPING**

- \* Create a finished prototype product to use as a sample for production. The researcher will make or develop a prototype of the solution and test how it would be used to solve the problem.

**Example: Prototype**

The illustration of sketches in the planning stage can be created in the MS Excel and its functions can be identified as the basic solution for Stocking Records.

**Step 5: PRODUCTION**

- \* Gather materials and production

This step is the gathering of materials and producing of the product from the best prototype. This involves the identification of lists of materials, procedural steps with their respective tools or equipment to be used to produce the intended product.

It is obviously known during the production that certain procedural steps are needed to be done in certain order before the others because later steps depend on them being prioritized. In addition, concepts of other subjects needed for producing the product maybe gathered, integrated and utilised in the production of the product.

**Example: Producing the product****Step 6: COSTING**

- \* Total cost of product sold (COGS) to determine retail price and gross margin

This stage is known as product pricing which involves the calculation of the costs of materials used, labour costs mark up and selling prices. The selling price may be influenced by responses to the questions in the survey due to the interest of the buyers which will determine the cost of the product.

The cost for producing the item are;

Material Unit cost K\_\_\_\_\_

Labour Cost(no of hours spent x your Rate ) 10 hrs x K\_\_\_\_\_ = K\_\_\_\_\_

Selling/Marketing cost K\_\_\_\_\_

A simple formula to calculate a good mark-up percentage for the project:

$$\text{MARKUP PERCENTAGE} = (\text{SELLING PRICE} - \text{UNIT COST}) / \text{UNIT COST} \times 100\%$$

Simply take the sales price minus the unit cost and divide the number by the unit cost. Then multiply by 100 to determine the mark-up percentage.

For example: if the project costs K50.00 to make and the selling price is K75.00 then the mark-up percentage would be 50%.  $(K75.00 - K50.00 = 0.50 \times 100 = 50\%$ .

Example: Pricing the product.

## Step 7: MARKETING

- \* Launch product into market

This stage involves the marketing of the finished product. The potential buyers of the product are the targeted audience that were used in the research.

The finished product can be promoted using flyers, put out on public places and market page can be created on social media networks.

## STEAM- Based Lesson Planning

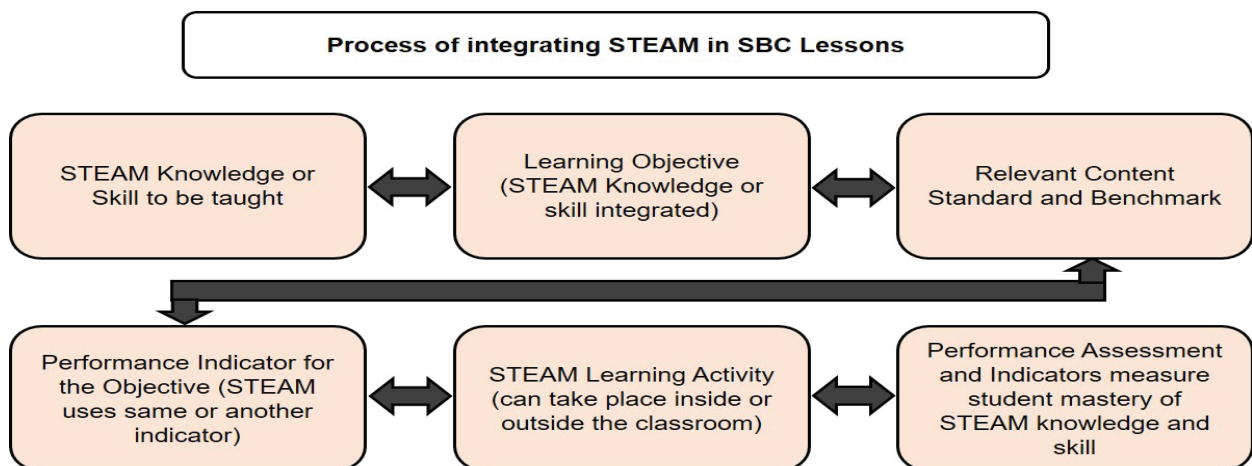
Effective STEAM lesson planning is the key to the achievement of the expected outcomes. STEAM Skills can be planned and taught using separate STEAM- based lesson plans or integrated into the standards- based lesson plans. To effectively do this, teachers should know how to write effective standards and STEAM-based lesson plans.

### Developing STEAM-based Lesson Plans

An example of a standards- based lesson is provided below. Teachers should use this to guide them to integrate STEAM content and teaching, learning and assessment strategies into their standards- based lesson plans.

### Integration of STEAM problem-solving skills into standards-based lesson plans

### Process for Integrating STEAM Principles and Problem-Solving Skills into Standards-Based Lessons



Teachers should follow the steps given below when integrating STEAM problem-solving principles and skills into their standards-based lesson plans. Teachers should follow the steps given below when integrating STEAM problem-solving principles and skills into their standards-based lesson plans.

**Step 1:** Identify the STEAM knowledge or skill to be taught (From the table of KSAVs for each content standard and bench mark). This could be already being captured in the learning objective stated in the standards-based lesson plan.

**Step 2:** Develop and include a performance standard or indicator for measuring student mastery of the STEAM knowledge or skill (e.g. level of acceptable competency or proficiency) if this is different from the one already stated in the lesson plan

**Step 3:** Develop student learning activity (An activity that will provide students the opportunity to apply STEAM knowledge or skill specified by the learning objective and appropriate statement of standards). Activity can take place inside or outside the classroom and during or after school hours.

**Step 4:** Develop and use performance descriptors (standards or indicators) to analyse student STEAM related behaviours or products (results or outcomes), which provide evidence that the student has acquired and mastered the knowledge or skill of the learning objective specified by the indicator(s) of the standard(s).

### STEAM- Based Assessment

STEAM-based assessment is closely linked to standards-based assessment where assessment is used to assess student's level of proficiency or competency of a specific knowledge, skill, value or attitude taught using a set of performance standards (indicators or descriptors). The link also includes the main components such as the purpose, the assessment principles and assessment strategies and tools.

In STEAM-based assessment, assessment is designed for what the students should know and be able to do. In STEAM learning students are assessed in a variety of ways including portfolios, project/problem-based assessment, backward designs, authenticity assessment, or other students centered approaches. When planning and designing the assessment, teachers should consider the authenticity of the assessment by designing an assessment that relates to a real world task or discipline specific attributes (such as simulation, role play, placement assessment, live projects, debates) should make the activity meaningful to the student, and therefore be motivating as well as developing employability skills and discipline specific attributes.

#### Effective STEAM-Based Assessment strategies

The following six sections describe six assessment tools and strategies shown to impact teaching and learning as well as help teachers foster a 21<sup>st</sup> century learning environment in their classrooms.

1. Rubrics
2. Performance-based assessment (PBAs)
3. Portfolios
4. Student self-assessment
5. Peer-assessment
6. Students response system (SRS)

Although the list does not include all innovative assessment strategies, it includes what we think are the most common strategies, and ones that may be particularly relevant to the educational context of developing countries in this 21<sup>st</sup> century. Many of the assessment strategies currently use fit under one or more of the categories discussed. Furthermore, it is important to note that strategies also connect in a variety of ways.

#### 1. Rubrics

Rubrics are both a tool to measure students' knowledge and ability as well as an assessment strategy. A rubric allows teachers to measure certain skills and abilities not measurable by standardised testing systems that assess direct knowledge at a fixed moment in time. Rubrics are also frequently used as part of other assessment strategies (portfolios, performances, projects, peer-review and self-assessment), they will be discussing in those sections as well.

## 2. Performance- Based Assessments

Performance- Based Assessments (PBA), also known as authentic assessment are generally used as a summative evaluation strategy to capture not only what students know about a topic, but if they have the skills to apply that knowledge in a; real-world' situation by asking them to create an end product. PBA pushes students to synthesize their knowledge and apply their skills to a potentially unfamiliar set of circumstances that is likely to occur beyond the confines of a controlled classroom setting. The implementation of performance-based assessment strategies can also impact other instructional strategies in the classroom.

## 3. Portfolio Assessment

Portfolios are a collection of student work gathered over time that is primary used as a summary evaluation method. The most salient characteristic of the portfolio assessment is that rather than being a snap shot of a student's knowledge at one point in time (like a single standardized test) it highlights student effort, development, and achievement over a period of time; portfolios measure as student's ability to apply knowledge rather than simply regurgitate. They are considered both student-centered and authentic assessment of learning.

## 4. Self-Assessment

Its main purpose is for students to identify their own strengths and weakness and to work to make improvements to meet specific criteria. Self-assessment occurs when students judge their own work to improve performance as they identify discrepancies between current and desired performance. In this way, self-assessment aligns well with standards-based education because it provides clear targets and specific criteria against which students or teachers can measure learning.

Self-assessment is used to promote self-regulation to help students reflect on their progress and to inform revisions and improvements on a project or paper in order for self-assessment to be truly effective, four conditions must be in place, the self-assessment criteria, criteria is negotiated between the teachers and students, students are taught how to apply the criteria, students receive feedback on their self-assessments and teachers help students use assessment data to develop an action plan.

## 5. Peer Assessment

Peer assessment, much like self-assessment, is a formative assessment strategy that gives students a key role in evaluating learning. Peer assessment approaches can vary greatly but, essentially it is a process for learners to consider and give feedback to other learners about the quality or value of their work. Peer assessments can be used for a variety of products like papers, presentations, projects and or other skills behaviors. Peers assessment is understood as more than only a grading procedure and is also envisioned as teaching strategy since engaging in the process develops both the assessor and the assesses skills and knowledge. The primary goal for using peer assessment is to provide feedback to the learners. This strategy may be particularly relevant in the classrooms with many students per teacher since student time will be more plentiful than teacher time, although any single student's feedback may not be rich or in-depth as teachers feedback, the research suggests that peer assessment can improve learning.

### 6. Students Response system

Students response system (SRS), also known as classroom response (CRS), audience response system (ARS) is general term that refers to a variety of technology-based formative assessment tools that can be used to gather student- level data instantly in the classroom through the combination of hardware, (voice recorders, PC, internet connection, projector and screen) and software.

Teachers can ask students a wide range of questions (both closed and open ended), where students can respond quickly and anonymously, and the teacher can display the data immediately and graphically. The use of technology also includes a use of video which examines how a range of strategies can be used to assess students understanding. The value of SRS comes from the teachers analysing information quickly and then devising real-time instructional solutions to maximise students learning. This includes a suggested approach to help teachers and trainers assess learning.

## ESSENTIAL KNOWLEDGE, SKILLS and ATTITUDES

Students' level of proficiency and progression towards the attainment of content standards for Technology and Industrial Arts subject will depend on their mastery and application of essential knowledge, skills, values, and attitudes in real life or related learning experiences and situations across the secondary curriculum.

Examples of the different types of knowledge, skills, values and attitudes, including processes, that all students are expected to learn and master as they progress through the grades are provided in;

- Technology and Industrial Arts syllabuses for grades 9&10 page 24-27 and
- Technology and Industrial Arts syllabuses for grades 11&12 pages 23-26.

These knowledge, skills, values and attitudes have been integrated into the content standards, benchmarks and performance standards developed for Technology and Industrial Arts subject

Teachers are expected to plan and teach these in their lessons, and assess students' performance and proficiency, and progression towards the attainment of content standards.

### Textile and Industrial Arts

Technology and Industrial Arts provides and instills in students the confidence to use a range of specific knowledge, skills, values and attitudes in various technologies. These are scoped and embedded within the strands curriculum content in the subject, with the intension to create related career pathways. Each strand content encourages students to be proactive, competent, creative, responsible and reflective learners, enabling them to pursue career opportunities in respective fields of technology studied in this subject.

Provided herein are recognised knowledge for the subject which are applicable across the strands.

### Types of common knowledge for Technology and Industrial Arts

These are specific content knowledge for the subject. They include;	
<ul style="list-style-type: none"> <li>• Creativity</li> <li>• Branding</li> <li>• Communication skills</li> <li>• Technical expertise</li> <li>• Industry expertise</li> <li>• Critical thinking-</li> <li>• Information Technology skills</li> <li>• Innovation</li> </ul>	<ul style="list-style-type: none"> <li>• Building and Engineering Knowledge.</li> <li>• Physical Strength and Stamina.</li> <li>• Mathematical formulas in technology</li> <li>• Technology and Industrial Language Coordination.</li> <li>• Technology Skills.</li> <li>• Problem Solving Skills.</li> <li>• Prototype</li> </ul>

Technology and Industrial Arts is a skills oriented subject, therefore embraces all the commonly recognised skills which can be used across the strands scoped in the content. Listed here for teachers convenience are commonly recognised skills across the strands.



## Types of Skills for Technology and Industrial Arts

These are specific content Skills for the strand., They include;	
<ul style="list-style-type: none"> <li>• Creativity</li> <li>• Critical thinking</li> <li>• Technical knowledge</li> <li>• Commercial awareness of textile industry</li> <li>• Research and data handling capacity</li> <li>• Critical analysis and interpretation of materials</li> <li>• Management skills</li> <li>• Organisational Skills.</li> <li>• Problem solving skills</li> <li>• Mathematical skills</li> <li>• Language Literacy skills</li> <li>• Leadership</li> <li>• Innovative skills</li> <li>• trans formational skills</li> </ul>	<ul style="list-style-type: none"> <li>• Textile construction Skills</li> <li>• Focus Communication skills (approachability, circumstantial awareness, diligence, efficiency, thoroughness)</li> <li>• <u>Multitasking skills</u></li> <li>• Attention to detail skills (multitasking , approachability,</li> <li>• Technical Skills for fashion designing</li> <li>• Decision making skills</li> <li>• <u>Textile technology soft skills</u></li> <li>• <u>logical thinking</u></li> <li>• <u>collaboration</u></li> <li>• <u>teamwork</u></li> <li>• Textile <u>Design engineering</u></li> <li>• <u>consumer Service</u></li> <li>• Modelling</li> </ul>

## Types of Values

Personal engagement and civic engagement strategies help young people to acquire and apply skills and dispositions that will prepare them to become competent and responsible citizens.

Personal Values (importance, worth, usefulness, etc.)

Core values	Sustaining values
<ul style="list-style-type: none"> <li>• Sanctity of life</li> <li>• Truth</li> <li>• Aesthetics</li> <li>• Honesty</li> <li>• Human</li> <li>• Dignity</li> <li>• Rationality</li> <li>• Creativity</li> <li>• Courage</li> <li>• Liberty</li> <li>• Affectivity</li> <li>• Individuality</li> </ul>	<ul style="list-style-type: none"> <li>• Self-esteem</li> <li>• Self-reflection</li> <li>• Self-discipline</li> <li>• Self-cultivation</li> <li>• Principal morality</li> <li>• Self-determination</li> <li>• Openness</li> <li>• Independence</li> <li>• Simplicity</li> <li>• Integrity</li> <li>• Enterprise</li> <li>• Sensitivity</li> <li>• Modesty</li> <li>• Perseverance</li> </ul>

## Social Values

Core Values	Sustaining Values
<ul style="list-style-type: none"> <li>• Equality</li> <li>• Kindness</li> <li>• Benevolence</li> <li>• Love</li> <li>• Freedom</li> <li>• Common good</li> <li>• Mutuality</li> <li>• Justice</li> <li>• Trust</li> <li>• Interdependence</li> <li>• Sustainability</li> <li>• Betterment of human kind</li> <li>• Empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• Plurality</li> <li>• Due process of law</li> <li>• Democracy</li> <li>• Freedom and liberty</li> <li>• Common will</li> <li>• Patriotism</li> <li>• Tolerance</li> <li>• Gender equity and social inclusion</li> <li>• Equal opportunities</li> <li>• Culture and civilization</li> <li>• Heritage</li> <li>• Human rights and responsibilities</li> <li>• Rationality</li> <li>• Sense of belonging</li> <li>• Solidarity</li> <li>• Peace and harmony</li> <li>• Safe and peaceful communities</li> </ul>

## Types of Attitudes

Attitudes - Ways of thinking and behaving, points of view	
<ul style="list-style-type: none"> <li>• Optimistic</li> <li>• Participatory</li> <li>• Critical</li> <li>• Creative</li> <li>• Appreciative</li> <li>• Empathetic</li> <li>• Caring and concern</li> <li>• Positive</li> <li>• Confident</li> <li>• Cooperative</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible</li> <li>• Adaptable to change</li> <li>• Open-minded</li> <li>• Diligent</li> <li>• With a desire to learn</li> <li>• With respect for self, life, equality and excellence, evidence, fair play, rule of law, different ways of life, beliefs and opinions, and the environment.</li> </ul>

## Textile Technology Strand

The textile technology strand encourages students to “think out of the box”. This simply means to think openly and freely beyond the learning situation to bring about fresh creative ideas into the classroom lessons. This gives opportunity to the students to apply creativity and critical thinking to participate in the lessons. Teachers must ensure that even students with rudimentary creativity skills end up improvising them

## Types of knowledge for Textile Technology

These are specific content knowledge for the subject. They include;	
<ul style="list-style-type: none"> <li>• technical knowledge of fabric manufacturing,</li> <li>• yarn preparation,</li> <li>• textile dyeing and bleaching,</li> <li>• textile construction methods,</li> <li>• all the basics of fibre, warp, weft, weave etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturing of textiles.</li> <li>• Procurement of raw materials.</li> <li>• Yarn preparation.</li> <li>• Analysis of materials.</li> <li>• Printing and dyeing.</li> <li>• Painting techniques.</li> <li>• Traditional dyeing techniques like tie and dye, batik, (kalamkari,) screen printing, (stencilling), transfer printing, and block printing.</li> <li>• Application of colour theory.</li> <li>• Knowledge of luminosity and colour spectrum.</li> <li>• Fabric cutting, sewing, weaving techniques.</li> <li>• Analysis and interpretation of materials.</li> </ul>

## Processes in Technology & Industrial Arts

Technology and Industrial Arts expounds on the classroom practices using processes for effective and evidence based lesson deliveries. The commended/suggested processes are for teachers to use as the starting points planning skills or practice based lessons in any of the strands as presented in the subject syllabus.

**Types of Processes- Inquiry processes for Technology & Industrial Arts subject****Technology & Industrial Arts Inquiry processes include: (Accept for the TG)**

- Gathering information
- Analysing information
- Evaluating information
- Making judgements
- Taking actions
- Instructional technology
- Integration process
- Project planning process
- Organisation of learning experiences

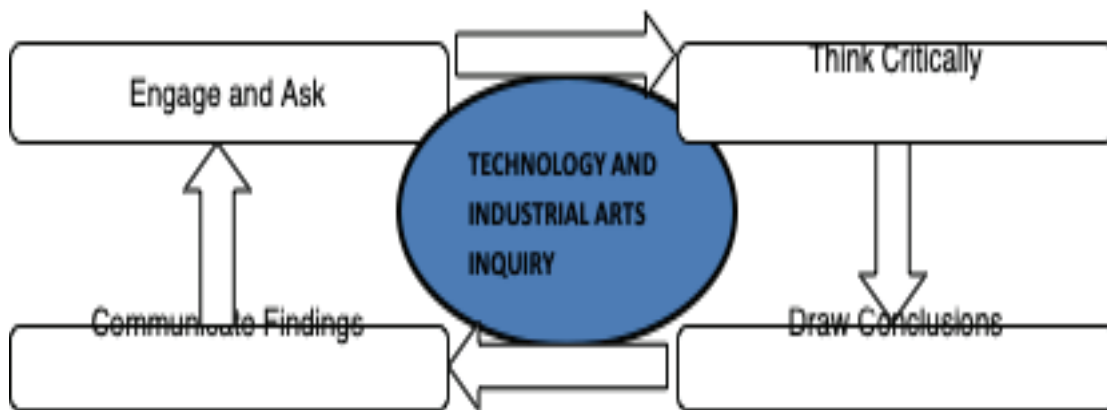
## Technology & Industrial Arts - Inquiry Processes

<p><b>Engage and Ask</b></p>	<p>How will I engage my students in the topic and prompt them to ask questions?</p> <ul style="list-style-type: none"> <li>• Determine the enduring understandings about the topic being studied.</li> <li>• Engage your students with the topic by grabbing their interest with a hook connected to the enduring understandings.</li> <li>• Allow students to generate questions based upon the topic and hook.</li> <li>• Determine what questions will be essential to achieving the enduring understandings. (Student generated or teacher determined)</li> <li>• With students, determine what other information is needed in order to fully answer the questions.</li> </ul>
<p><b>Think Critically</b></p>	<p>How will students access and analyse information about this topic?</p> <ul style="list-style-type: none"> <li>• Have students think about where they can find answers to the questions posed about the topic.</li> <li>• Gather and organize multiple primary and secondary sources.</li> <li>• Ensure that sources used expose students to different perspectives and viewpoints about the topic.</li> <li>• Students should use sources to collect, analyse, and interpret data.</li> <li>• Ensure students are analysing sources for credibility, bias, and perspective in order to identify gaps in the research.</li> </ul>
<p><b>Draw Conclusion</b></p>	<p>How will students synthesize ideas to answer the questions posed based on sources used?</p> <ul style="list-style-type: none"> <li>• Students should engage in civic discussion to answer the questions posed while respecting diverse opinions.</li> <li>• Engage students in evaluating possible courses of action and their consequences.</li> <li>• Students should make and justify an informed decision or choice and/or design an action plan supported by evidence from sources.</li> <li>• Have students evaluate the consequences of a decision or choice.</li> <li>• Allow students to make revisions based on feedback and further study.</li> </ul>

## Textile Technology

<b>Communicate Findings</b>	<p>How will students demonstrate what they have learned and take action on that learning?</p> <ul style="list-style-type: none"><li>• Determine how students will apply what they have learned and share their findings with others.</li><li>• Explore appropriate audiences for students to present conclusions.</li><li>• Determine if there is an opportunity for students to take action and influence others to make more informed decisions.</li><li>• Have students develop strategies to persuade others, including policy makers when applicable.</li><li>• Prepare students to defend their analysis against alternative.</li></ul>
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Below is how the Technology & Industrial Arts Inquiry Process will be taught in the classroom. Be specific as you make notes of the activities or prompts you will use to ensure students will have the opportunity to practice these skills as a requirement in the Grade 9 content standards.



### Technology & Industrial Arts Enquiry

#### 1. Developing Questions and Planning Inquiries

- a. Constructing Essential Questions
  - Address essential questions that reflect an enduring issue in the field
- b. Constructing Supporting Questions
  - Explain how supporting questions contribute to an enquiry.
- c. Determining Helpful Sources
  - Develop new support or essential questions through investigations, collaboration and use diverse sources.

### 2. Evaluating Sources and Using Evidence

#### a. Gathering and Evaluating Sources

- Gather and evaluate information from multiple sources while considering the origin, credibility, point of view, authority, structure, context and corroborative value of the sources.

#### b. Developing Claims and Using Evidence

Identify evidence that draws information from multiple sources to revise or strengthen claims.

- Communicating Conclusions and Taking Informed Action

#### c. Communicating Conclusions

- Construct and evaluate explanations and arguments using multiple sources and relevant, verified information.

#### d. Critiquing Conclusions

- Articulate explanations and arguments to a targeted audience in diverse setting.

#### e. Taking Informed Action

- Use interdisciplinary lenses to analyse the causes and effects of and identify solutions to local, regional or global concerns.
- Use deliberative processes and apply democratic strategies and procedures to address local, regional or concerns and take action in or out of school.

## 5. Literacy Skills

A strong emphasis must be placed on various types of literacy, from financial to technological, from media to mathematical, from content to cultural. Literacy may be defined as the ability of an individual to use information to function in society, to achieve goals and to develop her or his knowledge and potential. Teachers emphasize certain aspects of literacy over others, depending on the nature of the content and skills they want students to learn.

## The following literacy skills are intended to be exemplary rather than definitive

<ul style="list-style-type: none"> <li>• Listens, read, write, and speak with comprehension and clarity</li> <li>• Define and apply discipline-based conceptual vocabulary</li> <li>• Describe people, places, and events, and the connections between and among them</li> <li>• Arrange events in chronological sequence</li> <li>• Differentiate fact from opinion</li> <li>• Determine an author's purpose</li> <li>• Determine and analyse similarities and differences</li> <li>• Analyse cause and effect relationships</li> <li>• Explore complex patterns, interactions and relationships</li> <li>• Differentiate between and among various options</li> </ul>	<ul style="list-style-type: none"> <li>• Listens, read, write, and speak with comprehension and clarity</li> <li>• Define and apply discipline-based conceptual vocabulary</li> <li>• Describe people, places, and events, and the connections between and among them</li> <li>• Arrange events in chronological sequence</li> <li>• Differentiate fact from opinion</li> <li>• Determine an author's purpose</li> <li>• Determine and analyse similarities and differences</li> <li>• Analyse cause and effect relationships</li> <li>• Develop an ability to use and apply abstract principals</li> <li>• Explore and/or observe, identify, and analyse how individuals and/or societies relate to one another</li> </ul>
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### High Level Thinking Skills

These skills include analysis, synthesis, and evaluation skills.

**Analysis Skills** – Analysis skills involve examining in detail and breaking information into parts by identifying motives or causes, underlying assumptions, hidden messages; making inferences and finding evidence to support generalisations, claims, and conclusions.

Key Words				
Analyse	Differences	Find	List	Similar to
Appraise	Discover	Focus	Motivate	Simplify
Arrange	Discriminate	Function	Omit	Take part in
Assumption	Discussion	Group	Order	Test for
Breakdown	Distinction	Highlight	Organise	Theme
Categorize	Distinguish	In-depth	Point out	
Cause & effect	Dissect	Inference	Research	
Choose	Divide	Inspect	See	
Classify	Establish	Isolate	Select	
Comparing	Examine	Investigate	Separate	

**Synthesis Skills** – Synthesis skills involve changing or creating something new, compiling information together in a different way by combining elements in a new pattern proposing alternative solutions.

**Evaluation Skills** – Evaluation skills involve justifying and presenting and defending opinions by making judgments about information, validity of ideas or quality of work based on set criteria.



### TEACHING AND LEARNING STRATEGIES

Technology & Industrial Arts emphasises and embraces the use of cognitive, reasoning, decision-making, problem solving and higher level thinking skills to teach to enhance students' understanding of inter-disciplinary concepts and issues in relation to environment, geography, history, politics and economic within PNG and globally.

It aims to provide a meaningful pedagogical framework for teaching and learning essential and in demand knowledge, skills, values, and attitudes that are required for the preparation of students for careers, higher education and citizenship in the 21<sup>st</sup> century.

Students must be prepared to gather and understand information, analyse issues critically, learn independently or collaboratively, organise and communicate information, draw and justify conclusions, create new knowledge, and act ethically.

Teaching and learning is a two-way interactive interaction between teacher and a student, a student to a student/students and occurs in any learning environment in or outdoors depending on the nature of teaching strategies learning activities and performance assessments teachers plan to use in the delivering of the lesson.

Technology and Industrial Arts teaching and learning takes on a blended perception and practices of its content delivering with envisioning intentions to reinforce evidence based learning. It embraces these in the classrooms whereby each technology strand content in the form of content standards, benchmarks and performance standards direct or determine the planning of the types of learning situations and activities, assessments throughout the school year.

These standards, including the specific knowledge skills and attitudes, how they are planned for students learning and performance attainment purposes in the respective grade levels are through highly commended teaching, learning and assessing strategies. For example; using blended learning strategies. This is where/when the traditionally recognised strategies (teacher centred) is blended with using e-teaching/learning strategies(online using smart phones) to learn about properties of fabrics, in a Textile Technology strand lesson.

#### Teaching strategies

Find listed for your convenience are identified teaching strategies commended for TIA subject lesson deliveries lessons However teachers can blend these in with the existing or current teaching practices using technology.

- use of multimedia for content research
- utilization of social media for fact finding on particular technology ...
- using variety of resources for meaningful teaching. ...
- making most of games in electronic devices for learning.
- use technology to empower students and reach out.

## Learning Strategies

These are suggested learning strategies that can be used across the learning of all the five content strands in TIA subject.

1. Using multiple types of instructional materials for learning
2. Incorporate technology for reinforcement and motivation for learning
3. Try new learning techniques
4. Keep your traditional methods
5. Vary your assessments
6. Mix up group work styles
7. Try a digital curriculum

## Classroom assessment strategies

Find for your convenience suggested assessment strategies to assess technology curriculum content.

- clarifying learning intentions and criteria for success.
- Engineer effective classroom-based questioning and discussions on performance tasks that provoke or draw out evidence of learning.
- Constantly provide feedback that move learners forward.
- Present or address students as instructional resources for each other,
- Computer assisted video-based test

All Teachers teaching TIA from grades 9-12 are encouraged to also add to this list for the good of their students learning.

### ► TIA Classroom

This classroom will be a learning environment prepared especially for the teaching and learning of TIA subject. As we are moving through the 21<sup>st</sup> century technology era TIA classrooms must reflect shadow image to encourage the teaching and learning of all the strands in the subject content.

It is suggested that teachers and students could work together to ensure that this technology classroom tips could be accommodated. These are;

- Regularly keep updates on new advancements in technology.
- Ongoing Effective Evaluation on an ongoing basis.
- Make technology a treat & not an expectation.
- Monitor closely usage of electronic devices.
- Set ground rules for all.
- Share knowledge on how to get technical support.
- Communicate with parents.
- Familiarize yourself with the technology first aid.
- Use of technology by students.

**These teaching and learning strategies will help teachers to;**

- familiarise themselves with different methods of teaching in the classroom
- develop an understanding of the role of a teacher for application of various methods in the classroom

Successful teachers always keep in view that teaching must “be dynamic, challenging and in accordance with the learner’s comprehension. He/she does not depend on any single method for making his/her teaching interesting, inspirational and effective”.

Please find a list of the different teaching and learning strategies in the Appendix.

**These strategies;**

- make learning more engaging
- make learning more effective
- make learning fun
- encourage higher motivational level
- improve attention spans
- develop higher order thinking and reflective skills
- improve communication skills
- develop the spirit of teamwork /collaboration
- develop leadership skills and qualities
- encourage discovery learning

Therefore, teachers are encouraged to utilise the suggested strategies as well as others.

### CURRICULUM INTEGRATION

#### *What is Curriculum Integration?*

An integrated curriculum is described as one that connects different areas of study by cutting across subject-matter lines and emphasizing unifying concepts. Integration focuses on making connections and linkages in content for students, allowing them to see the importance of all subjects in the curriculum. When students are able to see and understand the linkages between different subject matter, they engage in relevant, meaningful activities that can be connected to real life.

Curriculum integration is a holistic approach to learning thus curriculum integration in SBC will equip students with the essential 21<sup>st</sup> Century knowledge, skills, values and attitudes. Teachers must develop intriguing curriculum by going beyond the traditional teaching of content based or fragmented teaching to the teacher who is knowledge based and who should be perceived as a 21<sup>st</sup> Century innovative educator.

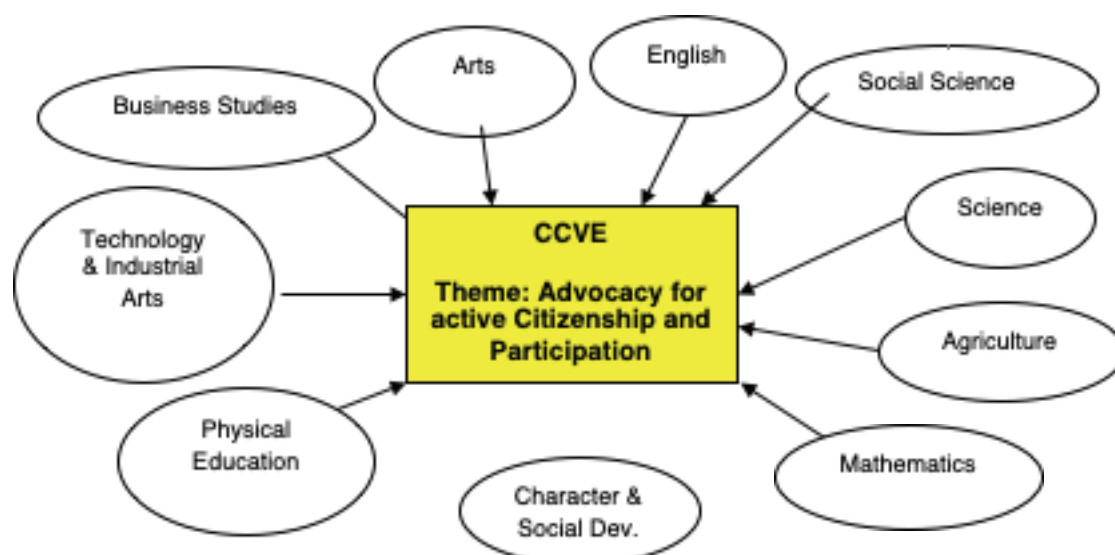
There are three approaches that SBC will engage to foster conducive learning for all children whereby they all can demonstrate proficiency at any point of exit. Adapting these approaches will have an immense impact on the lives of these children as they will not only see themselves as catalyst of change for a competitive PNG but also, comparable to the world standards as global citizens.

Engaging these three approaches in our curriculum will surely sharpen the knowledge and ability of each child, allowing them to see themselves as assets through their achievements and as agents of change contributing meaningfully to their country.

Integrated learning will bear a generation of knowledge-based populace who can solve problems and make proper decisions based on evidence. Thus, PNG can achieve its goals like the Medium Term Development Goals (MTDG) and aims such as the Vision 2050 for a happy, healthy and wealthy society whereby, all its citizens should have access and fair distribution to income, shelter, health, education and general good and services improving the general standard of living for PNG in the long run.

#### *(i) Multidisciplinary Approach*

In this approach, learning involves a theme or concept that will be taught right across all subject area of study by students. For instance, if the theme is “Advocacy for active Citizenship and Participation”, all subject areas create lessons or project-based learning and assessment as per their subjects around this theme. The content of the theme “Advocacy for active Citizenship and Participation” will be taught right across all the different subjects through the different Benchmarks as shown in the diagram and table below.



## Sample Curriculum Integration Outline of Linkages

<b>THEME:</b> “ADVOCACY FOR ACTIVE CITIZENSHIP AND PARTICIPATION”		
<b>SUBJECT:</b> CHRISTIAN AND CITIZENSHIP VALUES EDUCATION		
<b>GRADE:</b> 12		
<b>STRAND 3:</b> CHRISTIAN CITIZENSHIP AND SOCIETY		
<b>UNIT 1:</b> Christian Civics Systems		
<b>TOPIC:</b> Christian civic organizations use technology to advocate for good health, better education and for protection of the natural environment and its sustainability.		
Subject	Benchmark	Concept of focus to learn and assessed for the Theme
<b>CCVE</b>	<b>12.3.1.4;</b> Inquire and discuss how Christian civic Organizations use technology to advocate for good health, better education and for protection of the natural environment and its sustainability.	How Civic Organizations use technology to advocate for protection of the natural environment and its sustainability
<b>Agriculture</b>	<b>12.3.1.4.3;</b> Suggest ways for improving problems that affect conservation in Papua New Guinea	Improving Conservation problems in PNG as Citizens
<b>Arts</b>	<b>12.3.3.2;</b> Conduct research and create artworks to advocate for social change.  <b>12.1.2.2;</b> Use a range of techniques and technological tools in a variety of applications relating to music to communicate a theme.	Use data from research to create artwork to advocate for active Citizenship  Use Music Technological Tools to communicate active Citizenship
<b>Business Studies</b>	<b>12.4.2.9;</b> Establish the e-business by creating a website or using a mobile application (apps) using the Apple operating system (App Store) or Google Android operating system (Google Play).	Create a website or a mobile application to as a platform to advocate for active Citizenship[p

## Textile Technology

<b>Character and Social Development</b>		
<b>English</b>	<p><b>12.2.6.2:</b> Take advantage of technology's capacity to link to other information and to display information flexibly and dynamically.</p> <p><b>12.5.4.2:</b> Give a clearly articulated, well-structured presentation on a complex topic.</p>	<p>How to display Citizenship information flexibly and dynamically with use of technology.</p> <p>Do a clearly articulated, well-structured presentation on active Citizenship</p>
<b>Mathematics</b>	<p><b>12.4.4.3;</b> Use appropriate technology to aid concept development as a tool for problem solving. (General Mathematics)</p> <p><b>12.1.1.5</b> Apply quadratic equations to solve real-world situations and complex number problems. (Advance Mathematics)</p>	<p>Application of quadratic equations to solve real-world situations as part of active citizenship</p> <p>Use appropriate technology as a tool for problem solving when they engage as active citizens in real life situations</p>
<b>Physical Education</b>	<b>12.2.2.2;</b> Distinguish and illustrate sporting greats of PNG in respect to their contribution in the country	How they can actively participate as sporting greats to model active citizenship participation
<b>Science</b>	<b>12.2.1.6;</b> Investigate human population growth by comparing recent and future population growth in developed and developing countries (Biology)	Use of data from investigations to compare human population growth and use the information to participate in informed decision making
<b>Social Science</b>	<p><b>12.1.4.6;</b> Critique various national and global strategies, agenda, and actions for addressing climate change. (Geography)</p> <p><b>12.2.4.2;</b> Examine the different ways the United Nations promote change and maintain stability in different regions of the world. (Political Science)</p> <p><b>12.3.3.1;</b> Identify and appraise the different ways people from different cultures, religions, and ethnic and ideological backgrounds relate to each other (History)</p>	<p>Use of strategies to actively participate in addressing climate change</p> <p>Understanding of how UN maintains stability to be able to actively advocate for understanding of world peace</p> <p>Learn how common grounds of understanding and relationships minimizes differences in cultures, religions, and ethnic and ideological backgrounds and advocate for tolerance</p>

TIA	12.5.2.4; Describe the characteristics of client site scripting and creating interactive menus (Computer Tech)	The use of site scripting to create interactive menus for advocacy on issues of national and global interest as part of active citizenship participation
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### Note: Assessment Project Planning for the theme

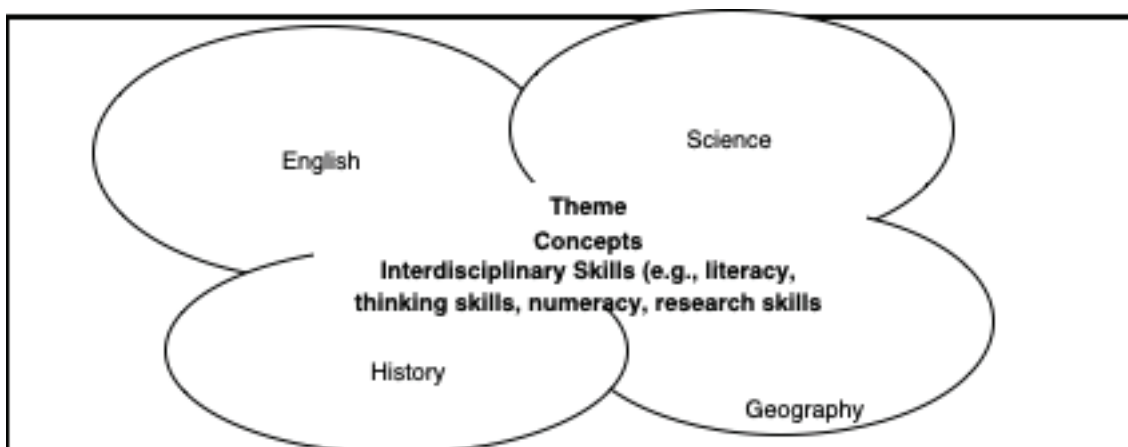
Planning for assessment will be a collaborative effort of all the subject teachers who wish their students to be part of the project with the CCVE subject Teacher as the overall coordinator of the Project and leading the Team. See the process of this assessment in the Assessment Section.

### (ii) Interdisciplinary Approach

This approach addresses learning similarly to the multidisciplinary approach of integrated learning whereby learning takes place within the subject area. It is termed interdisciplinary as the core curriculum of learning is interwoven into each subject under study by the students. For instance; in CCVE, under the strand “Governance and Leadership” students will learn the different types of leadership and common governance principles cut across the different leadership styles they will learn.

Apart from learning these, students learning in CCVE are expected to use the application of writing, speaking and communication presentation skills in writing text types in their essay, such as argumentative essay, informative, explanatory, descriptive, expository and narrative essay, oral presentations and speech delivery in debates, advocacies and awareness campaigns. They must be able to capture the mechanics of English skills such as grammar, punctuation etc... Though these skills are studied under English, they are considered as core skills that cut across all subjects under study.

Therefore, essential knowledge, skills, values and attitudes comprising the core curriculum are interwoven and provide an essential and holistic framework for preparing all students for careers, higher education and citizenship in this learning.



### ***(iii) Intra-disciplinary approach***

This approach involves teachers integrating sub-disciplines within a subject area. For instance, within the subject CCVE, the four different strands will all be captured studying a particular content for CCVE. For example, under the Civic Systems and Principles, students will learn about civic different identities of different contexts and their participation likewise in the other 3 strands. Thus, children are well aware of their responsibility in active civic participation.

### ***(iv) Trans-disciplinary Approach***

In this approach learning goes beyond the subject area of study. Learning is organised around students' questions and concerns. That is, where there is a need for change to improve lives, students develop their own curriculum to effect these needs. The Trans-disciplinary approach addresses real-life situations thus gives the opportunity to students to attain real life skills. This learning approach is more to do with Project-Based Learning also referred to as problem-based learning or place-based learning.

The three steps to planning project-based curriculum (Chard 1998).

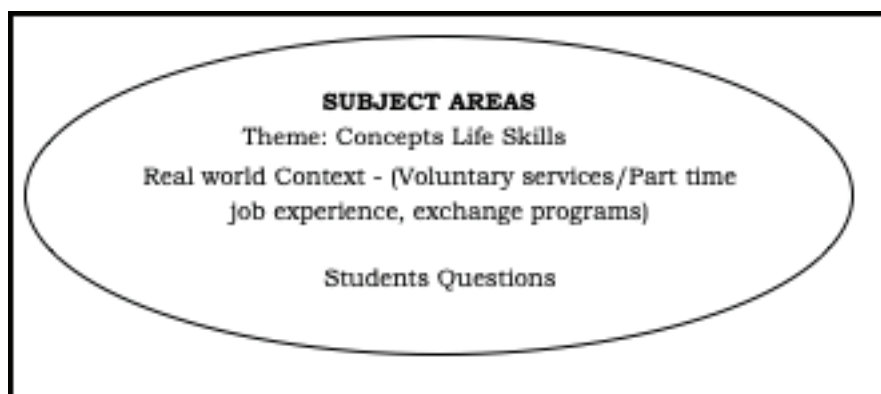
1. Teachers and students select a topic of study based on student interests, curriculum standards, and local resources.
2. The teacher finds out what the students already know and helps them generate questions to explore. The teachers will also provide resources for students and opportunities to work in the field.
3. Students share their work with others in a culminating activity. Students display the results of their exploration and review and evaluate the project.

For instance; students may come up with slogans for school programs such as 'Our culture— clean city for a healthier PNG'. The main aim could be to curb betel nut chewing in public areas especially around bus stops and local markets. Here, students draw up their own instructions and criteria for assessment which is they have to clean the nearest bus stop or local market once a week throughout the year. They also design and create posters to educate the general public as their program continues. They can also involve the town council and media to assist them specially to carry out awareness.

Studies (Susan M. Drake and Rebecca C. Burns) have proven that Project based-programs achievements have led to the following:

- Students go far beyond the minimum effort.
- Make connections among different subject areas to answer open-ended questions.
- Retain what they have learnt.
- Apply learning to real-life problems.
- Have fewer discipline problems.
- Lower absenteeism (Curtis, 2002)





These integrated learning approaches will demand for teachers to be more proactive in order to improve students learning and achievements. In order for SBC to serve its purpose fully, these three approaches must be engaged for better learning for the children of Papua New Guinea now and in the future.

## Strands, Units and Topics

This section of the teacher guide contains the Technology & Industrial Arts content to be taught in grade 9 to 12. It consists of;

- a brief explanation of how the topics, learning objectives and lesson topics are derived.
- an overview of the content distributed according to the four terms in an academic year;
- the unit of work per strand Technology & Industrial Arts is organized around five main strands – Textile Technology, Food Technology, Construction Technology, Communication Technology and Computer Technology.

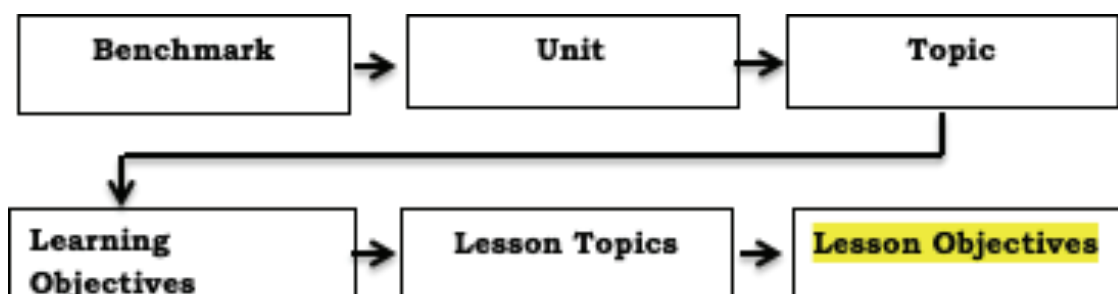
These strands embed the content that students are expected to learn and master at each grade and school level. National content standards are benchmarked at each grade level, which allows for essential KSAV's to be reinforced and expanded throughout the grades. Benchmarks show grade level expectations of what students are able to do to demonstrate that they are making progress towards attaining the content standard.

These grade-level benchmarks were then unpacked to identify the topics, learning objectives and the lesson topics. Below is a description of how topics were derived from the grade-level benchmarks.

### *Identifying topics from benchmarks*

In order to identify the topic from the benchmark, we need to unpack the benchmark. When we unpack a benchmark, we are identifying what students will know and be able to do when they have mastered the benchmark.

1. Write out the benchmark that you want to unpack.
2. Write the verbs (skills/actions) – Higher order thinking skills
3. Underline or highlight the big idea (content) in the benchmark. The big idea (content) is the topic derived from the benchmark.
4. Write essential questions that would be engaging for students
5. Develop sub-topics from the big idea (topic)
6. Write learning objectives according to the sub-topics
7. Write lesson topics from the learning objectives



## Teaching and Learning Concepts and Contents

The table below provides the teachers with what will be taught under each of the four strands in a year. Teachers will use this to develop their own yearly programs by organising these into terms. A sample is provided for teachers to use.

### Subject Content - Technology & Industrial Arts

The strand Textile Technology is the first strand in the subject Technology and Industrial Arts (TIA). The overviews given in this guide will provide teachers with a general view of both the subject and the strand if the syllabus is not available.

- **Subject Overview**

Strand	Unit	Content Standard
<b>1.Textile Technology</b>	1.Fibres and Fabrics	1.1 Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.  Integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions. Integrate
	2.Textile and Clothing	1.2 Integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.
<b>2.Food Technology</b>	1.Food and Nutrition	2.1 Examine and analyse the characteristics and properties of different types of food and the social, economic, political cultural and technological influences on their production and compliance with ethical principles and standards
	2.Food Science	2.2 Investigate and analyse the cultural, physical, chemical, nutritional, biological and sensory characteristics of food and how they influence the development and production of food

<b>3. Construction Technology</b>	1. Building Technology	3.1 Investigate the history and theory of buildings and analyse the components and system of buildings occupational health and safety procedures the properties of building materials and the processes in which those materials and equipment and are used according to industry standards.
	2. Electrical Technology	3.2 Analyse and apply the technological processes, concepts, principles, and practices related to Electrical Technology and its social contribution, with regard to economic growth, entrepreneurship, sustainability and as a tool for change, improving the quality of life responsive to individual, community and industrial needs
	3. Plumbing Technology	3.3 Investigate and analyse fundamental concepts of plumbing theories, Occupational health and safety regulations and standards, trade drawing , demonstrations and applications of tools and materials specifications instillation of plumbing fittings and accessories of drain, waste and vent(DWV)system, and water distribution system.
	4. Welding Technology	3.4 Investigate and analyse safety procedures print reading measurement and layout, identify properties of metals the welding techniques, cutting processes according to welding codes, inspections, testing principles and apply foundations of fabrications.
	5. Engineering Technology	3.5 Investigate and analyse historical and societal influences in Engineering by understanding the engineering principles, practices, the design processes, the management, problem solving and communication skills appropriate to any engineering field.

## Textile Technology

<b>4.Communication Technology</b>	1. Data Communication and Network	4.1 Investigate and analyse communication technology utilising multimedia and the practices and the systems in designing, installing configuring and managing networks.
	2.Computer Security and safety	4.2 Investigate and analyse ergonomics social and ethical issues, and the development of a monitoring and control system for both hardware , software, and information security in society
<b>5. Computer Technology</b>	1. Computer Architecture	5.1 Explore and analyse computer fundamentals the skills to manage and maintain diagnose, trouble shoot, and solve issues that encompass computer, systems networking interfacing and programing as well as electronics and robotics and be aware of related environment and social issues
	2. Computer Software	5.2 Investigate and analyse computer systems and application, software, programing, algorithm, web design and databases, and develop and apply the skills and knowledge in the various software

## Grade 12 Strand, Units and Topics [Content Expansion]

### Strand 1: Textiles Technology Unit 1: Fibres and Fabrics

#### Content Standard

CS1.1 Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.

Units	Benchmarks	Topics	Lesson Titles
Fibres and Fabrics	12.1.1.1 – Apply adherence to safe practices and procedures for facilities, processes, tools and equipment.	Safety Practices and Procedures in Design	1. Safety Practices and Procedures in Design 2. The design process 3. Promoting safety in big textile/design companies
	12.1.1.2 – Collaborate consumer behaviour in choices of clothing and textile products.	Consumer Behaviour on Clothing and Textile Products	1. Culture and social status 2. Budget 3. Availability and fashion
	12.1.1.3 – Describe the fashion industry’s sustainability practices and impact on the environment	Sustainability in the Fashion Industry	1. What is sustainability? 2. Sustainability and adaptation. 3. How fashion industry’s sustainability practices impact the environment.
	12.1.1.4 – Demonstrate an awareness of the relationship between fashion and self-esteem.	Fashion and Self-Esteem	1. Fashion and self-esteem 2. Self-esteem and its importance. 3. Positive and negative impacts of fashion on self-esteem
	12.1.1.5 – Demonstrate an awareness of the need for businesses to understand customer demographics.	Business and Customer Demographics	1. What is Customer demographics 2. The relationship between business and customer demographics

## UNIT 1: Fibres and Fabrics

**Content Standard 1.1;** Investigate the evolution, characteristics, designs and trends of fabrics and fabric design, their construction, production, representation, regulation and marketing

**Benchmark 12.1.1.1;** Apply adherence to safe practices and procedures for facilities, processes, tools and equipment.

### Topic 1: Safety Practices and Procedures in Design

#### Essential Questions:

1. What are some safety practices and procedures in design?
2. Why study the design process?
3. How do big textile/design companies promote safety in their workplace?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Safety Practices and Procedures
Skills	Apply
Context	Facility uses and safety
Attitudes/Values	Care handling and Respect

### Technology and Industrial Arts Application: Textiles Technology: -Fibres and Fabrics

#### Learning Objectives

By the end of this topic, the students will be able to;

1. Explain the safe practices and procedures for design facilities,
2. Describe application processes of certain types of tools and equipment

## Content Background

### Safety Practices and Procedures in Design

Safety is simply defined as the condition of being safe or protected from danger or risk. This simply means that safety is paramount. Safety should be everyone's business. Safety is practiced everywhere; at home, in schools, on the road, on a playing field, in factories, etc. The simple fact is that if we do not think and act safely, we have accidents.

Safety is a concern in design where different types of sharp objects or tools such as pins, needles and scissors as well as electrical tools like sewing machines and clothes irons are used. It is vital that we must all take the responsibility of working in a careful manner to create a safe environment for everyone.

When using textile tools, it is always important to do so correctly and safely. Before using any tool or piece of equipment, you must first make sure to find out the correct way to operate it. Have someone demonstrate how to use each tool. Make sure to ask questions if you are not sure and always follow instructions more carefully.

Once you know how to use the equipment correctly and safely, take care that you always use them in this manner. All tools and equipment must be maintained and cared for. By doing this, they will continue to work correctly and last longer. Find out how to look after the tools and carry out any regular maintenance on them.

Some safety practices and procedures.

When it comes to using tools and equipment, always remember, safely first!

- Concentrate on what you are doing,
- Don't talk to anyone while they or you are using important equipment especially tools like sewing machines and over lockers,
- Carry and pass scissors correctly,
- Don't leave pins lying around, especially on the floor,
- Store scissors and other sharp tools out of arms way,
- Ensure power cords are not frayed, and do not leave them hanging over edges of table/ bench.

### Design Process

Design as we know is the creative use of technology to meet the needs and wants of human being and the society. A good example would be the chairs and tables used in a classroom. They have been designed purposely to meet a student's needs. They help students work more comfortably and efficiently. Imagine having to sit on the floor with nothing to lean on when doing your work. It would be more difficult and you would get less work done than when you are using a desk.



Overall, design focuses on meeting human needs and wants. Design helps us to get most of our needs and wants. In order for design to be effective, individual differences, cultural influences and environmental considerations must be taken into account. Designing is about solving problems; collecting information and thinking up solutions. It is about planning and making solutions that work.

It is about evaluating and changing things until you get the best possible solution. When designing something, it is a good idea to think creatively. This might mean to create an idea that no-one else has ever thought of or could mean working on someone else's idea to make it better.

Some people think that they are not creative, but everyone has the ability to do so. To be creative, you should be able to:

- Take risks and try things that many people would not be bothered with,
- Accept criticism and use it constructively,
- Try new experiences without judging them first,
- Laugh at your own mistakes, and most importantly, learn from them
- See things from what you initially see and not judge things by looks only,
- Identify problems before others do and think up ways of solving them.

A design process can take many different forms and styles, and contain various phases; but the steps generally remain the same. The design process is a planned series of steps used to solve problems or meet needs. It normally leads to the production of an end product that meets the needs of a design project. It includes the following steps:

- Problem identification
- Investigation (Research)
- Idea generation
- Optimum selection
- Production
- Final evaluation

### Design Process Steps:

**(a) Problem identification** – Analyse the situation and recognise the need. To do this you will be given a design situation and a design brief.

**(b) Investigation** – Collect information and ideas about how to solve the problem.

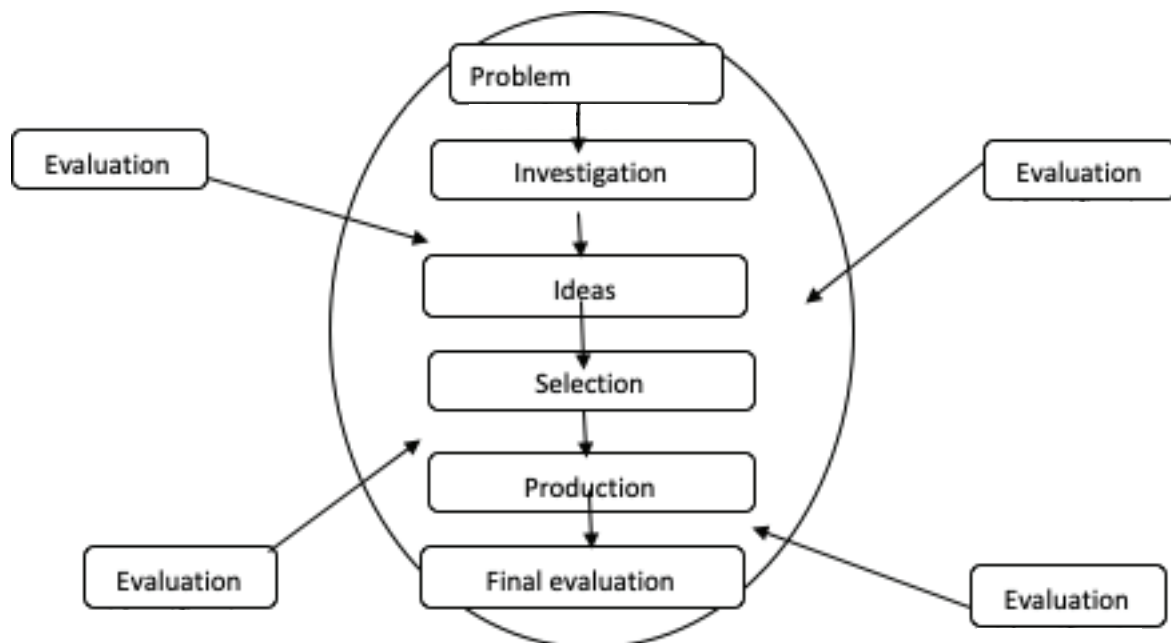
**(c) Ideas** – Organise your ideas and consider them in terms of positive and negative aspects.

**(d) Selection** – Choose the idea for solving your problem and plan on how you are going to use this idea to solve the problem. Consider the use of materials and equipment at this stage.

**(e) Production** – Make the product and hopefully solve your problem.

**(f) Final evaluation** – At every stage of the design process, evaluation occurs. However, as a final stage, a critical evaluation is carried out to find out what went right, what went wrong and what would be changed next time.

These steps are generally taken by all designers in their efforts to solve problems and also meet the needs and wants of people all over the world. Normally, designers are given a project to work on called the design project. The steps taken throughout this project are carried out in conjunction with the design process so that the problem will be solved. A design situation is given to the designer to help them know more about the problem that needs solving. The design brief actually states the problem and is especially useful in helping the designer to know what they are expected to do. It is important to note that variations exist between the design processes used to solve a given problem or meet a need from school to school.



- *Evaluation occurs at every stage of the design process as indicated in the diagram above.*

### Promoting Safety in Big Textile/Design Companies

Safety is paramount and should be taken into consideration every time and everywhere. In big textile or design companies it is vital that safety is promoted so that accidents are avoided just as in a classroom situation when basic sewing is taking place. The only difference is that at a company level, safety precautions are at a larger and broader level than in our classrooms.

In order to identify how safety is promoted in big textile and design companies, let us first identify some dangers or risks in these places. The various danger and safety concerns in the textile/design industry are mostly centred on the textile mills and manufacturing. These factories are under the risk of:

- **Fires** – These happens due to chemicals and flammable textiles, especially materials like cotton.
- **Explosions** – Although textile machinery has come a long way, it can break down, have a short, or bust a circuit just like any other piece of technology.
- **Machine-related injuries** – Although a lot of equipment are automatic today, there are factories that still have many machines handled by skilled workers who can get their hands and fingers caught, causing a lot of damage.
- **Air Pollution** – The processing of fibres and fabrics, for example, cotton, can create cotton dust due to natural and synthetic fibre breakdown in the air. This dust is a combination of cotton, chemical pesticides that were in the cotton, and soil. They are get into the air and then into the lungs of the workers if they are not properly masked. These can cause serious lung issues for the employees.
- **Employee deafness** – The factories usually have large rooms packed with all the machinery working at once. The loud machines are damaging to the ear, especially with constant exposure.
- **Chemical exposure** – Textiles go through several iterations of chemical dipping and dyeing for cleaning, finishing and softening processes. This means that employees are exposed to these harsh chemicals constantly.
- **Electrocution** – Most machinery and equipment in the factories are operated using electricity. If workers are not too careful, they can easily get electrocuted.

Having identified and understood the different kinds of risk factors in these big companies, it is clear that though there are safety rules and guidelines in place to avoid accidents from happening.

Employees need to be alert and take extra precautions at all times. Safety can prevail if:

- **Fires** – Chemicals and flammable textiles are handled with extra care and store in correct places.
- **Explosions** – All the machinery used in the factories must be checked and services regularly to avoid explosions.
- **Machine-related injuries** – Employees need to be vigilant and careful when using the machinery. They must pay close attention to what they are doing and not be disturbed while working.
- **Air Pollution** – Since the air is always polluted in textile mills, there must be good ventilation and employees must be fully masked with the right kinds of mask to avoid getting sick.
- **Employee deafness** – Employees need to wear ear protection gears to protect their ears from the loud noise from the machineries.
- **Chemical exposure** – Proper safety clothing must always be worn by employees to avoid chemical exposure.

### Electrocution-

Machines must always be turned off after use.

- Make sure hands are dry before touching switches.
- Power cords must not be in the way of movement.
- Machines must be used for their intended purpose only and not to do other things.

## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

**Lesson 1:** Safety practices and procedures in design?

### Teaching Strategies

Teacher introduces safety practices and procedures in designing process stressing on the importance of practicing safety in the Textile Technology classroom (sewing room) and the consequences of not complying.

### Learning Strategies

Strategies such as project works small groups, pairs, or individual researching, report writing, conducting surveys are encouraged to take ownership of learning

Discover and identify different safety practices and procedures used in design

*Activity; 1*

Explain why safety is such an important factor in design.

*Activity; 2*

Debate this statement: 'Once you know how to use a tool, safety should no longer be an issue'.

*Activity; 3*

List ten safety rules of your textile technology (sewing) room.

### Resources

Norman P, Salley K (2010) Outcomes Edition for PNG – Book 1 Grade 9/10, Oxford University Press Melbourne (page 158/159))

Sullivan C, (2004) High Textile - Stage 4, Reed International Books Australia, Melbourne (page 44/45)

## Lesson 2: The design process

### Teaching Strategies

Introduce what the design process is and its importance in the textile and design industry. The teacher should also state and explain the different steps involved in the design process and why it is important to closely observe these steps.

### Learning Strategies

Discover the design process and the different steps involved.

#### *Activity; 1*

Think about how your bedroom is designed. Is there anything that you would like to change about it? If so, write it down.

#### *Activity; 2*

Think about how your school uniform is designed. Is there anything that you would like to change about it? If so, write it down.

#### *Activity; 3*

Design your school uniform according to the changes you stated in activity 2. Do this by sketching using a pencil.

### Resources

Ridgewell T (1998) Textiles and Design in Action, Addison Wesley Longman Australia Pty Ltd, Melbourne (page 24/25)

**Lesson 3:** Promoting safety in big textile and design companies.

### Teaching Strategies

Teacher lists and explains different accidents that occur in big textile or design companies.

### Learning Strategies

Discover different accidents that occur in big textile or design companies.

#### *Activity; 1*

In pairs, brainstorm two ways in which each of the accident listed by your teacher can be avoided.

#### *Activity; 2*

List other accidents that can happen in these big companies not listed by the teacher and explain how to keep safe in this situation.

### Resources

Internet - Study.com, 'Safety Issues in the Textile Industry'.

## UNIT 1: Fibres and Fabrics

**Content Standard 1.1;** Investigate the evolution, characteristics, designs and trends of fabrics and fabric design, their construction, production, representation, regulation and marketing

**Benchmark 12.1.1.2;** Collaborate consumer behaviour in choices of clothing and textile products

### Topic 2: Consumer Behaviour on Clothing and Textile Products

#### Essential Questions:

1. How does culture and social status affect consumer behaviour?
2. Why is budget a factor affecting consumer behaviour?
3. How does availability and fashion impact consumer behaviour?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Clothing and Textile Products
Skills	Collaborate
Context	Consumer Choices
Attitudes/Values	Choosing wisely, Appreciation and Acceptance

Technology and Industrial Arts Application: Textiles Technology: Fibres and Fabrics

#### Learning Objectives

By the end of this topic, the students will be able to;

- Explain different customer behaviours towards a particular fashion.
- Understand the relationship between consumer behaviour and choices of clothing/products



## Content Background Consumer Behaviour On Clothing and Textile Products

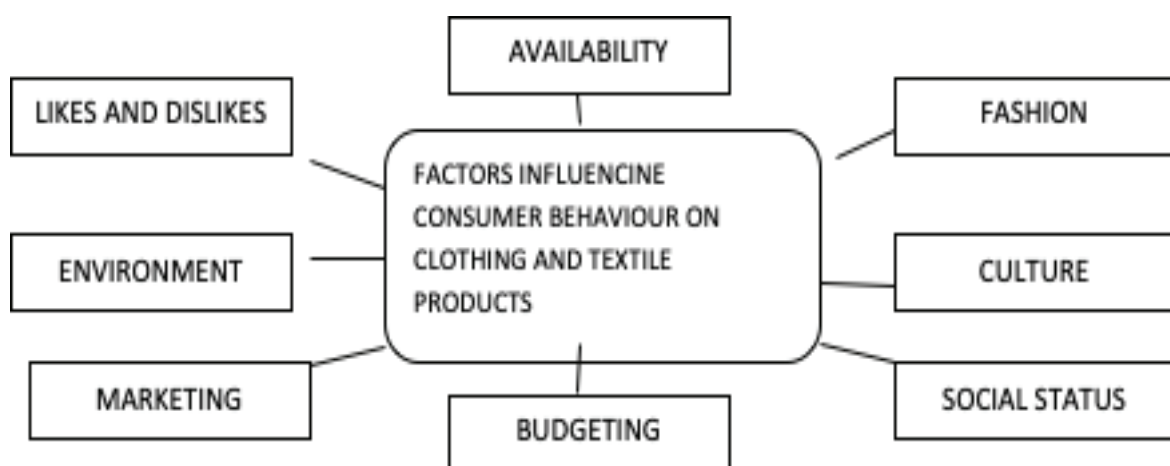
A consumer is a person who exchanges money for goods and services. Nowadays, consumers exchange a great deal of money to acquire textile goods such as clothing and even textile services such as laundry and dry cleaning. It is clear that throughout time textile products have been used extensively by people in their everyday lives. An individual has his own choice and mindset.

Consumer buying behaviour eventually refers to the buying behaviour of an individual. An individual can get affected by the environment in which he lives in, his cultural beliefs and traditions, his social status within the community in which he lives, his psychology, his mindset and many other factors. The challenge is now on the marketers who will really need to study and understand the psychology and mindset of the consumers, also understand how these factors affect consumer behaviour in order to develop effective marketing strategies.

Textile products serve a number of purposes including;

- Clothing
- Comfort
- Decoration
- Protection
- Leisure
- Safety

Textile products have always and will always be in demand. Let us look closer at the factors outlined in the mind map below.



There are different kinds of factors as listed above but we will only look at four of these factors in this topic as listed below:

1. Culture
2. Social Status
3. Budget
4. Availability and Fashion

### **1) Culture**

Culture is simply defined as a way of life or in other words the way in which a particular group of people live. A person's culture is made up of his or her customs, traditions and beliefs of the society, or group, to which they belong. One's culture is also determined by the religion. People are born into different cultural groups around the world.

Culture is a very important aspect to understand a consumer's behaviour. It signifies the set of values for a particular community. An individual decides to behave in a certain manner because of his culture. He gets all these values from his parents and family. Every individual has different sets of values as compared to others, what they see from their childhood when they start practicing those habits, they become their culture. One's cultural background plays a very important role in their selection of textile products.

Many cultural groups around the world are identified by the clothes they select and wear. For example:

- Muslim women cover their bodies and veil their faces
- Jewish men cover their heads during times of prayer
- European women wear black to mourn loved ones
- Japanese women wear kimonos on special occasions
- Indian women wear saris
- Scottish men wear kilts on special occasions
- 

In Papua New Guinea, culture also plays an important role in peoples' choice of clothing.

### **2) Social Status**

One's social status refers to their position in the society or group to which they belong. Textile products are often selected and used by people to show their social status. A social status of an individual usually comprises of an individual's attitude, class and prestige. It depends on the way he carries himself socially or the position at which he is in his work or family or even in his group of friends.

The social status of a person definitely influences his consumption pattern. For example, a CEO may want to have a celebration and give a party to his colleagues, friends and family, so for his social status he may want to book a five star hotel like The Stanley Hotel and Suites instead of any other normal hotel.

Uniforms indicate that people belong to certain groups, for example, school, police and hospital staff uniforms, within individual groups, textiles can be used to differentiate between group members, for example, senior school students in some schools

would wear a different uniform from junior school students of the same school. Choices of textile products in the home can also show a person's social status.

### **3) Budget**

A consumer's budget greatly influences their choice of textile products. For some people, money is no object so they are likely to buy expensive textile goods, such as silk sheets and linen suits. For others, money is quite difficult to come by so it is important for them to budget for the things they want or need.

A budget allows people to put a certain amount of money aside for a particular want or need. For example, a consumer might budget K200 for a new pair of rugby boots, so their choice of rugby boot will be affected by their budget.

It is important that consumers think carefully about their budget before they select their textile products. It is good to shop around for the best value for money, remembering that sometimes it is better to save a little more and buy a more expensive product if it is of superior quality.

### **4) Availability and Fashion**

As we all know, fashion often indicates what is available for consumers to buy, especially in the way of clothes. Fashion is a certain style that is accepted at a particular time. For example, fashion in the 1950s was teenage girls wearing full skirts to just below the knees, tight shirts and booty socks. This style of dress was readily available because it was famous at that time and many shops were selling it to meet the increasing demand.

In the 1970s, such fashion was neither fashionable nor readily available meaning it was slowly losing its significance. Gone were the skirts and in were the flare pants and platform shoes. A different style of clothing was fashionable and therefore was more readily available to consumers in the 1970s.



## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: Culture and Social Status

#### Teaching Strategies

Teacher introduces 'Consumer behaviour on Clothing and Textile Products' making mention of some common factors that affect this process.

#### Learning Strategies

Students explore how culture and social status affect consumer behaviour on clothing and textile products from their own experiences.

##### *Activity; 1*

Brainstorm activity on common PNG wears that helps to identify certain cultural or provincial groups.

##### *Activity; 2*

Make a sketch of what the clothing product from their area would look like.

##### *Activity; 3*

Collect pictures of the different PNG wears and display in the classroom.

#### Resources

Ridgewell T (1998) Textiles and Design in Action, Addison Wesley Longman Australia Pty Ltd, Melbourne (page 132-134)Internet – tutorials point, 'Consumer Buying Behaviours'.

## Lesson 2: Budget

### Teaching Strategies

Teacher introduces 'Consumer behaviour on Clothing and Textile Products' making mention of some common factors that affect this process.

### Learning Strategies

Students explore how budget affect consumer behaviour on clothing and textile products from their own experiences.

#### *Activity; 1*

In your own words explain how affects consumer behaviour on clothing and textile products budget.

#### *Activity; 2*

If you were given K100 to buy your needs and necessities since you were attending an Easter Youth Camp at your church, how would you budget the money? What would you spend on? In your exercise book, sketch out your budget.

#### *Activity; 3*

Explain why you budgeted to buy things on your shopping list and why you decided to allocate that much money for them.

### Resources

Ridgewell T (1998) Textiles and Design in Action, Addison Wesley Longman Australia Pty Ltd, Melbourne (page 132-134)

Internet – tutorials point, 'Consumer Buying Behaviours'.

## Lesson 3: Availability and Fashion

### Teaching Strategies

Teacher introduces 'Consumer behaviour on Clothing and Textile Products' making mention of some common factors that affect this process.

### Learning Strategies

Students explore how availability and fashion affect consumer behaviour on clothing and textile products from their own experiences.

#### *Activity; 1*

In your words explain how fashion affects consumer behaviour on clothing and textile products.

#### *Activity; 2*

In your words explain how religion can affect consumer behaviour on clothing and textile products.

#### *Activity; 3*

How can likes and dislikes affect consumer behaviour on clothing and textile products?

### Resources

Ridgewell T (1998) Textiles and Design in Action, Addison Wesley Longman Australia Pty Ltd, Melbourne (page 132-134)

Internet – tutorials point, 'Consumer Buying Behaviours'.

## UNIT 1: Fibres and Fabrics

**Content Standard 1.1** Investigate the evolution, characteristics, designs and trends of fabrics and fabric design, their construction, production, representation, regulation and marketing

**Benchmark 12.1.1.3** Describe the fashion industry's sustainability practices and impact on the environment.

### Topic 3: Sustainability in the Fashion Industry

#### Essential Questions:

1. What is sustainability?
2. How does sustainability relate to adaptation?
3. How do the fashion industry's sustainable practices impact the environment?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Sustainability Practices in the Fashion Industry
Skills	Describe
Context	Industry environment fashions
Attitudes/Values	Choosing Wisely, Rationally and Critically, Respect

#### Technology and Industrial Arts Application: Textiles Technology: Fibres and Fabrics

#### Learning Objectives

By the end of this topic, the students will be able to;

- Define the term- sustainability
- Explain briefly how the fashion industry's sustainability practices impact the environment

### Content Background      ADAPTATION TO FASHION

Adaptations in fashion on the other hand are designs that have all the dominant features of the style that inspired them, but do not claim to be the exact copies. Modifications have been made, but distinguishing features on the original, such as the special shoulder treatment or the use of texture fabrics, may be retained in the adaptation.

One may turn to ask what we mean by the phrase 'special shoulder treatment'. Well the special shoulder treatment is mainly to do with women and girls' clothing.

Designers have been exceptionally creative when it comes to ways of exposing the shoulders. For example, there are shift dresses trending nowadays that leave the shoulder area on each side cut out in an oval shape as can be seen on the right.



You can see that it does add interest to an otherwise unremarkable shift dress and has the advantage of drawing the eye to the shoulder area, which can have a balancing effect on the hips for pear shapes, but also make those with wide shoulders look a little top heavy.

### **Sustainability and Sustainable Fashion**

Sustainability is the ability to be maintained at a certain rate or level. In other words, sustainability is about meeting our own needs without compromising the future generations to meet their own needs.

By applying the concept of sustainability to fashion, 'Sustainable Fashion' can be defined as a system in which supply, production, and consumption of fashion products have been designed in a way that ensures environmental, social and economic sustainability.

As the definition implies, sustainable fashion is not limited to a mere product, but it is a philosophy that also embraces design processes, supply chain strategies, and consumption practices.

There are several terms that are being used by brands, practitioners, and academics to explain the different notions lying beneath the concept of sustainable fashion such as eco-fashion, ethical-fashion, organic-fashion, green-fashion, and vegan-fashion and so on. This variety of terms and in some cases inconsistency of definitions stem from the novelty of the topic of sustainable fashion which leaves this concept open to interpretation.

How the fashion industry's sustainable practices impact the environment?

The fashion industry has a disastrous impact on the environment. In fact, it is the second largest polluter in the world, just after the oil industry. And the environmental damage is increasing as the industry grows.





However, there are solutions and alternatives to mitigate these problems. The first step lies in building awareness and willingness to change.

### **1. Fashion and Water Pollution**

In most of the countries in which garments are produced, untreated toxic wastewaters from textiles factories are dumped directly into the rivers. Wastewater contains toxic substances such as lead, mercury, and arsenic, among others. These are extremely harmful for the aquatic life and the health of the millions people living by those rivers banks. The contamination also reaches the sea and eventually spreads around the globe. Another major source of water contamination is the use of fertilizers for cotton production, which heavily pollutes runoff waters and evaporation waters.

#### **What can we do about it?**

- Choose clothes made in countries with stricter environmental regulations for factories (EU, Canada, US...).
- Choose organic fibres and natural fibres that do not require chemicals to be produced.

### **2. Fashion and Microfibers in our Oceans**

Every time we wash a synthetic garment (polyester, nylon, etc.), about **1,900 individual microfibers are released into the water**, making their way into our oceans. Scientists have discovered that small aquatic organisms ingest those microfibers. These are then eaten by small fish which are later eaten by bigger fish, introducing plastic in our food chain.

#### **What can we do about it?**

- Choose natural or semi-synthetic fibers.

### **3. Fashion and Water Consumption**

The fashion industry is a major water consumer. Huge quantity of fresh water is used for the dyeing and finishing process for all of our clothes. As reference, it can take up to 200 tons of fresh water per ton of dyed fabric. Also, cotton needs A LOT of water to grow (and heat), but is usually cultivated in warm and dry areas.

Up to 20,000 litres of water are needed to produce just 1kg of cotton. This generates tremendous pressure on this precious resource, already scarce, and has dramatic ecological consequences such as the desertification of the Aral Sea, where cotton production has entirely drained the water (see pictures above). “85 % of the daily needs in water of the entire population of India would be covered by the water used to grow cotton in the country.

100 million people in India do not have access to drinking water.

### What can we do about it?

- Choose fibres with low water consumption such as linen, recycled fibres, etc.

### 4. Fashion and Waste Consumption

Clothing has clearly become disposable. As a result, we generate more and more textile waste. A family in the western world throws away an average of 30 kg of clothing each year. Only 15% is recycled or donated, and the rest goes directly to the landfill or is incinerated. Synthetic fibres, such as polyester, are plastic fibres, therefore non-biodegradable and **can take up to 200 years to decompose**. Synthetic fibres are used in 72% of our clothing.

### What can we do about it?

- Choose natural or semi-synthetic fibres.
- Buy less, buy better quality, mend clothes, and recycle.

### 5. Fashion and Chemicals

Chemicals are one of the main components in our clothes.

They are used during fibre production, dyeing, bleaching, and wet processing of each of our garments. The heavy use of chemicals in cotton farming is causing diseases and premature death among cotton farmers, along with massive freshwater and ocean water pollution and soil degradation. Some of these substances are also harmful to the consumer (see section about toxicity).

### What can we do about it?

Choose organic fibers.

- Choose sustainable brands.
- Always wash new clothes before using them for the first time.
- Look for garments with certification label controlling chemical content such as OEKO-TEX®, GOTS, or BLUESIGN®.

### 6. Fashion and Greenhouse Emissions

The apparel industry accounts for 10% of global carbon emissions.

The global fashion industry is generating a lot of greenhouse gases due to the energy used during its **production, manufacturing, and transportation** of the millions garments purchased each year.

**Synthetic fibres** (polyester, acrylic, nylon, etc.), used in the majority of our clothes, are **made from fossil fuel**, making production much more energy-intensive than with natural fibres. Most of our clothes are produced in China, Bangladesh, or India, **countries essentially powered by coal**. This is the dirtiest type of energy in terms of carbon emissions. “Cheap synthetic fibres also emit gases like N<sub>2</sub>O, which is 300 times more damaging than CO<sub>2</sub>.”

### What can we do about it?

- Choose natural fibres.
- Buy less, buy better quality, and mend clothes.
- Buy clothes made in countries powered by more renewable energy.

## 7. Fashion and Soil Degradation

The soil is a fundamental element of our ecosystem. We need healthy soil for food production but also to absorb CO<sub>2</sub>. The massive, global degradation of soil is one of the main environmental issues our planet is facing. It presents a major threat to global food security and also contributes to global warming.

The fashion industry plays a major part in degrading soil in different ways: **overgrazing of pastures** through cashmere goats/sheep raised for their wool; **degradation of soil due to massive use of chemicals** to grow cotton; **deforestation** caused by wood-based fibres like rayon.

### What can we do about it?

- Choose fibres friendly to the soil.

## 8. Fashion and Rainforest Destruction

Every year, thousands of hectares of endangered and ancient forests are cut down and replaced by plantations of trees used to make wood-based fabrics such as rayon, viscose, and modal.

This loss of forests is threatening the ecosystem and indigenous communities, as in Indonesia where large-scale deforestation of the rainforests has taken place over the past decade.

### What can we do about it?

- Choose Lyocell /Tencel instead of rayon, modal or viscose.

## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: Adaptation to fashion

#### Teaching Strategies

Explain the importance of adaptation in fashion industry, especially designing of textile products and give examples of shift dresses to further elaborate on lesson title.

#### Learning Strategies

With help of the internet, students will be required to look up certain phrases to find out what they are and what they may look like.

##### *Activity; 1*

Use the internet to research what 'top heavy' means and write a short paragraph of what it is. You will also look for animated pictures of a 'top heavy' body and paste it in your exercise book under the paragraph.

##### *Activity; 2*

Use the internet to research what 'pear shape' means and write a paragraph of what it is. Look for animated pictures of a 'pear shape' body and paste it in your exercise book under the paragraph.

##### *Activity; 3*

Use the internet to research what 'shift dress' means and write a paragraph about it. Find animated pictures of a 'shift dress' and paste it the book under the paragraph.

#### Resources

<https://www.styleincorporated.wordpress.com/2011/10/01-fashion-term-of-the-day-adaptations>

<https://www.yorkshireport.co.uk/whats-on/arts-anentertainment/fashion-gets-cold-shoulder-treatment-621418>

### Lesson 2: Sustainability and Sustainable Fashion

#### Teaching Strategies

Teacher introduces 'sustainability in fashion' and further elaborates on sustainable fashion on why it is important to know about it. Sustainable fashion is also explained making note of key concepts that the students need to know about.

#### Learning Strategies

Students are to work in pairs to investigate on what certain selected fashion concepts mean.

##### *Activity; 1*

Work in pair to investigate what an 'eco-fashion' and 'ethical-fashion' is. Write a short paragraph to explain each of these concepts. Write a short paragraph to explain each of these concepts.

##### *Activity; 2*

Work in pair to investigate what an 'organic-fashion', 'green-fashion' and 'vegan-fashion' is. Write a short paragraph to explain each of these concepts.

##### *Activity; 3*

'Sustainable Fashion is a Movement'. Use the internet to find out what this movement is all about and share your findings with the class.

#### Resources

[https://www.en.wikipedia.org/wiki/sustainable\\_fashion](https://www.en.wikipedia.org/wiki/sustainable_fashion)

**Lesson 3:** How the Fashion Industry's sustainability practices impact the environment

### Teaching Strategies

Teacher will bring students attention to how destructive the fashion industry's sustainability practices can be on the environment. A number of environmental impacts will be discussed with some kind of solutions that can be taken to help minimise the problem.

### Learning Strategies

Students will use the internet and other sources to find out additional information about the eight impacts of the fashion industry's sustainable practices on the environment. They will then summarise the information, put it creatively on a chart for display and present their findings to the class.

#### *Activity; 1*

Students will get into small groups of four and research the eight impacts that fashion industry's sustainability practices have on the environment. Each student can do two impacts each.

#### *Activity; 2*

All the information will then be put together, summarised and transferred onto a chart or two. The students need to be creative in presenting their information on the chart making sure that all important points are shown on the chart.

#### *Activity; 3*

Present findings to the class and display chart(s) in the classroom for classmates to see.

### Resources

[https://www.en.wikipedia.org/wiki/sustainable\\_fasion](https://www.en.wikipedia.org/wiki/sustainable_fasion)

## UNIT 1: Fibres and Fabrics

**Content Standard 1.1** Investigate the evolution, characteristics, designs and trends of fabrics and fabric design, their construction, production, representation, regulation and marketing

**Benchmark 12.1.1.4** Demonstrate an awareness of the relationship between fashion and self-esteem

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### Topic 4: Fashion and Self-Esteem

#### Essential Questions:

1. How is fashion related to self-esteem?
2. What is self-esteem and why is it important?
3. What are some positive and negative impacts that fashion has on self-esteem?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Relationships between Fashion and Self-Esteem
Skills	Demonstrate
Context	Marketing
Attitudes/Values	Appreciation and Self Respect

Technology and Industrial Arts Application: Textiles Technology: Fibres and Fabrics

#### Learning Objectives

By the end of this topic, the students will be able to;

- Explain how fashion can influence a person's self-esteem
- Recognise negative and positive impacts fashion has on different age group and class of persons

### Content Background; Relationship Between Fashion and Self-Esteem

Do you ever notice if the clothes you wear correlate with your mood or self-image? How fashion affects our self-esteem is an important topic when dealing with self-worth and living your best life. Clothing does reflect personality and ultimately confidence. So it's worthwhile to take a deeper look into what you're reaching for in your closet and how to make fashion choices work best for you.

There has been countless number of times that we look into our closet with complete disdain. It is like the saying that goes, "I do not have anything to wear!" This is especially the case when we are looking for an outfit to help us feel empowered and self-confident. We can never seem to find anything to fit the bill. Sadly, we are relatively certain this has more to do with us and *how* we see ourselves than the selection of clothes we own.

In any case, it's got us thinking about the impact our fashion choices, as well as the fashion industry; have on our self-image *and* the other way around. We have come to realize that it is not necessarily our wardrobe that needs the makeover, but it's our self-esteem and perception of what it means to feel validated in some way.

Many of us subscribe to the notion that the clothes we wear are simply a reflection of our personality and not necessarily how we measure our self-worth. If we relate to this mindset – that we are *in control* of what we wear – then we are not all that wrong, however, we are not completely right either. The gist is that either way, clothing **is** important to our overall well-being in various ways. Whether it is our mood, personality or self-esteem, there's a respective impact to what we wear.

### Does Clothing Reflect Personality And Behaviour?

After some research has been done, and as a result – self-examination, on the idea that clothing is merely a reflection of personality. It is believed an overall yes. We all have different styles of dressing up. Some like bling. Others find floral prints appealing. Someone who is generally happy most of the time may gravitate toward brighter colours. Or if you're the quiet or introverted type, maybe you favour clothes that cover your skin a bit more.

No doubt there is a correlation between personality types and the clothing they select and reflect. Well it is also important to realize that there are many exceptions to these correlations. Just like you cannot judge a book by its cover, *there is a whole lot more to a person than what they have on.*



### Benefit Of High Self-Esteem

Everyone wants to be happy, successful in life, and achieve their dreams. But what determines our achievements? Numerous psychological studies that were conducted in the past 50 years support the evidence that success in life is related to self-confidence. In other words, self-confident people usually succeed in all spheres of life and, on the other hand, successful people typically have a high level of self-confidence. Moreover, psychological research reveals that confidence is very important for performance in any activity and matters as much as abilities.

Self-confidence is crucial for progress in every aspect of our lives, yet many people struggle to develop this quality. They constantly ask themselves if they are smart, attractive or good enough or if they look good and presentable in what they are wearing to be happy and never stop worrying about that other people may think about them. Unfortunately, people who have low self-confidence, find it difficult to become successful. If you suffer from poor self-esteem, you should take measures to overcome it to feel good about yourself and become the master of your own life.

### What Is Self-Esteem and Why Is It Important?

There are two qualities that contribute to self-confidence: self-esteem and self-efficacy. Albert Bandura, a psychologist at Stanford University defines self-efficacy as people's beliefs in their abilities to gain success in a certain situation that determine how we think, feel, and behave.

People who have lots of confidence in their capabilities consider difficult tasks as challenges to master their skills and not as threats they should avoid. Self-confidence improves a person's motivation to put much effort in achieving his goals and overcome numerous difficulties and temptations that test his or her willpower.

Self-esteem is our actual emotional feelings and opinions about ourselves, our self-worth or personal value. It includes beliefs about oneself (e.g. 'I am worthy'), and some emotional states – pride, shame, despair, and triumph. It affects how we think, act, and relate to other people, and allows us to live our lives to our potentials. Actually, self-esteem determines how happy we are and has a direct bearing on our well-being.

High self-esteem makes a foundation for every positive experience in your life and helps you see positives sides in every situation, get through tough times, and appreciate good times. Having high self-esteem is important for every area of your life – it is related to all good things that you can just think of:

1. better economic standing,
2. good mental and physical health,
3. higher educational achievements,
4. happy personal relationships,
5. better career prospects,
6. high self-esteem gives you strength to take charge of your life, learn from mistakes, and grow as a person.

### Positive and Negative Impact Of fashion On Self-Esteem

In this sense, using expression in **fashion** to uplift your mood is a highly effective way to raise your **self-esteem**. With a higher level of **self-esteem**, we are more empowered to perform well at work or feel more social and outgoing. This is simply another avenue to help you do your personal best which is fueled by more **positive** mindset,

### 10 Most Common Benefits of Having High Self-Esteem

1. You are more resilient to troubles and difficulties that are inevitable in life. When your self-esteem is high, you have the ability and skills to bounce back the failure, learn from mistakes, and make adjustments to improve the situation and overcome the obstacles.
2. You feel happy and content with your life because you respect yourself and other people respect you.
3. You feel more motivated to achieve your goals because high self-esteem makes you trusted by other people and enhances your confidence in your ability to succeed. As a result, you are more motivated to take actions.
4. You enjoy better relationships with friends and partners and attract successful and confident people in your life who like you more for your positive energy.
5. You can accept the challenges because you are confident in your strengths and know you can master everything.
6. You perform better at any task: personal or related to your studies or your job.
7. Your life is more exciting. You live your life to the fullest, try to use every opportunity and take risks because you feel confident that you can succeed and achieve your goals.
8. You realize that you don't need to be perfect so you feel less stressed. You are not afraid to make bad decisions because you understand that anyone can make mistakes and it's OK.

9. You can be yourself and do not need to adapt your behaviour, values, and views to meet expectations of other people. You don't worry that other people can disagree with your views or behaviour. You don't need an approval of other people. You know that it is impossible to please everyone so you do what you consider to be right
10. You are successful in all spheres of life. You respect yourself and respect everyone around you. You make a good social image that contributes to your personal and social growth.

### **These are the 10 most common effects of a low self-esteem:**

Effects of a low self-esteem on your life can be huge. Understanding the effects of a low self-esteem begins with understanding self-esteem itself.

- What is it?
- Why is it so important?
- why can its lacking be so damaging?

In a nutshell, self-esteem is the way you think about yourself. It is confidence and satisfaction in yourself. Essentially, it is *self-respect*. When you have self-respect and a healthy self-esteem, you feel self-confident, purposeful and self-motivated; and when you do not, your self-esteem will suffer, dragging a list of consequences in its wake. You will feel as if “the fire has gone out” of your life.

#### **1. Negative feelings**

Self-esteem is closely linked to mood, so when it is diminished, you may experience a slew of negative feelings — sadness, shame, anxiety, fear, anger, loneliness, stress, even depression. Everyone experiences periods of negative emotions; but a person suffering from low self-esteem will have an especially difficult time shaking them, and will often experience them in combination.

#### **2. Self-loathing**

Hating yourself will cause you to loathe your own thoughts and actions, and have difficulty forgiving yourself. Hating your body will end up being reflected in how you behave in relationships and at work, as feeling unworthy of self-care will give you license not to take care of yourself.

#### **3. Believing you have nothing to offer**

This is a biggie, and reflects a deep-rooted sense of worthlessness. You may perceive others' traits and gifts as being superior to your own — even “heroic,” and therefore unattainable. If you are struggling with the effects of a low self-esteem, you may believe that no one cares what you think, how you feel, or even what you have to offer. And believing those things can lead to loneliness, hesitation to reach out and engage, and eventually increasing repressed anger.

#### **4. Difficulty getting motivated**

A low self-esteem can make every day feel like a Monday morning in heavy traffic...after driving off with your coffee mug on the roof of your car. There is a pervasive assumption that “I am going to fail anyway, so why bother?” This undertow of being “stuck” and “out of gas” can wreak havoc with your performance at work and at home. It can also easily leak over into your willingness to try new things that may help both your mood and your bank account.

### 5. **Obsession with perfection**

Believing you have to be “perfect” in all you do will lead to a constant sense of failure and never being “good enough.” If you are suffering from the effects of a low self-esteem, you may find yourself confusing “*making* a mistake” with “*being* a mistake,” and therefore unable to forgive yourself for simply being human and making “human” mistakes. And that is the tell-tale sign of toxic shame. There are many ways to cope when you do not feel like you are good enough.

### 6. **Lowered resilience**

Because the effects of a low self-esteem are imbued with a sense of futility — “there is no hope,” “things can’t get better” — you will have difficulty bouncing back from setbacks that should only be temporary.

### 7. **Lack of self-care**

When your self-worth is suffering, it’s likely your self-care is, as well. Because there is an underlying assumption that “things can’t get better, so why waste my energy,” it’s easy to then ignore essential elements of well-being, like sleep, good nutrition, and exercise. Low self-esteem will also increase your vulnerability to fear-based distractions like drug and alcohol abuse, compulsive sex, eating, and shopping, all in an effort to avoid conflict, pain, and failure.

### 8. **Struggling relationships**

Relationships inevitably suffer when low self-esteem is on board. You may not believe you deserve or can maintain a healthy relationship, so you don’t put forth your best effort or present your best self.

### 9. **Being a “people pleaser”**

Wanting to make the world a better place isn’t the problem here; not having clear boundaries and not being able to say “no” are. If your self-esteem is at the bottom of its well, you will feel unworthy of receiving goodness from others and you will feel obligated to make sure *they* feel good.

### 10. **Believing you are powerless to change anything**

This falsehood naturally leads to fear and anxiety, and when compounded by the belief that your own thoughts don’t matter to others, will deepen your repressed hurt and anger.

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## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery where the knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### **Lesson 1:** Relationship between Fashion and self-Esteem

#### **Teaching Strategies**

Teacher creates an awareness of the relationship between fashion and self-esteem.

#### **Learning Strategies**

Students will use the personal experiences and thoughts to try to make sense of the relationship between fashion and self-esteem.

#### *Activity; 1*

Discuss what clothing does to the wearer.

#### *Activity; 2*

In your own words, describe the kind of feeling you get when you dress up on a Saturday to go hang out with your friends at the shopping mall.

#### *Activity; 3*

Explain why you think fashion matters so much in this day and age?

#### **Resources**

<http://www.ownyourbest.com/how-fashion-affects-self-esteem-personality>

## Lesson 2: Self-esteem and its importance

### Teaching Strategies

Teacher revisits the concept of self-esteem explaining reasons as to why it is important to always maintain a good self-esteem.

### Learning Strategies

Students will differentiate between key concepts and discuss how self-esteem can impact certain aspect of life.

#### *Activity; 1*

Differentiate between self-confidence, self-efficacy and self-esteem?

#### *Activity; 2*

In small groups, discuss how self-esteem can have an impact on:

- Higher academic achievements?
- Happy personal relationships?
- Better career prospects?

#### *Activity; 3*

Share your discussions with the class.

### Resources

[http://www.batleby.com/essay/positive\\_negative\\_effects\\_of\\_the\\_fahion\\_FKLBZ-49KRZZS](http://www.batleby.com/essay/positive_negative_effects_of_the_fahion_FKLBZ-49KRZZS)

### Lesson 3: Positive and Negative Impacts of Fashion on Self-Esteem

#### Teaching Strategies

Teacher will make a list of benefits of high self-esteem and effects of low self-esteem and explain each of them giving brief example.

#### Learning Strategies

Students will be required to use their personal experiences to explain selected benefits of high self-esteem and effects of low self-esteem.

##### *Activity; 1*

Select three benefits of having high self-esteem and give examples based on your own experiences.

##### *Activity; 2*

Select three effects of having low self-esteem and give examples based on your own experiences.

##### *Activity; 3*

Share your answers with the class.

#### Resources

[http://www.battleby.com/essay/positive\\_negative\\_effects\\_of\\_the\\_fashion\\_FKLBZ-49KRZZS](http://www.battleby.com/essay/positive_negative_effects_of_the_fashion_FKLBZ-49KRZZS)

## UNIT 1: Fibres and Fabrics

**Content Standard 1.1;** Investigate the evolution, characteristics, designs and trends of fabrics and fabric design, their construction, production, representation, regulation and marketing

**Benchmark 12.1.1.5;** Demonstrate an awareness of the need for businesses to understand customer demographics

### Topic 5: Business and Customer Demographics

#### Essential Questions:

1. What is consumer demographics?
2. Why study consumer demographics?
3. How does consumer demographics relate to business?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Customer Demographics
Skills	Demonstrate
Context	Business and customer needs
Attitudes/Values	Being rational, Making Critical Observations

Technology and Industrial Arts Application: Textiles Technology: Fibres and Fabrics

#### Learning Objectives

By the end of this topic, the students will be able to;

- Demonstrate knowledge of the need for a business to understand customer demographics
- Explain consumer demographics



What is Customer Demographics?

Customer demographics are about categories of the consumers or target populations that are relevant to a business' purpose/ses, such as marketing and product design. The term also refers to the study of such categories of customers in a business context. Demographics are basically one of the key elements of customer segmentation. Targeting specific groups of customers enables more efficient allocation of marketing resources and increases the opportunities for cross- and up-selling.

The practice also makes more personalized interaction possible, improving customer service and fostering customer loyalty and retention. More appropriately targeted marketing efforts are typically more relevant to the customer's needs and, as a result, more welcome.

From another perspective, a business might study customer demographics to understand the makeup of something, for example, exploring the characteristics of the population in a particular neighbourhood or the audience of a website. That approach is used in creating demographic profiles of individual customers as well as groups.

*What are some important customer demographics?*

Some of the most common customer demographics for business purposes include **age, gender, geographical location, education level, marital status, household income, occupation and hobbies**. Demographics are one of the key elements of customer segmentation.

*What are demographics used for?*

Demographics are used to identify who your customers are (now and in the future), where they live, and how likely they are to purchase the product or service you are selling. While demographic studies of customers frequently confirm what you might already intuitively know, they just as often can hold surprises

*What is demographics in marketing?*

**Demographics** is the collection and study of data regarding the general characteristics of specific populations. It is frequently **used** as a business marketing tool to determine the best way to reach customers and assess their behaviour. Segmenting a population by **using demographics** allows companies to determine the size of a potential market

### **Relationship Between Business and Customer Demographics** (How customer demographic influences business)

Demographics in business are more important than many companies realize. Amidst the other concerns presented in building a company, this one important aspect can easily be overlooked. However, when trying to grow a larger customer base, understanding the demographics of your target audience could be the key to your success.

### **Finding Customer Demographics**

Demographics encompass any typical statistical data or specific information regarding the population of your target audience, or the people who will most likely buy your goods or services. This information includes:

- Age
- Annual income
- Education
- Number of individuals in a household
- Occupation
- Geographic location
- Gender
- Status of home ownership
- Marital status
- Race or ethnic background

A smaller chapter of customer demographics include psychographics, which takes a look at the psychology, lifestyle, and behaviours of your customers, and includes things such as:

- Buying habits
- Hobbies
- Shopping patterns
- Values and opinions
- Behaviours
- Travel habits
- General attitudes

If you want a comprehensive analysis on the demographics and psychographics of your target audience, you'll need to conduct thorough research on a certain geographical region and fill out customer personas which will give you an accurate depiction of who your customers are and what, how, when, and why they're interested in purchasing a good or service.

### **Using demographics to improve businesses**

Understanding customer demographics is one of the most important things for improving your overall business, but it also has a particular influence on the effectiveness of your marketing strategy. Here are just a few of the ways that understanding customer demographics can positively impact your business.

#### **Exposes Shopping Habits:**

When is the best time to run an advertisement? Where will most of your customers see it? Is digital or physical more effective? When you understand the psychographics of your target customers, you get the answers to these questions and more. With this information, you can tailor your marketing strategy to produce advertisements when and where it will be most effective.

#### **Targets Price Points:**

Regions throughout the country have a certain median annual income that shapes the asking price for your goods and services. For example, according to a chart from 42 Floors, Atlanta has a median household income of \$46,000, which is below state averages. With this information, you know that a higher price point won't get as far in Atlanta as it would in other areas of the state.

#### **Prevents Costly Errors:**

Deductive reasoning through customer demographics helps to eliminate costly mistakes in your marketing plan. It helps you to hone in on what your customers are interested in seeing and helps you eliminate unsuccessful strategies. For example, researching customer interaction with similar businesses in a certain area can tell you what they're buying and what they're avoiding. It can also define a certain need of the consumer, which can help you avoid making many of the mistakes your competitors have already made regarding drawing in customers.

#### **Identifies Product and Service Needs:**

Products and services are successful because they fulfil a customer need. Understanding the needs of your customers can help you comprehend what products or services you should offer in the future. This can also help you to evolve your product so that it can better meet the needs of your customers. Successful companies don't ignore the demographics of their company. They research them in depth, and apply the information to their business processing. From there, companies can see significant growth and improvement in their dealings with customers.

### Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: Customer Demographics?

#### Teaching Strategies

Teacher introduces what customer demographics is and explains its importance in a business world.

#### Learning Strategies

Students will be tasked to investigate certain concepts; find out what they are and their importance.

##### *Activity; 1*

Define customer demographics.

##### *Activity; 2*

Identify some important customer demographics and define them.

##### *Activity; 3*

Investigate what customer segmentation is and write a paragraph to tell us what it is all about.

#### Resources

<https://www.whatis.techtarget.com/definition/customer-demographics>

### Lesson 2: The Relationship between Business and Customer Demographics

#### Teaching Strategies

Teacher will explain the relationship between customer demographics and business so that the students can understand how one cannot work well without the other.

#### Learning Strategies

Students will be tasked to investigate certain concepts; find out what they are and their importance.

##### *Activity 1*

In your own words, explain how customer demographic can influence a business.

##### *Activity 2*

A smaller chapter of customer demographic include; psychographics, which takes a look at the psychology, lifestyle and behaviour of customers.

In groups of 3 to 4 students, discuss how the following customer psychographics is related to a business;

- Buying habit
- Shopping Patterns
- Values and Opinions
- Travel habits

##### *Activity 3*

Share your discussions with the class.

#### Resources

[https://www.customerthink.com/how\\_customer\\_demographic\\_influence\\_your\\_business](https://www.customerthink.com/how_customer_demographic_influence_your_business)

## Strand 1: Textiles Technology

### Unit 2: Textile and Clothing

CS1.2 Intergrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

Units	Benchmarks	Topics	Lesson Titles
Fibres and Fabrics	12.1.2.1 – Apply historical influences, technological processes and the emerging fashion trends in the creation of a range of fabric items.	Factors used to create Fabric Items	1. Fabric in General 2. Factors contributing to the creation of Fabric Items.
	12.1.2.2 – Investigate and apply the design, material and technology on clothing for functional needs.	Clothing for Functional Needs	1. Functional Clothing 2. Types of Functional Clothing
	12.1.2.3 – Integrate and combine ideas, emerging technological techniques and contemporary cultural illustrations in the construction of fabrics and fabric products.	Using ideas, techniques and illustrations to construct Fabric and Fabric Product	1. Integrating ideas, techniques and illustrations to construct fabric and fabric items. 2. Embellishing, printing and dyeing fabrics
	12.1.2.4 – Design and construct a fibres and fabric portfolio for trends of fashion in design, illustration, construction, and the end processes in the fashion industry	Project Portfolio	1. Types of Project Portfolios 2. Compiling a Portfolio
	12.1.2.5 – Assess and appraise the standards in the fashion industry according to the materials, skills and processes, and techniques.	Standards in the Fashion Industry	1. Quality Control and Quality Assurance? 2. What makes these two concepts so important in raising standards in fashion industry?

## Unit 2: Textiles and Clothing

**Content Standard 1.2;** Integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 12.1.2.1;** Apply historical influences, technological progressions and the emerging fashion trends in the creation of a range of fabric items.

**Topic 1:** Historical Fabric item creation

### Essential questions:

1. What types of historical influences affected or promoted fashions and fabrics in general?
2. What are some factors that contribute to the creation of fabric items?
3. How do fashion trends affect textile businesses?

### Essential Knowledge Skills, attitudes and values

Knowledge	A range of fabric items
Skills	Apply, utilise and use
Context	Historical Influences
Attitudes/Values	Appreciate fabric items

Technology and Industrial Arts Application: Textiles Technology: Textile and Clothing

### Learning Objectives

By the end of this topic, students will be able to:

1. Select a historical influence and use it to create a fabric item or product
2. Explain how various technological progressions are enablers of emerging fashion trends.

### Content Background; Fabrics in General

So many people underestimate the role fabric plays in their lives. Sure, we all put on clothes every day, many of us without a second thought. But have you ever stopped to think how many important moments and everyday experiences in your life are associated with some form of fabric? From your childhood blanket to your wedding dress, and your favourite worn-out jeans, fabric plays a major role not only in how we live but also how we feel. The look, touch and even scent of a familiar piece of clothing can bring to mind a first love, a cherished vacation memory or simply a sense of comfort.

We also use fabric to express ourselves. Even beyond the world of high fashion and designer labels, many people even feel that putting together outfits is the ultimate form of creative expression. We use different clothing styles, colours, materials and textures to express mood, attitude and personality.

Fabric and clothing also play an important role in religious and social beliefs. From the earliest recorded history, a person's clothes could give us an instant glance into their socio-economic status.

Where today we hold those designer tags in highest regard, thousands of years ago, just the fact that one was able to afford clothing at all was a sign of wealth. Today, many religious orders are readily associated with certain types of fabric and clothes, from the bright yellow garb of the Buddhist monk to the heavy black burkas worn by many Muslim females, to the colourful hand-spun clothing associated with traditional African religions.

Above all, fabric serves a practical function. It protects us from cold and heat, the rain and the bright sun. We use blankets to cover ourselves as we sleep and woven rugs to cushion our steps as we walk. With all of the contributions fabric makes to our everyday lives, many people don't stop to think how fabric is created. The process of turning natural and synthetic fibres into cloth is much more complicated than is commonly thought. In this article, we'll learn how the fibres used to make up fabric are extracted and transformed into the clothing and textiles we're familiar with.



### Recap

Reflecting back to grade 9 and 10, we know that fabric construction involves the conversion of yarns, and sometimes fibres, into a fabric having characteristics determined by the materials and methods employed. Most fabrics are presently produced by some method of interlacing, such as weaving or knitting. Weaving, currently the major method of fabric production includes the basic weaves, plain or tabby, twill, and satin, and the fancy weaves, including pile, Jacquard, dobby, and gauze. Knitted fabrics are rapidly increasing in importance and include weft types and the warp types, raschel and tricot. Other interlaced fabrics include net, lace, and braid. Nonwoven fabrics are gaining importance and include materials produced by felting and bonding. Laminating processes are also increasing in importance, and fairly recent developments include needle weaving and the sewing-knitting process.

### Factors Contributing to the Creation Of Fabric Items

Fabric refers to any woven, knitted and matted material, cloth or textile item.

To create a fabric item that is authentic considering its historical background, i.e.

- the kind of fibre to be used (plant, animal, manufactured)
- the construction methods and processes (weaving, knitting, matting)
- Patterns and designs (e.g. Tufi tattoos)

The item must also consider technological progressions, i. e.

- Adaptations made to the original/historical designs like using latest fabric material rather than the original fibres
- Construction methods are the same, however techniques may differ using technology
- Improvements may be done to original designs to make it your own

When creating your fabric item consider the current and emerging fashion trends and your target consumers. The kind of fabric items, styles, designs etc. that is popular today and include in the adaptations or alterations that are made to your item.

## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1 – Fabric in General

#### Teaching Strategies

Lecture type teaching in the topic for the lessons given under this topic

#### Learning Strategies

Students get into groups or pairs and research and report on the lesson titles

##### *Activity 1:*

In your own words, describe the kind of role that fabric plays in your life. Share your work with your desk mate.

##### *Activity 2:*

Describe how you can use fabric to express your feelings.

##### *Activity 3:*

Give 2 examples each of how religious and social beliefs can be expressed through a fabric.

#### Resources

Syllabus and Teacher Guides- Technology & Industrial Arts Grade 11-12 SBC  
Syllabus and Teacher Guides- Design and Technology Grade 9-12 OBC

**Lesson 2** – Contributing factors to the creation of fabric items.

## Teaching Strategies

The teacher will deliver a lesson that looks at the factors (emerging fashion trends, technological progression, and historical influences) that contribute to the creation of fabric item.

## Learning Strategies

Students to investigate what these so-called ‘fancy weaves’ look like. In a sentence or two, explain how they are made as well as explain how selected concepts inter-relate in the creation of fabric items,

### *Activity 1:*

Weaving, currently the major method of fabric production includes the basic weaves, plain or tabby, twill, and satin, and the fancy weaves, including pile, Jacquard, dobby, and gauze. Investigate what these so-called ‘fancy weaves’ look like. In a sentence or two, explain how they are made.

### *Activity 2:*

Collect pictures of these fancy weaves, cut them out and paste them in your exercise book.

### *Activity 3:*

In a paragraph, explain how the following concepts inter-relate when it comes to creating a fabric item.

- Historical influences
- Technological progression
- Emerging fashion trends

## Resources

Syllabus and Teacher Guides- Technology& Industrial Arts Grade 11-12 SBC  
Syllabus and Teacher Guides- Design and Technology Grade 9-12 OBC

## Unit 2: Textiles and Clothing

**Content Standard 1.2** - Integrate and apply and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 12.1.2.2** - Investigate and apply the design, material and technology on clothing for functional needs.

**Topic 2:** Clothing for Functional Needs

### Essential questions:

1. What is functional clothing?
2. What are some types of functional clothing?
3. Why is wearing the right type of clothing for a particular job, event or environment important?

### Essential Knowledge Skills, attitudes and values

Knowledge	Clothing for functional needs
Skills	Apply and Investigate
Context	Functional needs
Attitudes/Values	Appreciate, Enjoy choosing clothes for special occasions

Technology and Industrial Arts Application: Textiles Technology: Textile and Clothing

### Learning Objectives

By the end of this topic, students will be able to:

1. Identify the importance of functional clothing
2. Choose a type of functional clothing and research design and construction processes.

### Content background - **Functional Clothing**

Clothing made or designed is capable of a particular function or use. For example, clothes for special events and occasions such as; Christmas hats, wedding dresses, graduation gowns, maternal dresses etc. The clothing must be suitable for the occasion in which it will be used or worn and the consumer or user must be comfortable in it.

Functional clothing are those garments that can perform multiple functions apart from just their aesthetics and basic protection of the wearer. These belong to the application area of technical textiles and are specifically designed /engineered to deliver functionality or performance to the wearer, beyond the fundamental clothing functions. The functionality of these garments might vary from design to design, ranging from medicine, nanotechnology, biotechnology, computing, physics, etc.

#### ***Types Of Functional Clothing***

Functional clothing can be classified into four groups, based on their areas of functionality:

#### **Protective functional clothing**

This includes functional garments that can provide the wearer protection from one or more hazards. These can include protection against mechanical impact, physical injury (cuts, bites, perforation and abrasion), drowning, heat/fire, extreme cold, rain, electric shock, radiation, invisibility and dangerous substances and infective agents.



### Sports functional clothing

Functional garments in this section are used to enhance the functionality of sports persons by providing a high level of breath ability, moisture/vapor transfer, heat insulation, wind-proofing, water-proofing, and/or UV protection depending upon the sport and environment requirements.



### Medical-functional clothing

This section includes functionalities like absorbency, air permeability and durability based on the wearer and requirements. It includes functional garments used for healthcare or hygiene, surgical clothing, therapeutic clothing and intelligent functional clothing.



### Clothing for special needs

These functional garments are used to improve the quality or ease of life for people with disabilities or special needs, like wheelchair users, paraplegics, arthritis sufferers, people with restricted movement or stroke victims. These garments are mostly made-to-measure to ensure individual need fulfillment and comfort for the wearer.



## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of fibres and fabrics.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: Functional Clothing

#### Teaching Strategies

Teacher will identify and showcase some functional clothing to the students stating their functions.

#### Learning Strategies

Students will be given the opportunity to use their own experiences and imagination to define certain concepts and sketch a particular clothing.

##### *Activity 1:*

Explain what functional clothing is according to your own understanding.

##### *Activity 2:*

State two reasons why functional clothing is important.

##### *Activity 3:*

Design and sketch functional clothing for a chef working in a kitchen. Explain why you chose this kind of clothing for a chef.

#### Resources

<https://wwwmedium.com/@stitchdiary/function-garment>



## Lesson 2: Types of Functional Clothing

### Teaching Strategies

Teacher will arrange parade for the students to parade themselves in different functional clothing in common trades like technical fields, and showcase to friends in the class, or a school assembly as a motivation activity for the lesson. Ask children to prepare a functional clothing for a parade in class or at school assembly

### Learning Strategies

Students individually prepare for this as an individual project and a score out of 5 for meeting the criteria set.

#### *Activity 1:*

Present to the class the functional clothing that was chosen for the functional clothing parade, Describe what the field of work is, the fabric it is made from, its name, profession and why it has been chosen?

#### *Activity 2:*

Draw or sketch this specific work (functional) cloth according to the five areas mentioned in activity 1. Missing information

#### *Activity 3:*

Create a prototype for the functional clothing (complete at home and submit with a description of the design process you created to design the prototype.

### Resources

<https://wwwmedium.com/@stitchdiary/function-garment>

## UNIT 2: Textiles and Clothing

**Content Standard 1.2** - Integrate and apply and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 12.1.2.3** - Integrate and combine ideas, emerging technological techniques and contemporary cultural illustrations in the construction of fabric and fabric products.

**Topic 3:** Using ideas, techniques and illustrations to construct Fabric and Fabric Products

### Essential Questions:

1. What are some integrating ideas, for construct fabric and fabric items?
2. What is the difference between techniques and illustrations in the designing of products?
3. How is embellishing, printing and dyeing of fabrics done?

### Essential Knowledge Skills, attitudes and values

Knowledge	Fashion and fabric products
Skills	Integrate, combine, construct
Context	Cultural and contemporary surroundings
Attitudes/Values	Respect for cultural ideas, accept and value changes

Technology and Industrial Arts Application: Textiles Technology: Textile and Clothing

### Learning Objectives

By the end of this topic, the students will be able to;

1. Describe technological techniques and ideas
2. Apply contemporary ideas and illustrations
3. Investigate cultural ideas and illustrations and integrate to product

### Content Background

Integrating Ideas, Techniques and Illustrations to Construct Fabric and Fabric Items.

Fabric is the term used to describe manufactured cloth or material. A number of processes go into making fibres into fabrics. These include:

- Gathering the fibre (plant, animal or manufactured)
- Making the fibre into thread or yarn (spinning)
- Making the yarn into fabric (weaving, knitting and matting)
- Colouring the fabric (bleaching, dyeing or printing)
- Giving special finishes to the fabric to make it suitable for various uses, such as, umbrella or baby blankets

### Techniques involved in Fabric Construction

- **Woven Fabrics:** The weaving of fabrics consists of interlacing systems of yarn. By varying the interlacing, a wide variety of different fabric constructions can be made.
- **Knitted Fabrics:** Fabrics can be constructed from one or more continuous yarns by the formation of a series of interconnected loops.
- **Matted Fabric (Non-Woven):** Masses of fibres can be held together into a fabric by the interlocking of fibers by mechanical action or by fusing fibres together with heat, adhesive or chemicals. .

### Embellishing, Printing and Dyeing Fabrics

- Why do people decorate their bodies with tattoos?
- Why were designs added to tapa cloth?
- Why are natural fibres dyed different colours to be used in grass skirts?

Since earliest times, people have been embellishing their clothes, household items and personal appearance to make them look more beautiful and more interesting than they were left plain.

It is the same for modern fibres and fabrics, if they were left in their natural states, everything will be plain and not coloured. Over the years, people are creative in adding colour and designs to fibres and fabrics.

Colour is important in our lives. It makes us feel relaxed and excited, warm or cold, reflect our moods/emotions. People have favourite colour/s. Colour is the first criteria people have when buying fabric and clothes. For centuries, people obtained colour from clay/fruit/berries/leaves and flowers. Today, making dyes is a highly scientific and technical industry.

Ways of decorating or embellishing fibres and fabrics include:

- Printing
- Dyeing
- Applique
- Embroidery

*Printing* is the process by which a design is applied to a fabric surface to make patterns. The design is only strongly visible on one side of the fabric. Three methods of doing things are:

- Block printing
- Screen printing
- Roller printing

*Dyeing* is the process by which fibres, thread or fabric are soaked or immersed in a dye solution. The solution may be hot or cold. The colour of dye passes from the solution into the fibres, thread or fabric. These dyeing methods have special names:

- Stock dyeing
- Yarn dyeing
- Piece dyeing (also variations of tie-dyeing and batik)

*Applique* is where small fabric pieces of shape or picture are sewn onto the garment.

*Embroidery stitches* are decorative stitches used to apply stitches to articles using thread.

## Teaching and Learning

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of textiles and clothing.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

**Lesson 1:** Integrating ideas, techniques and illustrations to construct fabric and fabric items.

## Teaching Strategies

Teacher will explain how ideas, techniques and illustrations can be integrated to construct or produce a fabric and a fabric item.

## Learning Strategies

Students are expected to use their imagination and creativity to create a chart comprising of vital information with regards to the processes in making a fabric and fabric item as well as techniques involved in fabric construction.

### *Activity 1*

A number of processes (5 processes) go into making fibres into fabrics. List them down in the book find pictures of each process and paste under the processes.

### *Activity 2*

List the techniques involved in fabric construction and again find pictures of each technique and paste under the technique.

### *Activity 3*

Work in small groups to creatively make a chart consisting of the information from

Activity 1 and Activity 2 and display in your classroom.

## Resources

Pamela Norman and Kikising Salley, Outcomes Edition, Home Economics, Book 1, Grade 9/10, page 100-11

## Lesson 2: Embellishing, printing and dyeing fabrics

### Teaching Strategies

The teacher list and explain some ways of decorating and embellishing fibres and fabrics such as printing, dyeing, applique and embroidery.

### Learning Strategies

Students will interview a local person to get information regarding how dye is made in their area and research to find out about commercial and printing of fabrics.

#### *Activity 1*

Look at your classmates' clothes and decide how the designs and colours are applied. Gather data about the design and colours on their clothes. Present the data in a table or a diagram. Discuss your findings.

#### *Activity 2*

Interview a local person to find out how local dyes are made and used in their area. Write it down and discuss your findings with your friends.

#### *Activity 3*

Use the library or the internet to find out more about the commercial and printing of fabric.

### Resources

Pamela Norman and Kikising Salley, Outcomes Edition, Home Economics, Book 1, Grade 9/10, page 100-111

## UNIT 2: Textiles and Clothing

**Content Standard 1.2** - Integrate and apply and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 12.1.2.4** - Design and construct a fibres and fabric portfolio for trends of fashion in design, illustration, construction and the end processes in the fashion industry.

### Topic 4: Project Portfolio

#### Essential Questions:

1. What is a project portfolio?
2. How is a portfolio compiled?
3. What do you place inside a project portfolio?

#### Essential Knowledge Skills, attitudes and values

Knowledge	Fibres and fabric portfolio
Skills	Design and construct
Context	Fashion Industry
Attitudes/Values	Being creative and open minded

Technology and Industrial Arts Application: Textiles Technology: Textile and clothing

#### Learning Objectives

By the end of this topic, the students will be able to;

1. Construct and compile a fibre and fabric portfolio
2. Design a project portfolio illustration in fashion trends, construction and end processes in the fashion industry.

### Content Background      A PROJECT PORTFOLIO

A project portfolio is a collection that demonstrates a body of work. The term carries different meanings for different individuals over a number of industries from visual arts to technology. Today's highly digitized world allows for project portfolios to exist in a number of media formats.

#### Types of Project Portfolios

Project Portfolios are used vastly around the world today amongst. Different organisations and industries use this medium. Below are a few examples

#### Portfolio Types

Photography, advertising, Web design, digital art and traditional art mediums are represented, usually in the form of high quality printed examples. Those working in video and other media maintain portfolios on disks. Many professionals maintain an online project portfolio of highlights of their work, but may not always include the entire body of their accomplishments.

#### Professional

Individuals and companies working in art and related industries most often use project portfolios as a demonstrating of their skill to prospective clients, though individuals within the company maintain separate portfolios. Students of related fields maintain portfolios demonstrating the projects they have completed and most often are called student portfolios.

#### Project Management

In project management, the project portfolio is a means to organize an ongoing project. The portfolio contains lists of key individuals, important contacts, budgets, schedules and deadlines. Often, the portfolio is maintained through a shared interface so members of the team can access pertinent information.

#### Corporate PPM

Large businesses also maintain a portfolio that outlines current projects. Details include clients, budgets and other information. Project portfolio management (PPM) is a method of analysing projects to optimize them to better suit the company's long-term goals.

### COMPILING A PORTFOLIO

In simple terms, a portfolio is a set of pieces of creative work collected to be shown to potential customers or employers.

Constructing a Fibre and Fabric portfolio requires a compilation of the following:

- Sample of fibre and fabric projects
- Illustrations of design and construction processes of the project
- Design illustration and processes of current fashion trends
- Construction and end processes of fashion products in the fashion industry
- Miscellaneous items in fashion design and production



## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of textiles and clothing.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: A Project Portfolio

#### Teaching Strategies

Teacher introduces the different types of project portfolios and their characteristics giving examples along the way.

#### Learning Strategies

Students will learn about different types of project portfolios and their characteristics and then read and formulate reasoning to the questions that follow.

#### *Activity 1*

PPM is a type of project portfolio. What does the abbreviation PPM stand for, what is it used for and who uses it? (Answer these questions in a paragraph)

#### *Activity 2*

Differentiate between Project Management and Professional.

#### Resources

<https://bizfluent.com/info-7856970-include-a-marketing -portfolio.html>

## Lesson 2: Compiling a portfolio

### Teaching Strategies

Teacher will guide students as they put together their portfolio encouraging them to be creative and organised in presenting their work.

### Learning Strategies

Students will use their organisational skills together with their creativity to compile a portfolio.

#### *Activity 1*

Looking at the example given on how to compile a portfolio, you will compile a portfolio of your own based on the previous lesson topic learnt (Topic 3 – Using ideas, techniques and illustrations to construct fabric and fabric item.)

Your portfolio will comprise of ways of decorating and embellishing fibres and fabrics including the different printing and dyeing techniques.

Give your portfolio a good title. Try to be creative and organized when setting out your portfolio.

#### *Activity 2*

Share your portfolio with your class.

### Resources

<https://bizfluent.com/info-7856970-include-a-marketing -portfolio.html>

## UNIT 2: Textiles and Clothing

**Content Standard 1.2** - Integrate and apply and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 12.1.2.5** - Assess and appraise the standards in the fashion industry according to the materials, skills and processes, and techniques.

### Topic 5: Quality and standards in fashion industry

#### Essential Questions:

1. What is Quality Control and Quality Assurance?
2. How are these two concepts so important in raising standards in the fashion industry?
3. What do we mean by raising standards in textile industries?

Essential Knowledge Skills, attitudes and values

Knowledge	Standards in the fashion industry
Skills	Assess, Appraise
Context	Fashion Industries
Attitudes/Values	Encourage one and other in tasks

**Technology and Industrial Arts Application:** Textiles Technology: Textile and clothing

#### Learning Objectives

By the end of this topic, the students will be able to;

1. Identify a strategy to Assess and appraise/evaluate standards of a famous fashion industry.
2. Recognise the importance of quality and standards in the textile industries

### Content Background

### Importance of Quality Control And Quality Assurance

Quality is an important factor when it comes to any product or service. With the high market competition, quality has become the market differentiator for almost all products and services. Quality control is essential to building a successful business that delivers products that meet or exceed customers' expectations. It also forms the basis of an efficient business that minimizes waste and operates at high levels of productivity. A quality control system based on a recognized standard, such as ISO 9001 published by the International Organization for Standardization, provides a strong foundation for achieving a wide range of marketing and operational benefits.

Therefore, all manufacturers and service providers out there constantly look for enhancing their product or the service quality. In order to maintain or enhance the quality of the offerings, manufacturers use two techniques, quality control and quality assurance.

These two practices make sure that the end product or the service meets the quality requirements and standards defined for the product or the service. There are many methods followed by organizations to achieve and maintain required level of quality. Some organizations believe in the concepts of Total Quality Management (TQM) and some others believe in internal and external standards. The standards usually define the processes and procedure for organizational activities and assist to maintain the quality in every aspect of organizational functioning.

When it comes to standards for quality, there are many. ISO (International Standards Organization) is one of the prominent bodies for defining quality standards for different industries. Therefore, many organizations try to adhere to the quality requirements of ISO. In addition to that, there are many other standards that are specific to various industries.

Since standards have become a symbol for products and service quality, the customers are now keen on buying their product or the service from a certified manufacturer or a service provider. Therefore, complying with standards such as ISO has become a necessity when it comes to attracting the customers.

Every organization that practices QC needs to have a Quality Manual. The quality manual outlines the quality focus and the objectives in the organization. The quality manual gives the quality guidance to different departments and functions. Therefore, everyone in the organization needs to be aware of his or her responsibilities mentioned in the quality manual.

Quality Assurance is a broad practice used for assuring the quality of products or services. There are many differences between quality control and quality assurance. In quality assurance, a constant effort is made to enhance the quality practices in the organization. Therefore, continuous improvements are expected in quality functions in the company.

When it comes to our focus, we understand that quality control is a product-oriented process. When it comes to quality assurance, it is a process-oriented practice. When quality control makes sure the end product meets the quality requirements, quality assurance makes sure that the process of manufacturing the product does adhere to standards. Therefore, quality assurance can be identified as a proactive process, while quality control can be noted as a reactive process.

## Teaching and Learning Strategies

Teachers are encouraged to introduce students to simulations to better understand the concepts taught. Therefore, students will learn effectively and master the knowledge prescribed in each topic. Whilst introducing the topic, guided discovery and research will enable students to get a picture of data textiles and clothing.

The knowledge prescribed must be taught. It is not only about teaching what students should know but also to interpret that knowledge for students in a way that makes it relevant to them, and enables them to begin to acquire skills of analysis and problem solving, which will support teaching and learning. Students must be given opportunities to apply their knowledge, to be creative and to solve problems.

### Lesson 1: Quality Control and Quality Assurance?

#### Teaching Strategies

Students will explain about Quality Control and Quality Assurance and few named organisations that are responsible for checking and maintaining standards in the fashion industry.

#### Learning Strategies

Students will learn about Quality Control and Quality Assurance and few named organisations that are responsible for checking and maintaining standards in the fashion industry.

#### Activity 1

Brainstorm the difference between quality control and quality assurance. Record brainstormed points

#### Activity 2

ISO is one of few globally recognised organisations that work towards maintaining standards in the fashion industry. What does the abbreviation ISO stand for? List down three of its roles

#### Resources

<https://www.textileschool.com/495/apparel-testing>  
<https://www.parekhplast.com/blog/importance-of>

**Lesson 2:** What makes these two concepts so important in raising standards in fashion industry?

### Teaching Strategies

Teacher will explain what makes quality control and quality assurance so important in raising standards in fashion industry.

### Learning Strategies

Students will find out what makes quality control and quality assurance so important in raising standards in fashion industry.

#### *Activity 1*

What makes quality control and quality assurance so important in raising standards in fashion industry?

#### *Activity 2*

Investigate and list down names of at least three other organisations that share the same interest and perform the same role as ISO.

### Resources

<https://www.textileschool.com/495/apparel-testing>  
<https://www.parekhplast.com/blog/importance-of>

### PLANNING AND PROGRAMING

#### TEXTILE TECHNOLOGY - PLANNING AND PROGRAMMING

##### Planning and Programming Process

The Planning and Programming Process used by the Business and Technology Subjects is a 8 step process. This process begins from Unpacking the Content Standards and Benchmarks and ends with planning a daily lesson plan.

- Step 1:** Identify the number of Strands and Units in the subject Syllabus
- Step 2:** Identify the total number of Content Standards, Benchmarks and Number of Topics (Syllabus and Teacher Guide)
- Step 3:** Consider the Facts and Considerations in the Planning and Programming Process (subject related)
- Step 4:** Distribute the Content evenly across the 4 school terms in a Matrix (Proposed Template)
- Step 5:** Expand and plot the distributed content into the complete Yearly Content Overview for the subject for the grade (Proposed Template)
- Step 6:** Develop the Termly Programs (Proposed Template – 3 part programme)
- Step 7:** Develop the Weekly Teaching Program (Proposed Template) Daily Lesson Plan (SBC Template)
- Step 8:** Review, Evaluate and Re-plan the yearly, termly, weekly Programs

#### TEXTILE TECHNOLOGY -PLANNING AND PROGRAMMING PROCESS

Planning and Programming Process involves 8 steps. The steps are outlined and described with samples provided to assist and guide you.

Step 1: Identify the number of Units in the subject Syllabus (Grade 11&12 TIA Syllabus Page 30-32)

It is important to first identify the strand and unit names for familiarization and also the number of units in the Grade 12 Textile Technology strand /subject.

The table below outlines the units for grade 12 Textile Technology strand/subject. This helps teachers understand how to deal with units when they are expanded into evidence outcomes and benchmarks at each grade.

## Textile Technology

The strands and units of content standards explain the progression from Grade 9 to Grade 10, linking to senior high school Technology and Industrial Arts content. The order and linkage of units signifies what the students will achieve from one grade to the next.

Technology and Industrial Arts is organised around five strands – Textile Technology, Food Technology, Construction Technology, Communication Technology and Computer Technology. These strands are comparable with the strands used internationally. The Content Standard of each Strand is based on units. The Strands, Units and Content Standards are outlined in the table below:

**Step 1:** Identify the Strand, Units Content Standards and Benchmarks in the TIA subject Syllabus (Grade 11&12 TIA Syllabus Page 30-32)

STRAND	UNITS	Content Standards	Benchmarks
Textile Technology	Fibres and Fabrics	Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.	12.1.1.1
			12.1.1.2
			12.1.1.3
			12.1.1.4
			12.1.1.5
	Textiles and Clothing	1.2 Integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions	12.1.2.1
			12.1.2.2
			12.1.2.3
			12.1.2.4
			12.1.2.5

**Step 2:** Identify the total number of units, content Standards and benchmarks Textile Technology in the grade 11 and 12 syllabus

### Table of units, content Standards and benchmarks

Subject/Strand	Units	Content Standards	Benchmarks
1	2	2	10



- ▶ Use the Syllabus to derive the total number of Content Standards and total number of Benchmarks
- ▶ Use the unpacking tool to derive your topics and the total number of topics
- ▶ Place or slot them in a matrix as in the sample shown below so you are knowledgeable and made aware of the total number of content standards, benchmarks and topics that you will be working with in the planning and programming of teaching and learning for the subject in a school year for that grade.

### Grade 12 Textile Technology Content Matrix

Consult the Grade 11 Technology and Industrial Arts Content Matrix showing the strand, units, content standards, Benchmarks and topics to be covered in Grade 11. Note that this would be in the teacher Guide but because the teacher guides are not available, we have provided this matrix for you to use to program.

#### **Step 3:** Consider the Facts and Considerations in the Planning and Programming Process (subject related)

It is important to consider and analyse facts that are worth considering if these facts will help or if these facts will pose a challenge to the planning and programming process.

#### Facts and Considerations about the Grade 12 Technology and Industrial Arts

1. As per the Matrix, there are a total of 10 Benchmarks and Topics which must be programmed and taught in a school year.
2. Textile Technology is now a subject which requires all students to take as a subject
3. There are specialist teachers who are trained to teach the specialist content in the Textile Technology strand/ subject.
4. Current practice has one teacher who can teach Food and Textile (Currently Home Economics), one teacher who can teach Construction Technology (currently Practical Skills) and one teacher who can teach Communication and computer Technology (currently Computer Studies and ICT).
5. With consideration #4, there are 3 personnel who will be required to teach TIA together to deliver the subject. Thus, this fact is considered to propose the Planning and Programming Process for TIA subject into a 3-part Teaching and Learning Planning and Programming Process. Which means TIA Subject Program is made up of 3 sub-programs
6. Time Allocation for Grade 12 Technology and Industrial Arts is 200 minutes per week which means it has 5 periods/5 lessons a week: 1 period of 40 minutes (1 period) periods and 1 x 160 minutes (4 periods block)
7. There is a total of 40 teaching weeks in a school year (4 Terms x 10 Weeks each)
8. In a term, there are about 8 weeks of actual teaching weeks which gives us 48 periods/48 lessons of actual teaching in a term (6 periods a week x 8 actual teaching weeks in a term)

9. Using these facts and considerations, we can Plan and Program the Textile Technology according to this understanding:

### Understanding 1:

There are 3 x Teachers who are required to teach the TIA subjects in 40 weeks. Therefore, teaching and learning must be programmed using the 3 parts ( $40 / 3 = 13.3$  weeks per part).

### Understanding 2:

There are 77 Benchmarks for TIA that must be planned and programmed for 40 weeks but distributed equally according to the 3-parts: Textile & Food = 34 BMS; Construction = 33 BMS; Communication & Computer = 33. (use the strand with the highest BMS to determine the number of BMS per week =  $34 / 16 = 2.1$  BMS week)

### Understanding 3:

The 3-factor plan and program for TIA becomes the Yearly plan and Program (meaning to say, the plan and program will be utilized by the teacher for 3 lots of students taking TIA in a rotation approach for a year. The TIA Content distribution will be determined by the 3 parts (3 available personnel) and therefore the content will be distributed.

### Understanding 4:

In the instance where the school decides to deliver the Food Technology, Textile Technology, Communication Technology and Computer Technology from term 1-3, then the Construction Technology gets to be taught in Term 4. This allows for the school to acquire or make available the necessary requirements for the construction technology strand. Otherwise, it becomes school-based and students are awarded an attainment certificate- for the strands they have learnt and NOT TIA. TIA is externally examined and certified.

- These understandings may not directly affect your planning and programming as you are now required to plan Textile Technology as a subject or standalone strand.

## Grade 12 Textile Technology Content distribution for the Teaching Year

This is a suggested distribution of Grade 12 Textile Technology content opted for delivery in a school year for an overview of the Textile Technology Content for Grade 12.

STRAND	UNITS	Content Standards	Benchmarks	Topics
Textile Technology	Fibres and Fabrics	Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.	12.1.1.1	Safety Practices and Procedures in Design
			12.1.1.2	Consumer Behaviour on Clothing and Textile Products
			12.1.1.3	Sustainability in the Fashion Industry
			12.1.1.4	Fashion and Self-Esteem
			12.1.1.5	Fashion and Self-Esteem
	Textiles and Clothing	1.2 Integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions	12.1.2.1	Factors used to create Fabric Items
			12.1.2.2	Clothing for Functional Needs
			12.1.2.3	Using ideas, techniques and illustrations to construct Fabric and Fabric Product
			12.1.2.4	Project Portfolio
			12.1.2.5	Standards in the Fashion Industry

Units	Benchmarks	Topics	Lesson Titles
Fibres and Fabrics	12.1.1.1 – Apply adherence to safe practices and procedures for facilities, processes, tools and equipment.	Safety Practices and Procedures in Design	<ol style="list-style-type: none"> <li>1. Safety Practices and Procedures in Design</li> <li>2. The design process</li> <li>3. Promoting safety in big textile/design companies</li> </ol>
	12.1.1.2 – Collaborate consumer behaviour in choices of clothing and textile products.	Consumer Behaviour on Clothing and Textile Products	<ol style="list-style-type: none"> <li>1. Culture and social status</li> <li>2. Budget</li> <li>3. Availability and fashion</li> </ol>

## Textile Technology

	12.1.1.3 – Describe the fashion industry’s sustainability practices and impact on the environment	Sustainability in the Fashion Industry	<ol style="list-style-type: none"> <li>1. What is sustainability?</li> <li>2. Sustainability and adaptation.</li> <li>3. How fashion industry’s sustainability practices impact the environment.</li> </ol>
	12.1.1.4 – Demonstrate an awareness of the relationship between fashion and self-esteem.	Fashion and Self-Esteem	<ol style="list-style-type: none"> <li>1. Fashion and self-esteem</li> <li>2. Self-esteem and its importance.</li> <li>3. Positive and negative impacts of fashion on self-esteem</li> </ol>
	12.1.1.5 – Demonstrate an awareness of the need for businesses to understand customer demographics.	Fashion and Self-Esteem	<ol style="list-style-type: none"> <li>1. What is Customer demographics</li> <li>2. The relationship between business and customer demographics</li> </ol>

### Unit 2: Textile and Clothing

Units	Benchmarks	Topics	Lesson Titles
Fibres and Fabrics	12.1.2.1 – Apply historical influences, technological processes and the emerging fashion trends in the creation of a range of fabric items.	Factors used to create Fabric Items	<ol style="list-style-type: none"> <li>1. Fabric in General</li> <li>2. Factors contributing to the creation of Fabric Items.</li> </ol>
	12.1.2.2 – Investigate and apply the design, material and technology on clothing for functional needs.	Clothing for Functional Needs	<ol style="list-style-type: none"> <li>1. Functional Clothing</li> <li>2. Types of Functional Clothing</li> </ol>
	12.1.2.3 – Integrate and combine ideas, emerging technological techniques and contemporary cultural illustrations in the construction of fabrics and fabric products.	Using ideas, techniques and illustrations to construct Fabric and Fabric Product	<ol style="list-style-type: none"> <li>1. Integrating ideas, techniques and illustrations to construct fabric and fabric items.</li> <li>2. Embellishing, printing and dyeing fabrics</li> </ol>
	12.1.2.4 – Design and construct a fibres and fabric portfolio for trends of fashion in design, illustration, construction, and the end processes in the fashion industry	Project Portfolio	<ol style="list-style-type: none"> <li>1. Types of Project Portfolios</li> <li>2. Compiling a Portfolio</li> </ol>
	12.1.2.5 – Assess and appraise the standards in the fashion industry according to the materials, skills and processes, and techniques.	Standards in the Fashion Industry	<ol style="list-style-type: none"> <li>1. Quality Control and Quality Assurance?</li> <li>2. What makes these two concepts so important in raising standards in fashion industry?</li> </ol>

## Step 4: Distribute the Content evenly across the 4 terms

The teaching content outweighs the teaching weeks and therefore considerations must be made on teaching and learning approaches for example; integration, project-based learning, etc. we have provided some information to help you distribute the Technology and Industrial Arts subject content to be programmed fairly across the 4 terms.

This is important for you as a classroom teacher as it can provide you some time plan for your grade or class assessment especially at the school level.

The table below is a sample for the planning of the Textile Technology strand/ subject for the school year.

Textile Technology content distribution in terms for a year.

Week	Term1	Term 2	Term 3	Term 4
1	Orientation	Revision of Term 1	Revision of Term 1	Revision of Term 1
2	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.1	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.3	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.1	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.3
3	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.1	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.3	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.1	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.3
4	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.1	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.4	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.2	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.4
5	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.2	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.4	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.2	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.4
6	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.2	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.4	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.2	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.4

## Textile Technology

7	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.2	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.5	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.2	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.5
8	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.3	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.5	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.3	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.5
9	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.3	Unit: 1 Content Standards: 1.1 Benchmarks: 12.1.1.5	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.3	Unit: 1 Content Standards: 1.2 Benchmarks: 12.1.2.5
10	Assessment	Assessment & Re- porting	Assessment & Re- porting	Assessment

### Note:

This arrangement for the school year spreading the benchmarks from the 2 units Fibres and Fabrics and Textiles and Clothing into the terms.

Assessment is and will be planned by the teacher according to the arrangement of the benchmarks after each benchmark is taught or 2 benchmarks are taught. Teachers are in a better position to make that judgment.

Sample of a Term Program for Grade 12.

This is a sample term program for the grade 12 class. It is a guide for the teacher to begin the year.

Sample Program – Term 1

Term	One			
Unit	Fibres and Fabrics			
Content Standard	Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.			
<b>Weeks</b>	<b>Benchmarks</b>	<b>Topics</b>	<b>Lesson Titles</b>	<b>Activity</b>
1	Orientation of the school year – student registration and enrolment			

## Textile Technology

2	12.1.1.1 – Display the processes of the fashion design, construction, production and marketing of textiles and clothing.	Safety Practices and Procedures in Design	Safety Practices and Procedures in Design	Activity 1 & 2
3	12.1.1.1 – Display the processes of the fashion design, construction, production and marketing of textiles and clothing.	Safety Practices and Procedures in Design	The design process	Activity 1&2
4	12.1.1.1 – Display the processes of the fashion design, construction, production and marketing of textiles and clothing.	Safety Practices and Procedures in Design	Promoting safety in big textile/design companies	Activity 1&2
5	12.1.1.2 – Analyze social, economic, cultural, environmental and technological factors influencing consumer selection of textiles and garments.	Consumer Behaviour on Clothing and Textile Products.	Culture and social status	Activity 1 & 2
6	12.1.1.2 – Analyze social, economic, cultural, environmental and technological factors influencing consumer selection of textiles and garments.	Consumer Behaviour on Clothing and Textile Products.	Budget and consumers	Activity 1&2
7	12.1.1.2 – Analyze social, economic, cultural, environmental and technological factors influencing consumer selection of textiles and garments.	Consumer Behaviour on Clothing and Textile Products.	Availability and fashion	Activity 3
8	12.1.1.3 – Distinguish the various physical, thermal, chemical and biological properties of fabrics.	Sustainability in the Fashion Industry	Integrating ideas, techniques and illustrations to construct fabric and fabric items.	Activity 1&2

## Textile Technology

9	12.1.1.3 – Distinguish the various physical, thermal, chemical and biological properties of fabrics.	Sustainability in the Fashion Industry	Embellishing, printing and dyeing fabrics.	Activity 1&2
10	Assessment and Reporting Week			

Note: The teacher could check the Term One sample program against the content spread out in the year plan above. This is a guide for you as grade or class teacher help you begin your school year. As a specialist you are encouraged to make adjustments to the lesson titles and activities to suit the need of your students learning.

Step 5: Expand and plot the distributed content into the complete 36 weeks in the year for Yearly Content Overview for the grade

The strand, Units and Benchmarks are further unpacked into Topics and Lesson Titles in the Teacher Guides. Grade 12 content overview has been adopted and expanded in this guide in the Teaching Program

- The Yearly Content Overview for Textile Technology is a 36 week Content Overview which is Yearly Content Overview for the Technology and Industrial Arts Subject. .
- It outlines the Strands, Units, Content Standards, Benchmarks, Topics and Lessons to be taught in 36 weekst. Teachers have the option of outlining their Yearly Content Overview in a template that can be easily read and understood by all who will be using the Yearly Overview to derive their Termly teaching programs. (a sample template is provided below)
- In the sample below, the Strands, Units, Content Standards, Benchmarks, Topics and Lesson Titles must be programmed
- A sample is given below for your convenience to help you plan for your termly program.
- **REFER TO THE YEARLY CONTENT PLAN DISTRIBUTED ACROSS THE FOUR TERMS IN STEP 4 OF THE PROCESS FOR PLANNING AND PROGRAMING.**

### Step 6: Develop the Termly Programs

- Extract the terms content from the Yearly Overview to expand the content into the termly teaching program.
- Note that the TIA program is developed in 3-parts and 1 of the 3 parts is the program to be used all year around for the different lots of students rotating to take all 5 strand s of TIA. Below is a proposed Template to develop a Teaching Program for a Term. (13 weeks)



Subject: \_\_\_\_\_ Grade \_\_\_\_\_ Term: \_\_\_\_\_ Year: \_\_\_\_\_

Week	Content Standards	Benchmark	Unit	Topic	Learning Objective	Knowledge	Skill	Attitude/ Values	Performance Standard
Write the week number	Write the Coding only	Write the Coding only	Write the Unit number and Name	Write the Topic number and Name	By the end of this Topic, Students will be able to:  Write the learning Objectives for the Topic	Write the essential knowledge to be learnt in this topic	Write the essential skill to be learnt in this topic	Write the essential attitude and values to be learnt in this topic	By the end of this Topic, students will be able to;  Write the Performance Standard (if the Benchmark carries one)

**Note:** A Performance Standard will only be included if the Benchmark has been nominated to carry a Performance Standard (Assessment). Otherwise, it is not very necessary for all Benchmarks to have a Performance Standard.

## Step 7: Develop the Weekly Teaching Program (Proposed Template) and Daily Lesson Plan (SBC Template)

Template 1: Using Topics to develop Weekly Teaching Program

- You can use the Topics to develop the weekly teaching program
- Below is a proposed Template to develop a Teaching Program for a week

Subject: \_\_\_\_\_ Grade: \_\_\_\_\_ Term: \_\_\_\_\_ Week: \_\_\_\_\_ Date: \_\_\_\_\_ Year: \_\_\_\_\_

CS	BM	Unit	Topic	Learning Objective	Knowledge	Skill	Attitude/ Values	Suggested Learn Activities	Performance Standard
Write the Coding only	Write the Coding only	Write the Unit number and Name	Write the Topic number and Name	By the end of this Topic, Students will be able to:  Write the learning Objectives for the Topic	Write the essential knowledge to be learnt in this topic	Write the essential skill to be learnt in this topic	Write the essential attitude and values to be learnt in this topic	List down the learning activities that will be done in this topic	By the end of this Topic, students will be able to;  Write the Performance Standard  (only if the Benchmark carries a performance standard)

## Template 2: Using Lesson Titles to develop Weekly Teaching Program

Use the unpacking process to derive lesson titles and lesson objectives to be able to expand your weekly teaching program.

Below is a proposed Template to develop a Teaching Program for a week

Subject: \_\_\_\_\_ Grade: \_\_\_\_\_ Term: \_\_\_\_\_ Week: \_\_\_\_\_ Date: \_\_\_\_\_ Year: \_\_\_\_\_

CS	BM	Unit	Topic	Learning Objective	Knowledge	Skill	Attitude/ Values	Performance Standard	Lesson Number and Titles	Lesson Objectives	Suggested Learning Activities
Write the Coding only	Write the Coding only	Write the Unit number and Name	Write the Topic number and Name	By the end of this Topic, Students will be able to:  Write the learning Objectives for the Topic	Write the essential knowledge to be learnt in this topic	Write the essential skill to be learnt in this topic	Write the essential attitude and values to be learnt in this topic	By the end of this Topic, students will be able to;  Write the Performance Standard  (if the Benchmark carries one)	Lesson 1:	L1 Objectives	
									Lesson 2:	L2 Objectives	
									Lesson 3: Etc.	L3 Objectives	

## Time tabling of Textile Technology

The teaching and learning of Textile Technology can be organized in the manner of class rotational basis. There are three teachers who will be teaching the subject TIA.

- 1: The Home Economics Teacher,
- 2: The Practical Skills Teacher, and
3. The Mathematics /Science/Computing Teacher.

These three teachers will be timetabled to teach TIA during the term. Then the planning and programming will be organized in this same manner only each strand teacher will extract the strand program for teaching as these are subject specific content. This is to ensure that teachers are on contact throughout the terms and to maintain their teaching loads.

This Process *MUST BE DONE COLLABORATIVELY BY ALL WHO TEACH THE SUBJECT. IT MUST BE DONE PROGRESSIVELY*

Notes to the Teachers;

It is advised that all teachers assigned to teach Technology and Industrial Arts in your school should study the organization of the content by strand in the other Teachers Guides for the respective strands as indicated in the Grade 11 and 12 syllabus for Technology and Industrial Arts to guide you through the process steps for programing Textile Technology benchmarks with other strand benchmarks for the other 4 strand. The commended programing strategies for TIA should you wish to teach all the strands in a school year according to the syllabus contentment for Grade 11 and 12 in TIA subject.

The strands are:

Programing by the strands according to the school terms in the order the strands appear in the syllabus. Here is a sample done for grade 10 you could adopt. The grade 12 may look like the table below should you wish to take up the challenge. This is a grade 10 sample which you can modify for grade 12.

Sample Grade 10 Year Plan for 5 Strands in TIA – only an option for teachers.

Weeks	Term 1	Term2	Term3	Term4
1	Orientation	CONS TEC Building Technology Unit 1 bm 1 and 2,	CONST TEC Welding Technology Unit 1 bm 3	COMM TEC Data Commu- nication and Network Unit 1 bm 5

## Textile Technology

2	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 1 and 2	CONST TEC Building Technology Unit 1 bm,3 4,	CONST TEC Welding Technology Unit 1 bm 4	COMM TEC Computer Security and Safety Unit 2 bm 1 and 2
3	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 3 and 4	CONST TEC Building Technology Unit 1 bm, 5, 6	CONST TEC Engineering Technology Unit 1bm 1	COMM TEC Computer Security and Safety Unit 2 bm 3and 4
4	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 5 and Unit 2 Bmark 1	CONST TEC Electrical Technology Unit 1bm 1 and 2	CONST CONS TEC Engineering Technology Unit 1 bm 2	COMM TEC Computer Security and Safety Unit 2 bm 5
5	Textile Technology: Textile and Clothing: Unit 2 Benchmark 2 & 3 4	CONST TECU1 Electrical Technology Unit 1bm 3	CONST TEC Engineering Technology Unit 1 bm 3	COMP TEC Computer Architecture Unit 1 Bm 1 and 2
6	Food Technology: Food and Nutrition: Unit1 Bm 1 and 2	CONST TEC Plumbing Technology Unit 1 bm 1 and 2	CONST TEC Engineering Technology Unit 1 bm 4	COMP TEC Computer Architecture Unit 1 Bm 3 and 4
7	Food Technology: Unit 1 Bm3 &4	CONST TEC Plumbing Technology Unit 1bm 3	CONST TEC Engineering Technology Unit 1 bm 5	COMP TEC Computer Architecture Unit 1 Bm 3 and 4
8	Food Technology: Unit 1 Bm5 & Unit 2 bm 1	CONST TEC Plumbing Technology Unit 1bm 4	CONST TEC Engineering Technology Unit 1 bm 6	COMP TEC Computer Software Unit 1 Bm 1 and 2
9	Food Technology: Unit 2 bm 2and 3	CONST TEC Welding Technology Unit 1 bm 1	COMM TEC Data Communication and Network-Unit 1 bm 1 and 2	COMP TEC Computer Software Unit 1 Bm 3 and 4 and 5
10	Food Technology: Unit 2 bm 4and 5	CONST TEC Welding Technology Unit 1 bm 2	COMM TEC Data Communication and Network-Unit 1 bm 3 and 4	ASSESSMENT

## Textile Technology

11		ASSESSMENT	ASSESSMENT	

This program for a school year is just a suggestion; you could do a similar one for your class/grade. You can do a check in the sample before this suggestion decides on the best option for your class/grade. You are also conducting performance assessment after every third or fourth benchmark is taught in each unit.

Sample Grade 10 Term Plan for 5 Strands in TIA – only an option for teachers.

Week	Textile Technology and Food Technology	Construction Technology	Communication and Computer Technology
1	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 1 and 2	Building Technology Unit 1 bm 1 and 2, 3	Communication Technology Data Communication and Network-Unit 1 bm 1 and 2
2	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 3 and 4	Building Technology Unit 1 bm 4, 5, 6	Communication Technology Data Communication and Network-Unit 1 bm 3 and 4
3	Textile Technology: Fibres and Fabrics: Unit 1 Benchmarks 5 and Unit 2 Benchmark 1	Electrical Technology Unit 1bm 1 and 2	Communication Technology Data Communication and Network Unit 1 bm 5
	Assessment	Assessment	Assessment
4	Textile Technology: Textile and Clothing: Unit 2 Benchmark 2 and 3	Electrical Technology Unit 1bm 3	Communication Technology Computer Security and Safety Unit 2 bm 1 and 2
5	Textile Technology: Textile and Clothing: Unit 2 Benchmark 4	Plumbing Technology Unit 1 bm 1 and 2	Communication Technology Computer Security and Safety Unit 2 Bm 3 and 4
6	Food Technology: Food and Nutrition: Unit1 Bm 1 and 2	Plumbing Technology Unit 1bm 3 and4	Communication Technology Computer Security and Safety Unit 2 bm 5
	Assessment	Assessment	Assessment
7	Food Technology: Unit 1 Bm3 &4	Welding Technology Unit 1 bm 1	Computer Technology Computer Architecture Unit 1 Bm 1 and 2

## Textile Technology

8	Food Technology: Unit 1 Bm5 &	Welding Technology Unit 1 bm 2 and 3	Computer Technology Computer Architecture Unit 1 bm 3 and 4
9	Food Technology: Unit 2 bm 1 and 2	Welding Technology Unit 1 bm 4	Computer Technology Computer Software- Unit 2 bm 1 and 2
	Assessment	Assessment	Assessment
10	Food Technology: Unit 2 bm 3 and 4	Engineering Technol- ogy Unit 1bm 1 and 2	Computer Technology Computer Software Unit 2 bm 3 and 4
11	Food Technology: Unit 2 Bm 5	Engineering Technol- ogy Unit 1 bm 3 and 4	Computer Technology Computer Software -Unit 2 bm 5
12	Food Technology: Reteach any bench- marks that need reteaching	Engineering Technol- ogy Unit 1 bm 3 and 4	Computer Technology Computer Software Reteach benchmarks that need reteaching
13	Summative Assessment		

# STANDARD BASED LESSON PLANNING

## What are Standards-Based Lessons?

In a Standards-Based Lesson, the most important or key distinction is that, a student is expected to meet a defined standard for proficiency. When planning a lesson, the teacher ensures that the content and the methods of teaching the content enable students to learn both the skills and the concepts defined in the standard for that grade level and to demonstrate evidence of their learning.

Planning lessons that are built on standards and creating aligned assessments that measure student progress towards standards is the first step teacher must take to help their students reach success. A lesson plan is a step-by-step guide that provides a structure for an essential learning.

When planning a standards-based lesson, teacher instructions are very crucial for your lessons. How teachers instruct the students is what really points out an innovative teacher to an ordinary teacher. Teachers must engage and prepare motivating instructional activities that will provide the students with opportunities to demonstrate the benchmarks. For instance, teacher should at least identify 3-5 teaching strategies in a lesson; teacher lectures, asks questions, puts students into groups for discussion and role plays what was discussed.

## Why is Standards-Based Lesson Planning Important?

There are many important benefits of having a clear and organised set of lesson plans. Good planning allows for more effective teaching and learning. The lesson plan is a guide and map for organising the materials and the teacher for the purpose of helping the students achieve the standards. Lesson plans also provide a record that allows good, reflective teachers to go back, analyse their own teaching (what went well, what didn't), and then improve on it in the future.

Standards-based lesson planning is vital because the content standards and benchmarks must be comparable, rigorous, and measurable and of course evidence based and be applicable in real life that we expect students to achieve. Therefore, teachers must plan effective lessons to teach students to meet these standards. As schools implement new standards, there will be much more evidence that teachers will use to support student learning to help them reach the highest levels of cognitive complexity. That is, students will be developing high-level cognitive skills. Planning for under-achievers

Under achievers are students who fail or do not perform as expected. Underachievement may be caused by emotions (low self-esteem) and the environment (cultural influences, unsupportive family). There may be other factors; however, as teachers your concern to ensure all students achieve a certain grade in their performance is normal. In the instance that you discover that one or a couple of your students are not performing to the expected level as their peers, you would need to do some fact finding of the causes and plan on how best to help the student/s improve their performances.

## Helping underachievers

There are countless strategies you may choose from depending on your teaching

experiences specifically to assist the under-achiever/s you have identified. It is good to bear in mind that underachievement varies between students. Not all students are in the same category of underachievement. Also it is important that underachieving students are addressed individually by focusing on the student's strengths.

Given here are suggested strategies teachers may adopt to assist underachievers in the classroom. They include:

- Examining the Problem Individually
- Create a Teacher-Parent Collaboration

Teachers and parents need to work together and pool their information and experience regarding the child. Teachers and parents begin by asking questions such as;

- In what areas has the child shown exceptional ability?
- What is the child's preferred learning styles?
- What insights do parents and teachers have about the child's strengths and problem areas?
- Help student to plan every activity in the classroom.
- Help students set realistic expectations.
- Encourage and promote the student's interests and passions.
- Help children set short and long-term academic goals.
- Talk with them about possible goals.
- Ensure that all students are challenged (but not frustrated) by classroom activities.
- Always reinforce students.

### Components of a Standards-Based Lesson Plan

An effective lesson plan has three basic components;

- objectives of the lesson;
- teaching and learning activities;
- assessments to check student understanding of the topic.

Effective teaching demonstrates deep subject knowledge, including key concepts, current and relevant research, methodologies, tools and techniques, and meaningful applications.

The standard based lesson plan has the following components. It is a must that the lessons teachers are teaching must be planned before actual delivery to the students.

The lesson components include:

1. Content Standard
2. Benchmark
3. Topic
4. Lesson Number and Title
5. Essential Questions



6. Lesson Objective
7. Essential KSAV
8. Teaching and Learning
  - Introduction
  - Body- Modelling
  - Body –Guided Practice
9. Body -Independent practice
10. Conclusion
11. Resources

### Examples of Standards-Based Lesson Plans

To help teachers plan effective lessons, there is a sample lesson for the strand provided here. Teachers are encouraged to study the layout of the different components of this lesson and follow its design in their lesson preparation and teaching of lessons. Planning a good lesson helps the teacher in maintaining a standard teaching pattern and does not let the class deviate from the topic.

### Standards-Based Lesson Planning

Planning a good lesson helps the teacher in maintaining a standard teaching pattern as a motivating factor to capture students' attention. To help teachers plan effective Textile Technology lessons, here is a grade 12 sample lesson from Unit 1 Fibres and Fabrics – Benchmark 12.1.1.1. Teachers are encouraged to study the different components of these lessons and follow this design in their preparation and teaching of each lesson.

## Sample of SBC Lesson Plan

Below displayed for your convenience is a sample of a Textile lesson specially done for a grade ten class. Teachers are encouraged to use this as a guide and write up their own lesson plans using the given template.

### SAMPLE LESSON PLAN STRAND 1 TEXTILE TECHNOLOGY UNIT 1: FIBRES AND FABRIC

**Content Standard:1.1** Investigate the evolution, characteristics, designs and trends of fabrics and fabric designs, their construction, production, representation, regulation and marketing.

**Benchmark: 12.1.1.1** Apply adherence to safe practices and procedures for facilities, processes, tools and equipment.

**Topic: 1** Safety Practices and Procedures in Design  
**Lesson: 1** Safety Practices and Procedures in Design

#### Essential Questions:

- What are the common safety practices in a textile classroom / factory?
- Why is it important to make certain that textile tools and equipment must be kept safe and taken care off?
- How often should you check to make sure that the tools/ equipment are in good working condition

Lesson Objective (s): By the end of the lesson, students will be able to;

1. Identify 5 safety rules applied to the common tools in a textile classroom /factory
2. Explain the importance of caring for a textile equipment or tool
3. Describe the procedures for using an electrical or manual sewing machine.

Essential Knowledge Skills Values and Attitudes

Knowledge	Skills	Attitudes	Values
<ul style="list-style-type: none"> <li>• Safety rules and caring for a textile equipment or tool</li> <li>• Procedures for using a sewing machines</li> </ul>	<ul style="list-style-type: none"> <li>• Identify safety rules</li> <li>• Explain procedure for using a sewing machine</li> <li>• describe a caring strategy for a tool</li> </ul>	<ul style="list-style-type: none"> <li>• Be careful when handling, putting away textile tools / equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Respect, value changes in the designs</li> </ul>

- Teaching and Learning Strategies

Teacher	Students
<b>Introduction (5 mins)</b>	
<p>Teacher will:</p> <ol style="list-style-type: none"> <li>1. Have the lesson title printed on the chalkboard?</li> <li>2. Give the following lead up questions: <ul style="list-style-type: none"> <li>• why is safety important in a textile classroom?</li> <li>• what type of tools /equipment should you have in textile classroom/factory?</li> <li>• How often should textile tools and equipment be maintained/ serviced?</li> </ul> </li> <li>3. Tell the students to use the guiding questions to do a brainstorm of the lesson title.</li> </ol>	<p>Students will</p> <ol style="list-style-type: none"> <li>1. Ask the questions to one another and do a brainstorm of the lesson title.</li> <li>2. List their responses around the lesson title given on the chalkboard using stick on pads or chalks.</li> </ol>
<b>Body (time in minutes)(10 mins)</b>	
<b>Modelling</b>	
<ol style="list-style-type: none"> <li>1. Display a common electrical sewing machine used in a textile lesson in class for students to see</li> <li>2. Tell students to list the safety checks before operation of the machine operated by electricity</li> <li>3. Do a demonstration on the procedures of using electric sewing machines.</li> </ol>	<ol style="list-style-type: none"> <li>1. Study the placing of the machine and the surface it is placed on and how it is threaded before use</li> <li>2. Watch carefully the procedures in using the machine and take notes.</li> </ol>
<b>Guided Practice of the body(10 mins)</b>	

## Textile Technology

<p>1. Set up all electrical sewing machines making sure that 2 of them are malfunctioning.</p> <p>2. Tell the students to work in 3s doing 1,2 &amp; 3</p> <p>3 Tell students to identify 1 safety precaution to take if the machine they have chosen is malfunctioning.</p>	<p>Activity 1</p> <p>In groups of 3 enact the 3 things the teacher did.</p> <p>Activity 2</p> <p>Write down what things to do if their sewing machine is not working</p>
<p><b>Independent practice of the body(10)</b></p>	
<p>1. Give students a picture of a tool/ equipment/ an electrical appliance used in a textile factory or classroom</p> <p>2. Tell students to</p> <ul style="list-style-type: none"> <li>· list the procedures of using the appliance/tool</li> <li>· list 2 ways to keep the appliance safe</li> </ul>	<p>Activity 1.</p> <p>Individually complete the 2 tasks indicated on the worksheet on the tool/equipment/ an electrical appliance</p>
<p><b>Conclusion(5)</b></p>	
<p>Ask volunteers to share their responses on the worksheet</p>	<p>Volunteers express their opinions of safety practices in relation to a textile classroom or a factory producing textile products. industry.</p>

### Resources

Ensure students have some or all of the listed resources:

- handouts/ worksheets for the students
- common types of textile tools in a textile classroom
- electrical equipment and appliances used in a textile business /factory

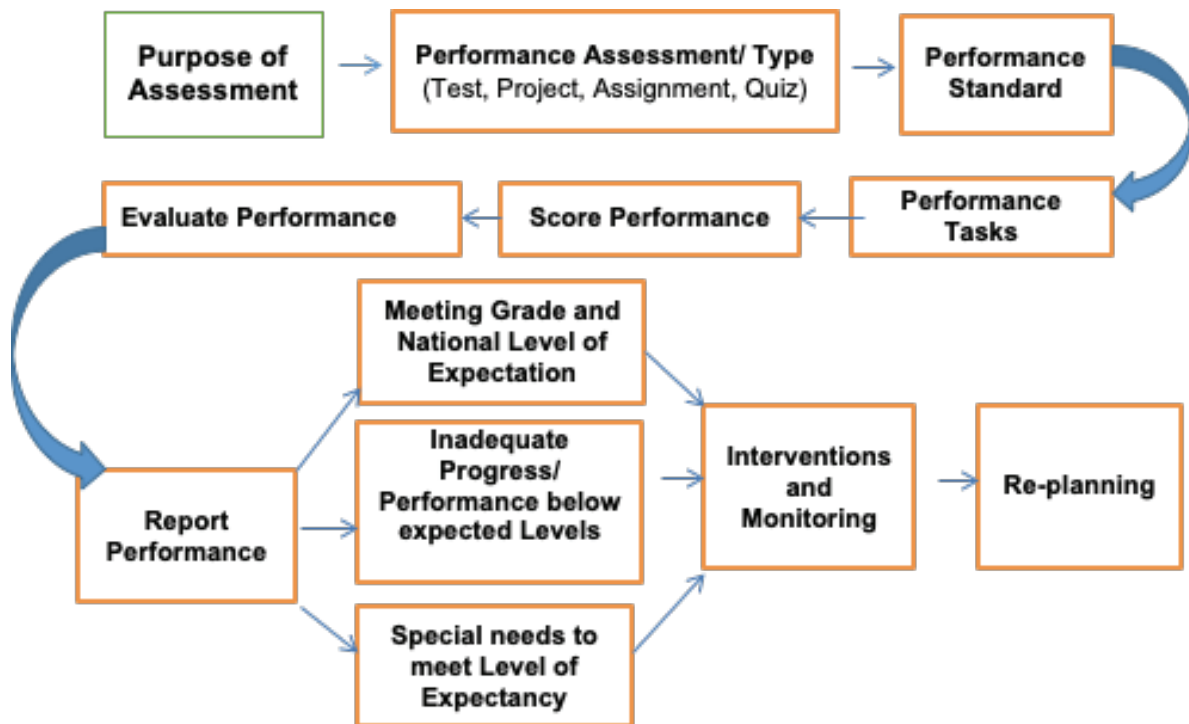
## **ASSESSMENT MONITORING & REPORTING**

### **What is Standards-Based Assessment (SBA)?**

Standards-Based Assessment is an on-going and a systematic process of assessing, evaluating, reporting and monitoring students' performance and progression towards meeting grade and national level expectations. It is the measurement of students' proficiency on a learning objective of a content standard and progression towards the attainment of that content standard and benchmark.

### **Standards-Based Assessment Cycle**

The Standards-Based Assessment Cycle begins with the purpose to assess learning. Teachers must always clearly define the purpose and expectations of the assessment tasks or activities before starting the assessment. The cycle consists the delivery of the assessment, scoring of performance, monitoring or learning, evaluating learning and performance, reporting of achievement and underachievement, developing interventions for underachievers and advance learners and replanning assessment as demonstrated below;



### Purpose of Standards-Based Assessment

Standards-Based Assessment (SBA) serves different purposes. These include instruction and learning purposes. The primary purpose of SBA is to improve student learning so that all students can attain the expected level of proficiency or quality of learning.

Enabling purposes of SBA is to:

- measure students' proficiency on well-defined content standards, benchmarks and learning objectives;
- ascertain students' attainment or progress towards the attainment of specific component of a content standard;
- ascertain what each student knows and can do and what each student needs to learn to reach the expected level of proficiency;
- enable teachers to make informed decisions and plans about how and what they would do to assist weak students to make adequate progress towards meeting the expected level of proficiency;
- enable students to know what they can do and help them to develop and implement strategies to improve their learning and proficiency level;
- communicate to parents, guardians, and relevant stakeholders the performance and progress towards the attainment of content standards or its components;
- compare students' performances and the performances of other students.

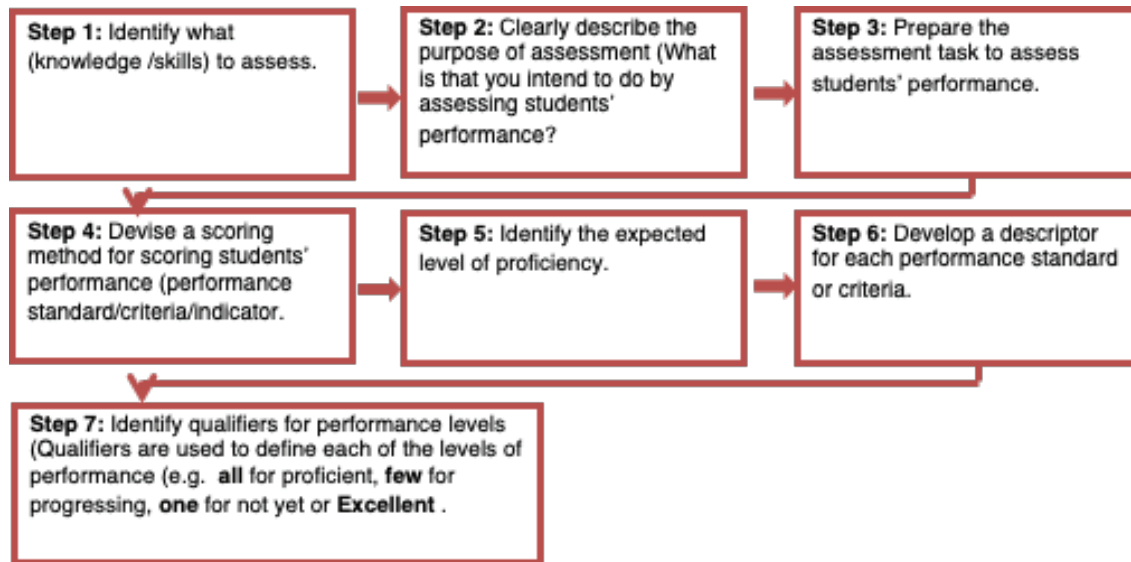
### Principles of Standards-Based Assessment

The principle of SBA is for assessment to be;

- emphasizing on tasks that should encourage deeper learning,
- be an integral component of a course, unit or topic and not something to add on afterwards,
- a good assessment requires clarity of purpose, goals, standards and criteria,
- of practices that should use a range of measures allowing students to demonstrate what they know and can do,
- based on an understanding of how students learn,
- of practices that promote deeper understanding of learning processes by developing students' capacity for self-assessment,
- improving performance that involves feedback and reflection,
- on-going rather than episodic,
- given the required attention to outcomes and processes,
- be closely aligned and linked to learning objectives, benchmarks and content standards.

## Standards-Based Assessment Process

Teachers are required to use the steps outlined below when planning assessment. These steps will guide you to develop effective assessments to improve student's learning as well as evaluating their progress towards meeting national and grade –level expectations.



## Authentic Assessment

Authentic Assessments in Standards-based (SBA) Assessment directly measure student's performance through "real life tasks" or "situations" that resemble "real life situations." Authentic assessment;

- Is performed in a real life context that approximates as much as possible, the use of a skill or concept in the real world.
- Is based on the development of a meaningful product, performance or process.
- Students develop and demonstrate the application of their knowledge, skills, values and attitudes in real life situations which promote and support the development of deeper levels of understanding.
- Is mostly associated with assessment as or while learning and assessment for learning but occasionally or contextually in summative learning.
- includes assessment activities such as demonstrations, debates, field work, simulations, problem solving, project-based learning, Poster Presentations, Research, Laboratory work, Reflections, Problem-based activities, Role Play, Report/Essay, Field experience, Field report, Recounts etc.

## Advantages of Authentic Activities

- Empower students to take ownership in their learning.
- Appreciates Learning experience.
- enables and encourages the Learning experiences to be used as a basis of learning.
- Meaningful, relevant, practical.
- Assess the actual learning experience which means; you do not need to “teach” and then assess, rather you assess actual learning experience while it is actually happening.

## Authentic Assessment Criteria

In SBA, teachers are encouraged to step out of their traditional assessment and explore authentic assessment. The criteria in authentic assessment;

- Looks at students actively engaged in completing a task that represents the achievement of a learning objective or standard.
- Takes place in real life situations.
- Asks students to apply their knowledge, skills, values and attitudes in real life situations.
- Students are given the criteria against which they are being assessed.

## A Comparison of Authentic and Traditional Assessment

Authentic Assessments	Traditional Assessments
<ul style="list-style-type: none"> <li>• Portfolios, demonstrations, field work, case studies, assignments, lab reports</li> <li>• Students take an active role in process</li> <li>• Qualitative</li> <li>• Interpretive</li> <li>• Focuses on performance, process and product</li> <li>• High level thinking</li> <li>• Use of rubric</li> <li>• Use of criterion levels evaluation</li> <li>• Part of teaching and learning Process</li> <li>• Shows mastery and learning performance</li> <li>• Generally, extends over time</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple choice tests, true-false, fill in the blanks, sentence completion, matching, diagram completions</li> <li>• External –(teacher driven – assessing performance of teacher rather than the student)</li> <li>• Teacher-centered (what is appropriate and convenient for the teacher and what teacher thinks is good for students and decides what should be and should not be learnt)</li> <li>• Quantitative (driven to collect marks)</li> <li>• Objective</li> <li>• End product (only looking for the end product and not concerned about the performance and process)</li> <li>• Standardised or norm referenced</li> <li>• Isolated facts</li> <li>• Low level content</li> <li>• Generally occurs in “one setting</li> </ul>



## Standards-Based Assessment Types

In SBA, there are three broad assessments types. These assessment types are applicable across all subjects and in all grade levels

These elaborations on each assessment type will help you understand the assessment type and create your assessment performance task for whichever benchmark a teacher may intend to do assessment on.

### 1. Formative Assessment

Formative assessment includes ‘assessment for and as’ and is conducted during the teaching and learning of activities of a topic.

Purposes of assessment for Learning

- On-going assessment that allows teachers to monitor students on a day-to-day basis.
- Provide continuous feedback and evidence to the teachers that should enable them to identify gaps and issues with their teaching, and improve their classroom teaching practice.
- Helps students to continuously evaluate, reflect on, and improve their learning

Purposes of assessment as Learning

- Occurs when students reflect on and monitor their progress to inform their future learning goals
- Helps students to continuously evaluate, reflect, and improve their own learning
- Helps students to understand the purpose of their learning and clarify learning goals

### 2. Summative Assessment

Summative assessment focuses on ‘assessment of learning’ and is conducted after or at the conclusion of teaching and learning of activities or a topic.

Purposes of assessment of Learning

- Help teachers to determine what each student has achieved and how much progress he/she has made towards meeting national and grade-level expectations
- Help teachers to determine what each student has achieved at the end of a learning sequence or a unit.
- Enable teachers to ascertain each student’s development against the unit or topic objectives and to set future directions for learning.
- Help students to evaluate, reflect on, and prepare for next stage of learning

Performance Assessment

Performance assessment is a form of testing that requires students to perform a task rather than select an answer from a ready-made list. For example, a student may be asked to explain historical events, generate scientific hypotheses, solve math

problems, converse in a foreign language, or conduct research on an assigned topic. Teachers, then judge the quality of the student's work based on an agreed-upon set of criteria. It is an assessment which requires students to demonstrate that they have mastered specific skills and competencies by performing or producing something.

### **Types of performance assessment;**

#### ***i. Products-Oriented***

This refers to concrete tangible items that students create through either the visual, written or auditory media such as;

- Creating a health/physical activity poster
- Video a class game or performance and write a broadcast commentary
- Write a speech to be given at a school council meeting advocating for increased time for health and physical education in the curriculum
- Write the skill cues for a series of skill photo's
- Create a brochure to be handed out to parents during education week
- Develop an interview for a favourite sportsperson
- Write a review of a dance performance
- Essays
- Projects

#### ***ii. Performances-Oriented***

It deals with observable affective or psycho-motor behaviours put into action such as;

- Skills check during game play
- Role plays
- Officiating a game
- Debates
- Performing dance/gymnastics routines
- Teaching a skill/game/dance to peers

### **Assessment Strategies**

It is important for teachers to know that, assessment is administered in different ways. Assessment does not mean a test only. There are many different ways to find out about student's strengths and weaknesses. Relying on only one method of assessing will not reflect student's achievement.

Provided in the appendices is a list of suggested strategies you can use to assess student's performances. These strategies are applicable in all the standards-based assessment types.

### ***Performance Standards***

Performance standards are measurement standards that are observed through

evidence outcomes and performance indicators. Evidence outcomes and Performance Indicators are used to measure students' performances, proficiency, competency, progression and achievement of the desired grade or level of expectation.

Performance Standards are concrete statements of how well students must learn what is set out in the content standards and benchmarks, often called the "be able to do" or "what students should know and be able to do." Performance standards indicate the quality that specifies how competent a students' demonstration or performance must be. They include explanations of how well students must demonstrate the content, explaining "how good is good enough."

### ***Performance standards:***

- measure students' performance and proficiency (using performance indicators) in the use of a specific knowledge, skill, value, or attitude in real life or related situations
- provide the basis (performance indicators) for evaluating, reporting and monitoring students' level of proficiency in use of a specific knowledge, skills, value, or attitude
- are used to plan for individual instruction to help students not yet meeting expectations (desired level of mastery and proficiency) to make adequate progress towards the full attainment of benchmarks and content standards
- are used as the basis for measuring students' progress towards meeting grade-level benchmarks and content standards
- A stem statement for Performance Standards will begin with." Students will be able to....."
- A stem statement for Performance Indicator will begin with ." Students can be able to....."

### **Assessment Strategies**

It is important for teachers to know that, assessment is administered in different ways. Assessment does not mean a test only. There are many different ways to find out about student's strengths and weaknesses. Relying on only one method of assessing will not reflect student's achievement.

Provided in the appendices is a list of suggested strategies you can use to assess student's performances. These strategies are applicable in all the standards-based assessment types.

Teachers can choose from these assessment strategies and plan suitable assessment activities for their students:

<b>Strategy</b>	<b>Description</b>
<b>Analogies</b>	Students create an analogy between something they are familiar with and the new information they have learned. When asking students to explain the analogy, it will show the depth of their understanding of a topic.

## Textile Technology

<b>Classroom Presentations</b>	A classroom presentation is an assessment strategy that requires students to verbalize their knowledge, select and present samples of finished work, and organize their thoughts about a topic in order to present a summary of their learning. It may provide the basis for assessment upon completion of a student's project or essay.
<b>Conferences</b>	A conference is a formal or informal meeting between the teacher and a student for the purpose of exchanging information or sharing ideas. A conference might be held to explore the student's thinking and suggest next steps; assess the student's level of understanding of a particular concept or procedure; and review, clarify, and extend what the student has already completed
<b>Discussions</b>	Having a class discussion on a unit of study provides teachers with valuable information about what the students know about the subject. Focus the discussions on higher level thinking skills and allow students to reflect their learning before the discussion commences.
<b>Essays</b>	An essay is a writing sample in which a student constructs a response to a question, topic, or brief statement, and supplies supporting details or arguments. The essay allows the teacher to assess the student's understanding and/or ability to analyse and synthesize information.
<b>Exhibitions/ Demonstrations</b>	An exhibition/demonstration is a performance in a public setting, during which a student explains and applies a process, procedure, etc., in concrete ways to show individual achievement of specific skills and knowledge.
<b>Interviews</b>	An interview is a face-to-face conversation in which teacher and student use inquiry to share their knowledge and understanding of a topic or problem, and can be used by the teacher to explore the student's thinking; assess the student's level of understanding of a concept or procedure and gather information, obtain clarification, determine positions, and probe for motivations.
<b>Learning Logs</b>	A learning log is an ongoing, visible record kept by a student and recording what he or she is doing or thinking while working on a particular task or assignment. It can be used to assess student progress and growth over time.
<b>Observation</b>	Observation is a process of systematically viewing and recording students while they work, for the purpose of making programming and instruction decisions. Observation can take place at any time and in any setting. It provides information on students' strengths and weaknesses, learning styles, interests, and attitudes.
<b>Peer Assessment</b>	Assessment by peers is a powerful way to gather information about students and their understanding. Students can use set criteria to assess the work of their classmates.
<b>Performance Tasks</b>	During a performance task, students create, produce, perform, or present works on "real world" issues. The performance task may be used to assess a skill or proficiency, and provides useful information on the process as well as the product.
<b>Portfolios</b>	A portfolio is a collection of samples of a student's work, and is focused, selective, reflective, and collaborative. It offers a visual demonstration of a student's achievement, capabilities, strengths, weaknesses, knowledge, and specific skills, over time and in a variety of contexts.
<b>Questions And Answers (Oral)</b>	In the question-and-answer strategy, the teacher poses a question and the student answers verbally, rather than in writing. This strategy helps the teacher to determine whether students understand what is being, or has been, presented, and helps students to extend their thinking, generate ideas, or solve problems.

## Textile Technology

<b>Quizzes, Tests, Examinations</b>	A quiz, test, or examination requires students to respond to prompts in order to demonstrate their knowledge (orally or in writing) or their skills (e.g., through performance). Quizzes are usually short; examinations are usually longer. Quizzes, tests, or examinations can be adapted for exceptional students and for re-teaching and retesting.
<b>Questionnaires</b>	Questionnaires can be used for a variety of purposes. When used as a formative assessment strategy, they provide teachers with information on student learning that they can use to plan further instruction.
<b>Response Journals</b>	A response journal is a student's personal record containing written, reflective responses to material he or she is reading, viewing, listening to, or discussing. The response journal can be used as an assessment tool in all subject areas.
<b>Selected Responses</b>	Strictly speaking a part of quizzes, tests, and examinations, selected responses require students to identify the one correct answer. The strategy can take the form of multiple-choice or true/false formats. Selected response is a commonly used formal procedure for gathering objective evidence about student learning, specifically in memory, recall, and comprehension.
<b>Student Self-Assessments</b>	Self-assessment is a process by which the student gathers information about, and reflects on, his or her own learning. It is the student's own assessment of personal progress in terms of knowledge, skills, processes, or attitudes. Self-assessment leads students to a greater awareness and understanding of themselves as learners.

### Assessment Strategies and Action Verbs

The table below gives teachers some action verbs that can be used in the application of a particular assessment strategy he or she choose to use in assessing the students' performance

<b>Action Verbs to Assessment Strategies</b>		
<b>Cognitive Learning</b>	<b>Action Verbs</b>	<b>Assessment Strategies</b>
Knowledge to recall or remember facts without necessarily understanding them	Arrange, define, duplicate, label, memorise, name, order,  recognise, relate, recall, reproduce, list, tell, describe, identify, show, label, collect, examine, tabulate, quote	<ul style="list-style-type: none"> <li>• Prior knowledge inventory, misconception/preconception check</li> <li>• Focused listing, empty outlines</li> <li>• Pre-post test, quiz, quick poll</li> </ul>
Comprehension – to understand and interpret learned information	Classify, describe, discuss, explain, express, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend, translate, review, restate, locate, recognise, report	<ul style="list-style-type: none"> <li>• Minute paper, muddiest (or clearest) point</li> <li>• Observe &amp; evaluate a student artifact or performance task using a rubric</li> <li>• Directed paraphrasing</li> <li>• Pre-post test, quiz</li> <li>• Interviews</li> </ul>

## Textile Technology

Application – to put ideas and concepts to work in solving problems	Apply, choose, demonstrate, dramatise, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, calculate, complete, show, examine, modify, relate, change, experiment, discover	<ul style="list-style-type: none"> <li>• Observe and evaluate a student artefact, performance, or task using a rubric</li> <li>• Directed paraphrasing, real-world application (apply learning in a new context)</li> <li>• Test, quiz</li> <li>• Job/internship evaluate, skill ratings</li> </ul>
Analysis – to break information into its components to see interrelationships and ideas	Analyse, appraise, calculate, categorise, compare, contrast, criticise, differentiate, discriminate, distinguish, examine, experiment, question, test, separate, order, connect, classify, arrange, divide, infer	<ul style="list-style-type: none"> <li>• Pro and con grid, categorizing grid, compare and contrast, concept maps</li> <li>• Observe and evaluate a student artifact, performance, or task using a rubric</li> <li>• Journaling</li> <li>• Job/internship evaluation, skill ratings</li> </ul>
Evaluation – to judge the value of information based on established criteria	Appraise, argue, assess, attach, defend, judge, predict, rate, support, evaluate, recommend, convince, judge, conclude, compare, summarise	<ul style="list-style-type: none"> <li>• Reflection component of a portfolio or experience</li> <li>• Journaling</li> <li>• Peer evaluation</li> </ul>
Affective Learning	appreciate, accept, attempt, challenge, defend, dispute, join, judge, praise, question, share, support	<ul style="list-style-type: none"> <li>• Reflection component of a portfolio or experience</li> <li>• Journaling</li> <li>• Observe and evaluate group work</li> <li>• Surveys, interviews, focus groups</li> </ul>

### Scoring Methods for Performance Assessment

Assessment can be scored during or after the students have completed the assessment task. However, it is best done during a lesson- using a checklist, rating scales & rubrics.

A rubric is a coherent set of criteria for students' work that includes descriptions of levels of performance quality on the criteria. Rubrics have two major aspects: coherent sets of criteria and descriptions of levels of performance. Rubrics include;

- (1) Descriptions of the of task
- (2) The scales to be used
- (3) The dimensions of the task
- (4) The description of each dimension on the scale

### A Rubric;

- is a scoring guide that helps teachers evaluate student performance, based on a range of criteria.
- A rubric lists the criteria, or characteristics, that student work should exhibit and describes specific quality levels for those criteria.
- Rubrics are a great way to improve communication, learning, and grading

fairness.

- Knowing how to create and use rubrics gives you a better understanding of assessment and another option for assessing student performance.
- are descriptive and not evaluative.
- Of course, rubrics can be used to evaluate, but the operating principle is to match the performance to the description rather than “judge” it.
- Thus rubrics are as good or bad as the criteria selected and the descriptions of the levels of performance under each.
- Effective rubrics have appropriate criteria and well-written descriptions of performance

### Purpose of Rubrics

Like any other evaluation tool, rubrics are useful for certain purposes and not for others. The main purpose of rubrics is to assess performances. For some performances, you observe the student in the process of doing something, like using an electric drill or discussing an issue. For other performances, you observe the product that is the result of the student’s work, like a finished bookshelf or a written report.

#### 1. Support authentic assessment

While traditional tests measure how well students recall content, rubrics measure how well students can apply knowledge to authentic contexts or real-world tasks.

#### 2. Clearly communicate expectations

Because rubrics define student “quality” in terms of objective criteria and standards, they clearly communicate how instructors will evaluate student performance.

#### 3. Improve performance

Rubrics lead to better student performance. When students understand assignments and expectations before they begin, they are more likely to fulfil them. They know what specific criteria and standards of excellence will be used to rate their performance.

#### 4. To inspire fairness

Because rubrics have detailed assessment information, students don’t feel that grades are assigned subjectively or arbitrarily. Also, when you have more than one grader, a rubric allows all graders to apply the same criteria in the same way.

Although rubrics have many benefits--and make grading faster and easier--a good rubric takes time, effort and patience to construct. You'll probably need to change (change, not add to) your grading and assessment methods, based on what you believe about learning assessment. Rubrics are best for critical assessments, major projects, and other assignments that require a multi-dimensional performance evaluation. The trick is to know what type of rubric to create for your situation.

Reasons for Creating Rubrics/Marking schemes

Rubrics or marking schemes are created for;

1. Categories to assess-different components or elements that will assess

- Factual information
- Application
- Analysis
- Writing Skills

2. Criterion for assessment

- Accuracy
- Completeness
- Length or number of examples
- Supported with research
- Range of answer
- Description and support

3. Levels or points 3-5 levels

- Exemplary. Proficient, acceptable, not acceptable
- Excellent, good, fair, poor
- 10 points, 5 points, 1 point

### Parts of a Rubric

- A rubric is a matrix of criteria and their descriptors.
- The left side of a rubric matrix lists the criteria (performance standards) for the expected product or performance.
- Across the top of the rubric matrix is the rating scale that provides a set of values for rating the quality of performance for each criterion.
- Descriptors under the rating scale provide examples or concrete indicators for each level of performance.
- The dimensions of the task that qualifies the achievement



Criteria	Performance Standards (Descriptors)
BEYOND	Beyond Standard (s) -Advanced in Performance and Understanding
	<p>Consistently demonstrates advanced conceptual mathematical understandings</p> <p>Consistently generates tasks that make connections between and among mathematical ideas</p> <p>Consistently applies strategies to unique situations</p> <p>Consistently demonstrated confidence to approach tasks beyond the proficiency level for grade</p> <p>Consistently initiates mathematical investigations</p>
CONSISTENT	Meet Standard (s)-Proficient in Performance and Understanding
	<p>Consistently demonstrates understanding of mathematical standards and cluster at the grade level</p> <p>Consistently demonstrated conceptual understanding</p> <p>Consistently applies multiple strategies flexibly in various situations</p> <p>Understands and fluently applies procedures with understanding</p> <p>Consistently demonstrates perseverance and precision</p> <p>Constructs logical mathematical arguments of thinking and reasoning</p> <p>Uses mathematical language correctly and appropriately</p>
INCONSISTENT	Progressing-Not Yet Proficient in Performance and Understanding
	<p>Inconsistently uses tools appropriately and strategically</p> <p>Demonstrates inconsistent understanding of key mathematical ideas at grade level</p> <p>Demonstrates inconsistent conceptual understanding of key mathematical ideas at grade level</p> <p>Inconsistent in understanding and application of grade level appropriate strategies</p> <p>Depends upon assistance of teacher and/or peers to understand and complete tasks</p> <p>Needs additional time to complete tasks</p> <p>Applies models of mathematical ideas inconsistently</p>
SELDOM	Not Yet -Limited Performance and Understanding
	<p>Exhibits minimal understanding of key mathematic ideas at grade level</p> <p>Rarely demonstrates conceptual understanding</p> <p>Seldom provides precise response</p> <p>Seldom use appropriate strategies</p> <p>Consistently requires assistance and alternative instruction</p> <p>Use tools inappropriately to model mathematics</p>

## Types of Rubrics

### 1. Analytic Rubric

Analytic rubrics describe work on each criterion separately. For most classroom purposes, analytic rubrics are best. Focusing on the criteria one at a time is better for instruction and better for formative assessment because students can see what aspects of their work need what kind of attention. Focusing on the criteria one at a time is good for any summative assessment (grading) that will also be used to make decisions about the future—for example, decisions about how to follow up on a unit or decisions about how to teach something next year.

#### Template for Analytic Rubrics

Criteria	Beginning	Developing	Accomplished	Exemplary	Score
Criteria 1	Description reflecting beginning	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting of highest level of performance	
Criteria 2	Description reflecting beginning level performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting of highest level of performance	
Criteria 3	Description reflecting beginning level performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting of highest level of performance	
Criteria 4	Description reflecting beginning level performance	Description reflecting movement toward mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting of highest level of performance	

## Sample Analytic Rubric

		Qualifier	Descriptor	
Performance Standard/Criteria	Advanced	Proficient	Progressing	Not Yet
Identify reasons for developing caring relationships	Identify and explain <b>all</b> the reasons for developing caring relationships	Identify <b>all</b> the reasons for developing caring relationships	Identify only a <b>few</b> of the reasons for developing caring relationships	Identify only <b>one</b> reason for developing caring relationships
Explain the reasons for developing caring relationships	Explain all the reasons for developing caring relationships and provide an in-depth justification for some of the reasons	Explain all the reasons for developing caring relationships	Explain only a few of the reasons for developing caring relationships	Explain only one reason for developing caring relationships

## Holistic Rubrics

Holistic rubrics describe the work by applying all the criteria at the same time and enabling an overall judgment about the quality of the work. Holistic rubrics are based on criteria for good work and on observation of how the work meets those criteria.

One classroom purpose for which holistic rubrics are better than analytic rubrics is the situation in which students will not see the results of a final summative assessment and you will not really use the information for anything except a grade. Some high school final examinations fall into this category. Grading with rubrics is faster when there is only one decision to make, rather than a separate decision for each criterion.

Decide on type of rubric to be used (Holistic or Analytic)

### 1. When to use Holistic Rubric

- There is no single correct answer/response to a task
- The focus has no the overall quality, proficiency, or understanding of a specific content or skills.
- You are assessing large numbers (eg. 150 portfolios)

Holistic Rubric						
Score	5	4	3	2	1	0
Description	Demonstrate <u>complete</u> understanding of the problem. <u>All</u> requirements of task are <u>included in response</u> .	Demonstrate <u>considerate</u> understanding of the problem. <u>All</u> requirements of task are <u>included</u> .	Demonstrate <u>partial</u> understanding of the problem. <u>Most</u> requirements of task are <u>included</u> .	Demonstrate <u>little</u> understanding of the problem. <u>Many</u> requirements of task are <u>missing</u> .	Demonstrate <u>no</u> understanding of the problem.	<u>No</u> response/ <u>not</u> attempted task

## 2. When to use Analytic Rubric

- Several subjects are assessing the student work.
- Description promote consistent scoring.
- Stakeholders will be examining the rubric scores.
- Substantial feedback to students or the subjects is desired.
- Outlines of specific strengths/weaknesses are anticipated.

Analytic Rubric				
Criteria	4	3	2	1
Criteria # 1	Description reflecting <u>highest</u> level of performance.	Description reflecting <u>mastery</u> level of performance.	Description reflecting <u>movement towards</u> mastery level of performance.	Description reflecting <u>beginning</u> level of performance.
Criteria # 2	Description reflecting <u>highest</u> level of performance.	Description reflecting <u>mastery</u> level of performance.	Description reflecting <u>movement towards</u> mastery level of performance.	Description reflecting <u>beginning</u> level of performance.
Criteria # 3	Description reflecting <u>highest</u> level of performance.	Description reflecting <u>mastery</u> level of performance.	Description reflecting <u>movement towards</u> mastery level of performance.	Description reflecting <u>beginning</u> level of performance.
Criteria # 4	Description reflecting <u>highest</u> level of performance.	Description reflecting <u>mastery</u> level of performance.	Description reflecting <u>movement towards</u> mastery level of performance.	Description reflecting <u>beginning</u> level of performance.

## Scoring of Performance for Formative Assessment (Assessment as/while learning and Assessment for learning)

### 1. Scoring Assessment using Rating Scale

Rating Scales are a type of checklists that judge the degree to which a criteria is met. They generally have a scale of between 1-6 options.

### Types of Rating Scales

#### A. Frequency Rating Scales

A frequency rating scale scores how often a task is done to meet criteria.

## Sample Rating Scale Descriptive Words

1. Words that describe the skill of selecting 'the right' information at varying levels of quality

Excellent	Proficient	Adequate	Limited
pertinent	relevant	suitable	trivial
insightful	meaningful	appropriate	superficial
significant	relevant	predictable	vague
perceptive	thoughtful	basic	questionable
precise	logical	partially correct	confusing
purposeful	focused	appropriate	irrelevant

2. Words that describe the skill of selecting 'enough' information at varying levels of quality.

Excellent	Proficient	Adequate	Limited
comprehensive	thorough	cursory	superficial
in-depth	sufficient	partial	incomplete
rich & detailed	specific	simplistic	undeveloped
extensive	substantial	partial	sketchy

3. Words that describe the skill of evaluating product or connecting insights to personal experience at varying levels of quality

Excellent	Proficient	Adequate	Limited
insightful	thoughtful	predictable	trivial
astute	relevant	appropriate	unfocused
perceptive	thoughtful	routine	trivial
intuitive	logical	rudimentary	unsubstantiated
innovative	credible	predictable	trite
compelling	meaningful	obvious	tenuous

4. Words that describe the skill of designing or constructing at varying levels of quality.

Excellent	Proficient	Adequate	Limited
efficient	practical	viable	unworkable
innovative	effective	workable	ineffective

5. Words that describe the skill of organizing or formatting information at varying levels of quality

Excellent	Proficient	Adequate	Limited
Skillful	systematic	simplistic	haphazard
purposeful	logical	methodical	disorganized

6. Words that describe the skill of analyzing information or data at varying levels of quality

Excellent	Proficient	Adequate	Limited
accurate	logical	partially accurate	flawed
insightful	logical	simplistic	unsupported
Astute	credible	plausible	inaccurate
Precise	relevant	basic	irrelevant

7. Words that describe the skill of presenting or communicating information or selecting appropriate visuals at varying levels of quality

Excellent	Proficient	Adequate	Limited
Vivid	interesting	simplistic	lacks appeal
compelling	effective	predictable	does little to sustain interest
enhances	supports	partially supports	interferes with
engaging	interesting	straightforward	ineffective
Skillful	effective	appropriate	inappropriate
intriguing	interesting	predictable	ineffective

### Sample Scoring using Rating Scale to assess “Collaboration”

Criteria	Frequency			
	Always = 4	Sometimes = 3	Rarely = 2	Never - 1
1. Embraces everyone’s abilities and encourages participation	Always Embraces everyone’s abilities and encourages participation	Sometimes Embraces everyone’s abilities and encourages participation	Rarely Embraces everyone’s abilities and encourages participation	Never Embraces everyone’s abilities and encourages participation
2. Ensures everyone is tasked to and activity	Always Ensures everyone is tasked to and activity	Sometimes Ensures everyone is tasked to and activity	Rarely Ensures everyone is tasked to and activity	Never Ensures everyone is tasked to and activity
3. Encourages everyone to achieve together	Always Encourages everyone to achieve together	Sometimes Encourages everyone to achieve together	Rarely Encourages everyone to achieve together	Never Encourages everyone to achieve together

## 2. Scoring assessment using a Checklist

Check lists are one of the easiest methods of scoring assessment tasks. The criteria i.e. skills, cues or tasks are considered separately according to whether they have been accomplished.

Types of Checklists include

- Yes/No
- Tick/Cross

- Circling
- Narrow scale, e.g. Sometimes, rarely, never
- Colouring

Symbols (signifiers), e.g. pictures, facials, artifacts, signs, drawings, concept maps)

Sample Scoring using Yes/No Checklist Scale to assess “Collaboration”

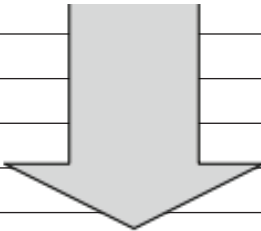
No	Criteria	Write Yes (score 2) or No (score 1)
1	Embraces everyone’s abilities and encourages participation	
2	Ensures everyone is tasked to an activity	
3	Encourages everyone to achieve together	

Sample Scoring using Tick/Cross Checklist Scale to assess “Collaboration”

No	Criteria	Place a tick(score 2) or and X (score 1)
1	Embraces everyone’s abilities and encourages participation	
2	Ensures everyone is tasked to an activity	
3	Encourages everyone to achieve together	

## Assessment Components and Task Weighting

The Assessment components and Task Weighting is intended for a Termly Assessment Schedule. It anticipated that the assessment components with their weightings may be changed by the teachers’ Business Studies Termly Teaching Programs accordingly but the total scores allocated for the THEORY ASSESSMENT COMPONENTS (TAC) of 40 Marks and PRACTICAL ASSESSMENT COMPONENTS (PAC) 60 Marks should remain as it is the determined as the required 40/60 Moderation Components (i.e. 100 marks) for Business Studies Assessments per Assessment Period.

THEORY ASSESSMENT COMPONENTS (TAC) (40 Marks)	TOTAL SCORE/100	PRACTICAL ASSESSMENT COMPONENTS (PAC) (60 Marks)	TOTAL SCORE/100
		Project Portfolio No. 1	10
		STEAM Project Portfolio No. 1	10
Test No. 1	15	Project No. 1	25
		STEAM Project No. 1	25
Assignment No. 1	10		
Test No. 2	15		
TOTAL THEORY SCORE	___/40	TOTAL PRACTICAL SCORE	___/60

## Textile Technology

<b>TOTAL SCORES OF TAC + PAC</b>  <b>= TOTAL SCORES OUT OF 100</b>	_____/100		
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### SAMPLE SUBJECT ASSESSMENT STRUCTURE

The internal assessment for the Technology and Industrial Arts/ subject is based on the Grade 9 & 10 and Grade 11 and 12 Technology and Industrial Arts Syllabus. The final assessment should be based on a range and balance of assessment strategies and instruments. Assessment must be both normative and criterion.

Component	Weighting	Tasks	Assessment Referencing
Practical Work in response to design brief (Moderation and Projects included here?)	60 % (of mandatory total)	Development and application of design ideas, safe and skilful use of materials, tools and equipment to make a product and the identified processes	Criterion Referencing Rubrics?
Design folio with outcomes of research, investigations and planning	20 % (of mandatory total)	Folio showing results of investigation in response to design brief, rough notes or sketches of design ideas, timelines, final drawings or plans, processes used to make the product and evaluation reports	Criterion Referencing Rubrics?
Tests	20 % (of mandatory total)	Theory and also applications in theory	Normative
Marks	100 %	A combination of design folios, practical applications, moderations and tests.	

### Sample Assessment

SBC embraces standards and as such, standards must also drive the administration of assessments to students. It is important that every student must be given the outline of the Assessment that has been planned for the term. Each Term will include 6 pieces (can have any number from 4-6) of assessment. Assessment is weighted accordingly.

Assessment Type	Description	Weighting
Topic Tests x 2	Students will be given two topic tests based on the content learnt in the term. 1 will be given mid-term and 1 at end-term. The test will be comprised of 10 multiple choice questions and 5 short written answers.	1 = 15 marks 1=10 marks
Portfolio	Individual Students will be assessed.....	10 marks







## STEAM Assessment

### Steps in Developing a STEAM Activity

1. Identify the Real/Authentic Situations that can be solved through the STEAM Activity.
2. Select a well-defined a Benchmark in your subject area that will carry the STEAM Activity.
3. Identify related subject areas with their concepts to be used solve the Authentic Situation.
4. Note down the Main parts of the Unit Of Work for the STEAM Activity.
5. Write a Description of the Authentic Situation for the STEAM Activity based on the identified Authentic situation.
6. Write down the Task Descriptions for the STEAM Activity in order to approach the Authentic situation.
7. Develop the Rubric to Assess the STEAM Activity.

#### 1. Authentic Situation identified for this STEAM Activity

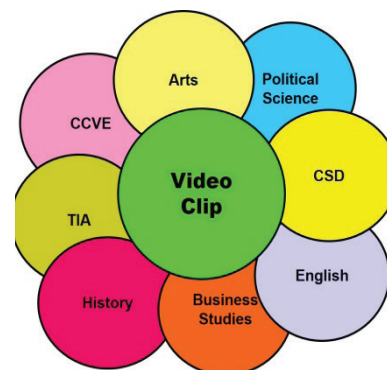
- Students spending too much time using their smart mobile phones on Facebook, WhatsApp and surfing the internet rather than their school work.
- Students still bringing their smart mobile phones to school despite the school rules telling them not to.
- Most schools need to fully utilise their School Rules, Mottos, Missions and Visions which determines the way they want to shape our students' Knowledge, Attitudes and Values, during and after, they leave the school at end of G10 and G12.
- Our schools in our country have been labelled as 'a very good school to a very bad school' due school student fights and vandalism of school properties.
- Stakeholders of the schools are blaming the school management for the school students behaviour problems and parents are transferring their students out of schools to others school in the country.

#### 2. Select a well-defined Benchmark in your subject area that will carry/drive the STEAM

Activity and its associated Big Idea (product, project etc.)

##### Sample:

- SUBJECT: BUSINESS STUDIES**
- BENCHMARK 9.2.5.1.** Analyse the impact of information technology on society.
- BIG IDEA/PRODUCT:** Video Clip



### 3. Identify other related subject areas with the appropriate concepts to solve the Authentic Situation(s)

\* Identify related subject areas with their concepts/Knowledge, Skills, Attitudes and Values to be used to solve the Steam Authentic Situation

SUBJECTS	BENCHMARKS	BIG IDEA/ PRODUCT	KNOWLEDGE	SKILLS	ATTITUDES	VALUES
1. Arts (Theatre Arts)	9.2.2.2		Video script	Script Writing		
2. Christian Civic Value Education (CCVE)	9.3.1.3		School Rules, Motto, Vision, Mission	Examine Civic values	Responsibility	Ownership, Love
3. Character Social Development (CSD)	9.1.5.1, 9.1.5.2, 9.1.5.3, 9.1.5.4, 9.1.5.5		School Rules, Motto, Vision, Mission	Asses experiences and mistakes	Caring, Positivity	Respect
4. English	9.2.2.1		Descriptive Writing	Descriptive Writing	Neatness	
5. Social Science (History)	9.2.2.3, 9.2.2.4		School history	Discuss school culture		Ownership
6. Social Science (Political Science)	9.3.3.1, 9.3.3.2		National development aspirations/demands of citizens	Anticipative skills		
7. Technology Industrial Arts (TIA)	9.4.1.4, 9.4.1.5, 9.4.1.6		Range of communications media products	Creative media communication	Alertness	
8. Business Studies	9.2.5.6.	Video clip	Media rich projects	Shooting with mobile	Creativity	Innovative

**There must be an anchor subject benchmark for any STEAM assessment.**

#### 4. Descriptions of the Steam Authentic Situation

- Paragraph 1 describes the problem/situation
- Paragraph 2 describes the solution to the problem/situation and who will be responsible to take up the task
- Paragraph 3 would mention any rewards/awards for an adequate solution to the problem/situation as a booster to create a competitive competition and a promoter of critical thinking amongst the students so that they can come out with the best products.

#### 5. Write down the Task Descriptions for the STEAM Activity

- Plan and write a short write-up for your video-clip.
- Use the notes to Make a 2-minute video clip to advertise and market your school to the public.
- The short video clip must embrace the school rules, motto, and mission and vision statements.
- It must also contain messages of new and competent management.
- This video clip has to have the potential to positively change the image of the school
- This 2-minute video clip must be captivating and totally convincing to attract students to want to enroll at your school.
- This clip must not be more than 2 minutes (maximum time limit).
- Present your video clip to be assessed.

- Submit both your write-up (on a chart) together with your video clip.

### 6. Developing Rubrics to Assess the Steam Video Clips

1. Decide on type of rubric to be used (Holistic or Analytic).
2. Decide what point scale rubric to use (always use 3, 4 or 5 point-scale) and rating scales to use (descriptive words or numerals).
3. Plan the layout to develop the rubric.
4. Decide what to assess from the Category of Tasks Description.
5. Identify and List down the Category of Tasks Description for the Criteria.
6. Reword the Tasks Descriptions to create Criteria.
  - Plan and write a short write-up for your video-clip. (The write up of the video)
  - Use the notes to make a 2-minute video clip to advertise and market your school to the public. (The development of the video)
  - The short video clip must embrace the school rules, motto, and mission and vision statements. (The content of the video)
  - It must also contain messages of new and competent management. (The content of the video)
  - This clip must not be more than 2 minutes (maximum time limit). (The presentation of the video)
  - Submit both your write-up (on a chart) together with your video clip. (The product)
7. List down the criteria against the Task Descriptions in a table
8. Unpack the Task Descriptions and Identify the essential KSAV that can be assessed.
9. Reword the Task Descriptions with the inclusion of KSAVs into a Descriptor statement for each criteria and distribute into each Competency Level/Level of Achievement.
10. Determine appropriate variance of Qualifiers for each Descriptors of each Achievement Level.
11. Determine the appropriate Descriptive Words or Number for Point Scales of the intended rubric.
12. Completed rubric sample: Video clip Assessment Rubric
13. Consider the Applications of the Steam Rubric.

## 1. Identify and list down categories of tasks

Category	Task Description
The write up of the video	Plan and write a short write-up for your video-clip.
The development of the video	Use the notes to Make a 2-minute video clip to advertise and market your school to the public.
The content of the video	<ul style="list-style-type: none"> <li>The short video clip must embrace the school rules, motto, and mission and vision statements.</li> <li>It must also contain messages of new and competent management.</li> <li>This video clip has to have the potential to positively change the image of the school</li> <li>This 2-minute video clip must be captivating and totally convincing to attract students to want to enroll at your school.</li> </ul>
The Presentation of the video	<ul style="list-style-type: none"> <li>This clip must not be more than 2 minutes (maximum time limit)</li> <li>Present your video clip to be assessed</li> </ul>
The product	Submit both your write-up (on a chart) together with your video clip.

## 2. Unpack the Task Descriptions and Identify the essential KSAV that can be assessed

Category	Task Description	Essential KSAVs
The write up of the video script	Plan and write a short write-up for your video-clip.	Skill : Procedural Writing
The development of the video	Use the notes to Make a 2-minute video clip to advertise and market your school to the public.	Values and attitudes: <ul style="list-style-type: none"> <li>Teamwork and cooperation</li> <li>Creativity</li> </ul> Knowledge: Know about the school
The content of the video	<ul style="list-style-type: none"> <li>The short video clip must embrace the school rules, motto, and mission and vision statements.</li> <li>It must also contain messages of new and competent management.</li> <li>This video clip has to have the potential to positively change the image of the school</li> <li>This 2-minute video clip must be captivating and totally convincing to attract students to want to enroll at your school.</li> </ul>	Knowledge: Adequate content about the school Skill: convincing and persuasive Values and attitude: Encouraging and luring

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The Presentation of the video	<ul style="list-style-type: none"> <li>This clip must not be more than 2 minutes (maximum time limit)</li> <li>Present your video clip to be assessed</li> </ul>	<p>Skill:</p> <ul style="list-style-type: none"> <li>Time management</li> <li>delivery skills (posture, language) and</li> <li>communication skills</li> <li>social skills (relativity and connectivity)</li> </ul> <p>Values and attitude: confidence</p>
The product	Submit both your write-up (on a chart) together with your video clip.	EKSAVs in the Write up and Presentation :

**3. Reword the Task Descriptions with the inclusion of KSAVs into a Descriptor statement for each criteria and distribute into each Competency Level/Level of Achievement**

**4. Determine the appropriate Descriptive Words or Number for Point Scales of the intended rubric.**

Criteria:	Advanced	Progressing	Novice	Mark
The write up of the video script	<p>Skill: Procedural Writing</p> <p>Organised paper of video script writing procedures</p>	Organised paper of video script writing procedures	Organised paper of video script writing procedures	/3
The development of the video	<p>Values and attitudes:</p> <ul style="list-style-type: none"> <li>Teamwork and cooperation</li> <li>Creativity</li> </ul> <p>Knowledge: Know about the school</p> <p>The video corresponds to the 2-minutes script and illustrates teamwork</p>	The video corresponds to the 2-minutes script and illustrates teamwork	The video corresponds to the 2-minutes script and illustrates teamwork	/ 3
Content of the video	<p>Knowledge:</p> <p>Adequate content about the school</p> <p>Skill: convincing and persuasive</p> <p>Values and attitude:</p> <p>Encouraging and luring</p> <p>The short video clip embraces the core ideas of school rules, motto, and mission and vision statements.</p>	The short video clip embraces the core ideas of school rules, motto, and mission and vision statements.	The short video clip embraces the core ideas of school rules, motto, and mission and vision statements.	/3

## Textile Technology

Presentation of the video	<p>Skill:</p> <ul style="list-style-type: none"> <li>• Time management</li> <li>• delivery skills (posture, language) and</li> <li>• communication skills</li> <li>• social skills (relativity and connectivity)</li> </ul> <p>Values and attitude: confidence</p> <p>The video clip captures essence of vital messages of the new and competent management with potentials to positively change the image of the school and captivating and convincing to attract students to want to enroll at the school.</p>	The video clip captures essence of vital messages of the new and competent management with potentials to positively change the image of the school and captivating and convincing to attract students to want to enroll at the school.	The video clip captures essence of vital messages of the new and competent management with potentials to positively change the image of the school and captivating and convincing to attract students to want to enroll at the school.	/3
The product	<p>EKSAVs in the Write up and Presentation:</p> <p>Video clip submitted at the assessment deadline for presentations</p>	Video clip submitted at the assessment deadline for presentations	Video clip submitted at the assessment deadline for presentations	/3

### 5. Completed rubric sample: Video clip Assessment Rubric

Criteria	Achieved	Progressing	Novice	Marks
Video Script Write up	Innovative and well organised paper with clarity of video <u>script</u> writing procedures	Well organised paper with clarity of video <u>script</u> writing procedures	Organised paper with some clarity of video <u>script</u> writing procedures	/3
Video Development	Appropriately considered details for the video are well corresponded to the 2-minutes script and illustrates a well-coordinated teamwork	Considered details for the video are mostly corresponded to the 2-minutes script and illustrates a coordinated teamwork	Some details considered for the video are partially corresponded to the 2-minutes script and illustrates a less coordinated teamwork	/3



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Video Clip Content	<ul style="list-style-type: none"> <li>The short video clip fully embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>The short video clip mostly embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>The short video clip somewhat embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	/3
Video Presentation	<ul style="list-style-type: none"> <li>The video clip fully captures essence of vital messages of the new and competent management with necessary potentials to positively change the image of the school and really captivating and totally convincing to attract students to want to enrol at the school.</li> </ul>	<ul style="list-style-type: none"> <li>The video clip mostly captures the essence of vital messages of the new and competent management with most potentials to positively change the image of the school and mostly captivating and partially convincing to attract students to want to enrol at the school.</li> </ul>	<ul style="list-style-type: none"> <li>The video clip somewhat captures the essence of vital messages of the new and competent management with some potentials to positively change the image of the school and almost captivating and less convincing to attract students to want to enrol at the school.</li> </ul>	/3
Video Clip Submission Time	<ul style="list-style-type: none"> <li>Video clip submitted well before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>Video clip submitted just before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>Video clip submitted within the assessment time for presentations</li> </ul>	/3

### 1. How to Score using the rubric

#### Scoring Rubrics

Criteria	Achieved 3	Progressing 2	Novice 4	Scoring
Video Script Write up -	Innovative and well organised paper with clarity of video <u>script</u> writing procedures	Well organised paper with clarity of video <u>script</u> writing procedures	Organised paper with some clarity of video <u>script</u> writing procedures	2/3

## Textile Technology

Video Development	Appropriately considered details for the video are well corresponded to the 2-minutes script and illustrates a well-coordinated teamwork	Considered details for the video are mostly corresponded to the 2-minutes script and illustrates a coordinated teamwork	Some details considered for the video are partially corresponded to the 2-minutes script and illustrates a less coordinated teamwork	1/3
Video Clip Content	<ul style="list-style-type: none"> <li>The short video clip fully embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>The short video clip mostly embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>The short video clip somewhat embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	3/3
Video Presentation	<ul style="list-style-type: none"> <li>The video clip fully captures essence of vital messages of the new and competent management with necessary potentials to positively change the image of the school and really captivating and totally convincing to attract students to want to enroll at the school.</li> </ul>	<ul style="list-style-type: none"> <li>The video clip mostly captures the essence of vital messages of the new and competent management with most potentials to positively change the image of the school and mostly captivating and partially convincing to attract students to want to enroll at the school.</li> </ul>	<ul style="list-style-type: none"> <li>The video clip somewhat captures the essence of vital messages of the new and competent management with some potentials to positively change the image of the school and almost captivating and less convincing to attract students to want to enroll at the school.</li> </ul>	3/3
Video Clip Submission Time	<ul style="list-style-type: none"> <li>Video clip submitted well before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>Video clip submitted just before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>Video clip submitted within the assessment time for presentations</li> </ul>	2/3

## 2. How to Grade using the rubric Grading Rubrics

Score Range	Grade	Qualifier (Proficiency)	Descriptor	Percentage
13 – 15	A	Advanced	Description reflecting <u>high-est</u> level of performance.	76 - 100%
9 - 12	B	Achieved	Description reflecting <u>mas-tery</u> level of performance.	46 - 75%
5 – 8	C	Progressing	Description reflecting <u>movement towards mas-tery</u> level of performance.	26 - 45%
0 - 4	D	Novice	Description reflecting <u>beginning</u> level of performance.	0 - 25%

## 3. How to Report using the rubric

a) Reporting an individual student's performance on the task

Assessment Task Report						
Assessment Task:		Video Development Project				
Name:	Grade:		Class:		Score and Grade:	/15
Criteria	Achieved A	Progressing B		Novice C		
Video Script Write up	Innovative and well organised paper with clarity of video <u>script</u> writing procedures	Well organised paper with clarity of video <u>script</u> writing procedures		Organised paper with some clarity of video <u>script</u> writing procedures		
Video De-velopment	Appropriately considered details for the video are well corresponded to the 2-minutes script and illustrates a well-coordinated teamwork	Considered details for the video are mostly corresponded to the 2-minutes script and illustrates a coordinated teamwork		Some details considered for the video are partially corresponded to the 2-minutes script and illustrates a less coordinated teamwork		

## Textile Technology

Video Clip Content	<ul style="list-style-type: none"> <li>• The short video clip fully embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>• The short video clip mostly embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>	<ul style="list-style-type: none"> <li>• The short video clip somewhat embraces the core ideas of school rules, motto, and mission and vision statements.</li> </ul>
Video Presentation	<ul style="list-style-type: none"> <li>• The video clip fully captures essence of vital messages of the new and competent management with necessary potentials to positively change the image of the school and really captivating and totally convincing to attract students to want to enrol at the school.</li> </ul>	<ul style="list-style-type: none"> <li>• The video clip mostly captures the essence of vital messages of the new and competent management with most potentials to positively change the image of the school and mostly captivating and partially convincing to attract students to want to enrol at the school.</li> </ul>	<ul style="list-style-type: none"> <li>• The video clip somewhat captures the essence of vital messages of the new and competent management with some potentials to positively change the image of the school and almost captivating and less convincing to attract students to want to enrol at the school.</li> </ul>
Video Clip Submission Time	<ul style="list-style-type: none"> <li>• Video clip submitted well before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Video clip submitted just before the assessment deadline for presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Video clip submitted within the assessment time for presentations</li> </ul>

**Note: The shaded is the student's proficiency score for each task.**

Related links to this Business Studies Benchmark in Business Studies with other subject areas:

Subjects	Reference Benchmark Codes
1. Arts (Theatre Arts)	9.2.2.2
2. Christian Civic Value Education (CCVE)	9.3.1.3

3. Character Social Development (CSD)	9.1.5.1, 9.1.5.2, 9.1.5.3, 9.1.5.4, 9.1.5.5
4. English	9.2.2.1
5. Social Science (History)	9.2.2.3, 9.2.2.4
6. Social Science (Political Science)	9.3.3.1, 9.3.3.2
7. Technology Industrial Arts (TIA)	9.4.1.4, 9.4.1.5, 9.4.1.6

The anchor subject in this sample STEAM assessment is Technology and Industrial Arts .

### Sample Assessment

Here is a sample assessment for steam that is done for grade 11 . Teachers are encouraged to study the sample and use it to develop a grade 12 STEAM assessment for your class.

#### *Performance Assessment*

### STRAND 1: TEXTILE TECHNOLOGY

#### UNIT 2: TEXTILE AND CLOTHING

**Content Standard 1.2:** students will be able to integrate and apply principles and techniques in presenting fashion ideas and illustrations in pattern making and garment construction for a variety of needs and occasions.

**Benchmark 11.1.2.1:** Evaluate the historical influences, technological progression and emerging trends as inspirational sources for design

#### Learning objectives:

1. List historical sources of design
2. Identify the changes to historical designs by technology
3. Create an item incorporating historical designs and technological progressions

**Topic 1:** Historical influences and technological progression

#### Purpose of Assessing the Topic:

To assess whether students can be able to identify and list historical sources of designs and the changes incorporated through/by technology and create an item capturing both sources of influence.

#### *How the Performance Task will be done?*

In pairs or small groups (can be regional/provincial or village grps), may create garment (clothing) or a household item.

Performance Standard: By the end of this project, students will be able to create a textile item originating from a historical design including features of modern technology.

### *Authentic situation*

A literacy group of mothers from the community are having basic sewing lessons and experimenting on local or historical sources of designs that influence a lot of textile items today including traditional dyes and printing substances using traditional materials from the surrounding environment.

The main aim of their literacy lessons or sessions is to promote traditional or historical skills, knowledge and designs using both local and modern materials and techniques.

They have invited the Home Economics department to help them create authentic textile items using their knowledge with the technological progressions and current trend of fashion. The item must be from a historical source of design that is of current trend with the influence of modern technology integrating modern and traditional materials.

The item must be created to make awareness and promote traditional or historical designs and materials and must also be marketable. The item must be attractive, authentic, aesthetic.

### Task Description

Creating a product to meet a Design Brief

### **Sample Design Brief:**

#### *Context*

A literacy group of mothers from the community are having basic sewing lessons and experimenting on local or historical sources of designs that influence a lot of textile items today including traditional dyes and printing substances using traditional materials from the surrounding environment.

They have invited the Home Economics department to help them create authentic textile items from a historical source of design that is of current trend with the influence of modern technology integrating modern and traditional materials.

#### *Problem*

A lot of Papua New Guineans are copying and favoring Western or modern clothing and accessories and our cultural or traditional (historical) designs or materials are gradually dying out. People need to be reminded of their origins by wearing or using textile items of historical designs integrating technological progressions.

#### *Design Brief*

Create an authentic textile item from a historical source of design that is of current trend with the influence of modern technology integrating modern and traditional materials, that must be marketable.

#### Specification

- The product must be appealing to the consumer.
- The product must be comfortable and hang well to wear or carry.
- The product must be strong and durable.

- Cost: less than K50.
- Timeline: 1 term

### Investigation

- Study the styles of local, contemporary products or items that are made by local designers.
- Research the current fashion styles and trends and the type of materials (natural fibres or modern fabric) and other materials to use.
- Decide on what you wish to use\
- Investigate the patterns available for the product you wish to do (patterns optional)
- Take measurements (if necessary) and decide on how much materials you will need.

### Drawing

Use A4 papers and make multiple drawings or sketches of different designs and choose the one that you like better and draw it properly again. Label the key features of your chosen design.

### Making

- Make or obtain patterns if needed and pin to fabric and cut out (optional).
- Obtain materials from the surrounding for those using local/natural materials.
- Remove pattern from fabric and make item (shirt/laplap/trousers, etc.)
- Weave, crochet, twist, beat, knit natural fibres into desired item.
- Complete the item using appropriate techniques and finishes.

### Evaluation

- Consider these questions and write an honest comment about your product.
- Does it suit the purpose for which it was made?
- Is it constructed strongly?
- Is it comfortable to wear or appropriate to use?
- Is it suitable for the targeted consumer you had in your plan?
- Was it made within the cost limit?
- How could you have made it better?
  
- Is it marketable?

### Materials:

- Fabric (woven, knitted, crocheted, non-woven).
- natural fibres -animal or plant fibres like tapa bark stripped to strings or other bush strings.

- fabric paint and dyes, stencil, water.
- shells, beads, plant seeds etc. for decorations.
- papers, pencils, eraser for sketching, scissors.
- sewing machine, needle, pins, thread, crochet hooks, strings, wools.

### 1. Developing Rubrics to Assess Textile item

- Decide on type of rubrics to be used (holistic/analytic).
- Plan rubrics.
- Planning to develop rubrics.
- Categorise the task description into criterias.

Sample of categorising task for the rubric

- Plan a textile product they will create (planning of project).
- Research styles and designs of various traditional, contemporary and modern textile items. (investigating/researching).
- Draw multiple sketches of designs and choose one (drawing or sketching designs).
- Decide on one and collect materials required for the project. (collecting of required materials).
- Construction of the textile item (construction process and techniques).
- Product must be authentic, aesthetic, attractive, strong and marketable (finished product).
- Presentation of the product to the group of mothers (oral and visual presentation).

### 2. Identify and list down categories of tasks

Category	Task Description
Planning of project	Plan a textile product they will create.
Investigating/researching	Research styles and designs of various traditional, contemporary and modern textile items.
Drawing or sketching designs	Draw multiple sketches of designs and choose one.
Collecting of required materials	Decide on one and collect materials required for the project.
Construction process and techniques	Construction of the textile item.
Finished product	Product must be authentic, aesthetic, attractive, strong and marketable.
Oral and visual presentation	Presentation of the product to the group of mothers.

### 3. Identify the essential KSAV that can be assessed



Category	Task Description	Essential KSAV
Planning of project	Plan a textile product they will create	Skill: critical thinking Knowledge: know traditional & modern designs
Investigating/re-searching	Research styles and designs of various traditional, contemporary and modern textile items	Skill: research & investigate Values & attitudes: - respecting each other - teamwork & cooperation knowledge: understand styles, designs
Drawing or sketching designs	Draw multiple sketches of designs and choose one	Skills: drawing or sketching Value: value different designs Attitude: respect other views/ ideas
Collecting of required materials	Decide on one and collect materials required for the project	Knowledge: know traditional/historical designs, material & patterns Values & Attitude: - value & appreciate traditional designs, materials
Construction process and techniques	Construction of the textile item  - sewing - weaving - printing, dyeing - knitting, crocheting using appropriate methods, techniques and tools in the construction process.	Skills: construction process & techniques  Values & Attitude: - Respecting & Appreciating designs & materials - Accepting & Valuing changes
Finished product	Product must be authentic, aesthetic, attractive, strong and marketable	Skills: finishes to the product (printing, dyeing etc.) Value & Attitude: - Appreciating & valuing the new product

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Oral and visual presentation	Presentation of the product to the group of mothers	Skills: <ul style="list-style-type: none"> <li>- time management</li> <li>- delivery skills</li> <li>- communication skills knowledge:</li> <li>- adequate content on historical sources of design &amp; technological influence values and Attitude: confidence</li> <li>- good self esteem</li> </ul>
Product submission time	Submitting the product and doing oral presentation	EKSAVs in the product and presentation

- Design the rubrics
- Design a holistic rubric
- Decide what to assess from the category
- Decide what point scale to use (always use 3 or 5-point scale)
- Decide whether you will score the criteria.

### Rubric Sample

Criteria	Achieved	Progressing	Novice	Marks
Planning of project	Well planned and organised with task delegated fairly to grp members	planned and organised properly but unfair task delegation	Planned properly but poor organisation and task delegation	/3
Investigating/researching	Well researched and identified all different styles, designs, patterns of historical and modern textile items	Partially researched and identified some styles, designs, patterns of historical and modern textile items	A little researching and a few styles, designs, patterns of historical and modern textile items	/3
Drawing or sketching designs	Creatively drew 4 drawings with a variety traditional and modern designs, styles etc.	Well-drawn 2-3 drawings with some traditional and modern designs, styles etc.	Sketches of 1-2 drawings with a few traditional and modern designs, styles etc.	/3
Collecting of required materials	Collected all required materials for project	Collected some materials for the project	Collected only a few materials for the project	/3
Construction process and techniques	Creative and innovative, using appropriate techniques and tools.	Well -constructed using some appropriate techniques and tools	Constructed evident using inappropriate techniques and tools	/3
Finished product	Product is authentic, aesthetic, marketable and meets the design brief.	Product is constructed well but partially meets the design brief.	Product poorly constructed and doesn't meet the design brief.	/3

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Oral and visual presentation	Confidently presented within time frame, convincing audience of aim of product (promoting historical designs)	Partially confident and overlapped time frame and partially convincing of aim of product.	Lacked confident and poor time management and was not convincing.	/3
Product submission time	Submitted product and oral presentation well before deadline.	Submitted product and presentation just before assessment deadline for presentation.	Submitted product and presentation within time for presentation.	/3

**Note:** Your Assessment Plan must include the National Department of Education Observable events, Commemorated events and Official Public Holidays or any calendar dates that may disrupt schooling, to help you plan your termly assessment plans.

## GLOSSARY

Words	Definitions
<b>Artisan</b>	-a worker who practices a trade or handicraft : crafts person. a skilled artisan. :  - People who manufacture handicraft goods are known as artisans. People who manufacture handicraft goods are known as craftspeople or artisans. Handicraft is the activity of making decorative or other objects by hand.
<b>Porous Fibres</b>	Porous fiber consists of three-dimensional components using polymeric fibers that are bonded together where they touch. This creates a void in between the fibers to hold fluid, making them porous.
<b>Acid wash</b>	-of, relating to, or being a fabric or a garment that has been treated with a bleach solution to produce a streaked or discolored appearance.
<b>Air jet- finish</b>	Air-jet spinning is also known as Vortex or fasciated yarn spinning.
<b>Anti –shrinkage treatment</b>	The finishing process by which the cotton knitted fabrics are made not to shrink is known as «Anti-Shrink Treatment». Different type of knitted fabrics such as single jersey, interlock and flat back rib were treated with Resil CLS using pad-dry-cure technique.
<b>Anti-microbial</b>	A substance that kills microorganisms such as bacteria or mold, or stops them from growing and causing disease.

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<b>Anti-pill finish</b>	The resistance of fabric to form little balls on the surface due to abrasion during wear. This could be a natural feature of the fabric or due to application of a special finish to prevent pilling.
<b>Apparel</b>	Clothing- that are worn
<b>Appliqued quilt</b>	Applique is a needlework technique in which one or more pieces of fabric are attached to a larger background fabric to create pictures or patterns. The fabric can be attached by hand, machine or fused.
<b>Bead board</b>	bead-board 'bēd- bōrd.: paneling that features decorative beading (see beading sense 1a) and that is used typically on walls (as for wainscoting) and ceilings. The porch has a bead board ceiling, paddle fan and recessed lighting, creating a comfortable retreat.
<b>Bead reamer</b>	A bead reamer is a pointed, round needle file that is used to either smooth the edges of the drill-hole in a bead, or to enlarge or straighten the hole itself.
<b>Bead spinner</b>	A bead spinner is a tool that makes bead working faster and more efficient. It normally consists of two main parts: a base (the stand) and an upper chamber (the bowl) which spins. It also includes a needle with a slight curve to the tip. This helps draw up the beads and ensures they flow onto the thread
<b>Beading Loom</b>	A bead loom is a tool used to weave beads together
<b>Beetling</b>	Beetling is a process applied to linen fabrics and to cotton fabrics made to resemble linen.
<b>Belt</b>	a strip of leather or other material worn, typically round the waist, to support or hold in clothes or to carry weapons.
<b>Bleaching</b>	cause (a material such as cloth, paper, or hair) to become white or much lighter by a chemical process or by exposure to sunlight.
<b>Brushing</b>	Brushing is a finishing process used to raise the surface fibres of a fabric. The fabric undergoes a mechanical brushing process in which fine, metal brushes carefully rub the fabric to produce fine fibres from the woven yarns, creating extra softness on the surface of the fabric.

<b>Business opportunities</b>	Textile manufacturing is a huge industry that entails the conversion of fiber into yarn, and that yarn into fabric. These fabrics are dyed, printed, or fabricated into clothes and various other items. Different types of fibers are used to produce yarn, with cotton remaining the most important natural fiber.
<b>Calendaring</b>	Mechanical finishing process in which fabric is passed between two rollers (one metal and one cotton fabric) under heavy pressure to create a variety of flattened looks and textures. Examples include chaised, moiré, and friction.
<b>Characteristics of fibres and fabrics</b>	<p>-Textile fibers are perhaps most obviously characterized by their fineness; they are long and very thin.</p> <p>- Durability, abrasion resistance, and UV light resistance is generally very good. A non-absorbent fibre, it will move very little in humid conditions. Not affected by acidic pollution or mildew. A strong and stable fibre.</p>
<b>Chemical</b>	Definition of Textile chemicals. The processes of conversion of natural and manmade textile fibres according to end uses & attractive qualities as per need of customer where involving the uses of a large number of organic and inorganic chemicals known as textile chemicals
<b>Chemical finish</b>	Chemical finishing can be defined as the use of chemicals to achieve a desired fabric property. Chemical finishing, also referred to as 'wet' finishing,
<b>Clothing</b>	Clothing (also known as clothes, garments, dress, apparel, or attire) is any item worn on the body. Typically, clothing is made of fabrics or textiles, but over time it has included garments made from animal skin and other thin sheets of materials and natural products found in the environment, put together.
<b>Coloring</b>	Dyeing can be described as the uniform application of colorant(s) to a coloring medium. The coloring of textiles may involve mass pigmenting (involving compounding), dyeing, and printing processes.
<b>Combination tools</b>	Combination tools (Spanner). It is usually made of forged steel. The size of spanners denotes the size of the bolt on which it can work.

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<p><b>Composite garments</b></p>	<p>-Composite fabrics are fabrics that include several structural elements that are combined into a single structure</p> <p>-Textile composite materials consist of a polymer matrix (thermoplastic or thermoset) combined with textile reinforcement. Materials of interest to the group include commingled glass/polypropylene fabrics.</p>
<p><b>construction</b></p>	<p>-Fabric construction is defined as the warp and weft yarn density in a fabric sheet.</p> <p>-the process, art, or manner of constructing. 3. : something built or put together : structure.</p>
<p><b>Construction process</b></p>	<p>Fabric construction involves the conversion of yarns, and sometimes fibres, into a fabric having characteristics determined by the materials and methods employed. Most fabrics are presently produced by some method of interlacing, such as weaving or knitting.</p>
<p><b>Cotton</b></p>	<p>-soft white fibrous substance which surrounds the seeds of the cotton plant and is made into textile fibre and thread for sewing.</p> <p>- Cotton fabric is one of the most commonly used types of fabrics in the world. This textile is chemically organic,</p>
<p><b>Cutting tools</b></p>	<p>There are many different types of cutting tools that can be used for sewing. These include scissors, rotary cutters, pinking shears, thread snips, seam rippers, and more. Each type has its own unique purpose which is crucial to your project's success.</p>
<p><b>Darn a socks</b></p>	<p>To darn a sock is to repair a hole in it using needle and thread.</p>
<p><b>De-clutter</b></p>	<p>Steps to help you declutter your sewing room. Getting rid of some of the stash is hard, but it makes for a more organised space.</p>
<p><b>Denim</b></p>	<p>Denim is a strong cotton fabric made using a twill weave, which creates a subtle diagonal ribbing pattern</p> <p>Denim is a sturdy cotton twill fabric woven with an indigo, gray, or mottled white yarn. Denim is perhaps one of the most well-known and commonly worn fabrics there is, from the classic blue jeans to jackets, dresses, overalls, and more.</p>

## Textile Technology

<b>Design</b>	<p>-Textile design is the process of planning and producing a fabric's appearance and structure. Textile designers dream up designs that are woven</p> <p>- Textile designing is a field that includes fashion design, carpet manufacturing and any other cloth-related field</p>
<b>Design process</b>	<p>-Textile design is the process of creating patterns or designs onto fabrics by way of weaving, knitting, or printing.</p> <p>-Textile design is the process of creating knitted, printed, and woven textiles.</p>
<b>Design sources</b>	<p>Textile design is the process of planning and producing a fabric's appearance and structure. Textile designers dream up designs that are woven or knitted into cloth or printed on fabric.</p>
<b>Diffusion</b>	<p>Diffusion is the process by which the colorant molecules penetrate the interior of the fibres. The scientific study of diffusion is a comparatively recent activity, and almost all work has been carried out with synthetic dyes.</p>
<b>Dispositions of chemicals</b>	<p>hazardous chemicals have been detected in a wide range of textiles and clothing products. A large number of complex chemical ingredients are used to produce various textile products</p>
<b>Draping</b>	<p>The process of positioning and pinning the fabric on a dress form is called draping. Draping can be used to create the basic pattern or to design organically by playing with the fabric on the form</p>
<b>Durability</b>	<p>It is the ability of a material to exist for a long time without significant deterioration and, especially for fabrics, to resist wear through continual use and care.</p>
<b>Elements of design</b>	<p>-The four basic ingredients or elements of design used in fashion are shape or silhouette, line, colour and texture.</p> <p>- The elements of design are the fundamental aspects of any visual design which include shape, color, space, form, line, value, and texture</p>

<b>Fabric fastening</b>	<p>-In textile design, fastenings are the objects used to hold a garment together. While they can be permanent, they are generally built to fasten and unfasten the textile numerous times.</p> <p>-Fasteners are used to hold two pieces of a garment together some pieces lap one over the other, while others meet. Fasteners include snaps, hooks and eyes, self-gripping devices, buttons and buttonholes, and zippers.</p>
<b>Fabric porosity</b>	<p>Fabric porosity is the total volume of void space within a specified area of the fabric.<sup>11</sup> Apart from the fabric structure, hairy fibre and fabrics</p>
<b>Fabrics</b>	<p>A cloth that has been woven, knitted, tufted, knotted, or bonded together using natural or synthetic threads, yarns,</p>
<b>Fashion</b>	<p>Generally, fashion refers to the change in style of garment.</p>
<b>Fashion design</b>	<p>-Textile and Apparel Design, commonly referred to as Fashion Design, relates the physical properties of textiles to our human need for functional and fashionable clothing and home accessories.</p> <p>- fashion and textile design is about creating a cohesive and finished appearance that can convey sophistication, be it through clothing or interior design.</p>
<b>Fashion ideas</b>	<p>-Clothing describes the material and the technical garment, devoid of any social meaning or connections; costume has come to mean fancy dress or masquerade wear</p> <p>-Fashion is a form of self-expression and autonomy at a particular period and place and in a specific context, of clothing, footwear, lifestyle, accessories, makeup, hairstyle, and body posture.</p>
<b>Fiber-based artwork</b>	<p>Fiber art refers to fine art whose material consists of natural or synthetic fiber and other components, such as fabric or yarn. It focuses on the materials</p>
<b>Fibres</b>	<p>Textile fibres are natural or synthetic structures that can be spun into yarn and woven, knitted, or bonded into fabric.</p>
<b>Flex textile</b>	<p>Flex Textile is a thermo-adhesive material that is used for printing on fabrics for the most varied uses, especially in fashion. Flex has the ability to merge with the most varied types of fabric, from cotton to nylon and polyurethane</p>



<b>Folding</b>	Fabric folding is the process of winding fabrics into clean, stretch-free folded form for easy packaging and transportation. It is the stage of fabric inspection that follows the defect mapping and cutting process.
<b>Folding and cutting</b>	all fabrics/materials are cut and folded similar to how you would fold a blanket. We do leave one edge free to make it easy to piece out smaller
<b>Functional clothes</b>	Functional clothing by definition is user-requirement specific and designed or engineered to meet the performance requirements of the user under extreme conditions.
<b>Functions of tools</b>	<p>Textile tools have a number of different tools, such as loom sword, loom weights, wool comb / flax hackle, whorls, needles made of bone or metal, needle cases, seam smoothers and scissors.</p> <p>-textiles have an assortment of uses, the most common of which are for clothing and for containers such as bags and baskets. In the household, textiles are used in carpeting, upholstered furnishings, window shades, towels, coverings for tables, beds, and other flat surfaces, and in art.</p>
<b>Garment</b>	A garment is a piece of cloth made of textile material(s) and it is stitched by means of a sewing machine. 'Garment' is the most common term used to name our clothes.
<b>Hair</b>	<p>-The principal hair fiber used to produce textile fabrics is sheep's wool. In wild sheep, the wool is a short, soft underlayer protected</p> <p>- Haircloth is a stiff, unsupple fabric typically made from horsehair and/or from the wooly hair of a camel.</p>
<b>Hems</b>	Hems lie at the end of a piece of cloth, where the fabric has been folded and sewn into place to prevent the material from fraying or losing its shape. The process of hemming uses small, nearly invisible stitches to catch the fabric and hold it securely in place
<b>Innovation</b>	Innovation in fiber and textiles affects everything from packaging to wearable electronics to aerospace materials to the clothes we wear.

<p><b>Innovative approach</b></p>	<p>The idea is to come up with different textiles with an eye on creativity and design to create and recreate different articles of clothing</p> <p>People have been creating clothing for thousands of years, but it was not until the Industrial Revolution that the textile industry radically changed. The invention of the power loom in 1785 sharply increased the efficiency of garment production. 18 Sept</p>
<p><b>Manufactured fibres</b></p>	<p>-The fibers that belong to this category are either entirely produced from chemical or is a combination of chemical processing and raw material</p> <p>- Synthetic fibers or synthetic fibres are fibers made by humans through chemical synthesis, as opposed to natural fibers that are directly derived from living organisms, such as plants or fur from animals</p>
<p><b>Mechanical furnishing process</b></p>	<p>-Commonly used mechanical finishes include calendaring, compressive shrinkage / Sanforizing, raising, emerizing / sueding / peaching, shearing /</p> <p>-Mechanical finishing is a big and important industry, it encompasses many processes that alter the surface of a manufactured item to achieve a certain property: improve appearance, adhesion or wettability, solderability, corrosion resistance, tarnish resistance, chemical resistance, wear resistance, hardness, modify ..</p>
<p><b>Medieval clothing</b></p>	<p>-Various fabrics, such as taffeta, velvet, and damask were made from textiles like silk, cotton, and linen using specific weaving techniques.</p> <p>- Peasant men wore stockings or tunics, while women wore long gowns with sleeveless tunics and wimples to cover their hair. Sheepskin cloaks and woolen hats and mittens were worn in winter for protection from the cold and rain. Leather boots were covered with wooden patens to keep the feet dry.</p>
<p><b>Metal wire tools</b></p>	<p>Wire cloth is a woven (or nonwoven) sheet or web material with a series of openings across the surface. Wire cloth is also known as: Metal Fabric or Metal Cloth.</p>
<p><b>Methods of water repellent</b></p>	<p>There are two main methods of water-repellent treatment such as hydrophobic admixture method and surface treatment method [29,30,31]. Many studies have shown that hydrophobisation has a positive effect on improving material properties.</p>

## Textile Technology

<b>Natural fabric</b>	Natural fabric is woven or knitted from fibres that occur in our natural world. All three sectors of nature; animal, vegetable and mineral produce fibres that can be used in fabric production.
<b>Natural polymer</b>	Natural polymers are defined as materials that widely occur in nature or are extracted from plants or animals. Natural polymers are essential to daily life as our human forms are based on them.
<b>Outputs</b>	The fabric that is manufactured by the factory is the out put.
<b>overhauling</b>	Visible mending is the practice of repairing clothes and other textile based objects in a way that is clearly visible, rather than trying to hide the repair.
<b>Panels of fabric</b>	In fabric, a panel is a large piece of cloth that's been cut into smaller pieces to create a finished product. Panels can be used in different ways to add depth and interest to an item, or they can serve as the main structural element of a garment.
<b>Paper piercing quilt</b>	Paper Piecing, refers to sewing fabrics to a paper foundation to stabilize the quilt block due to unusual geometric shapes, small pieces or odd angles on a bias.
<b>Patch holes</b>	If you patch something that has a hole in it, you mend it by fastening a patch over the hole.
<b>Personal safety</b>	Personal protective equipment means any device or appliance to be worn or held by an individual for protection against one or more health and safety ...
<b>Pierced quilt</b>	Piecing is the term used to describe the act of assembling and stitching pieces of fabric together, by hand or machine, to make a quilt block.
<b>Pliers</b>	se Fabric Edge Match Pliers to pull and match up your top layer with your bottom layer when sewing complicated curved and contoured shapes.
<b>Polyester</b>	-Polyester is a synthetic fabric that's usually derived from petroleum. This fabric is one of the world's most popular textiles, and it is used in thousands  - Polyester is a manufactured synthetic fiber. It is a kind of plastic and is usually derived from petroleum.

<b>Pressing</b>	Pressing is a method of using your iron to ensure a seam is flat and is an important part of quilt making.
<b>Principles of design</b>	<p>The principles of design consist of: balance, proportion (also referred to as scale), emphasis, and rhythm.</p> <p>-The principles of design describe the ways that artists use the elements of art in a work of art. Balance is the distribution of the visual weight of objects, colors, texture, and space. If the design was a scale, these elements should be balanced to make a design feel stable.</p>
<b>Process of a silk</b>	This process, silkworm larvae are fed with mulberry leaves, and after the fourth moult, they climb a twig placed near them and spin their silken cocoons. Then the cocoon is treated with boiling water and then silk is unwound from the cocoon delicately. Around 10 kg of cocoon produces 1 kg of silk.
<b>Productivity</b>	Productivity, in simple words, is the relationship between output and input. The output in garment factories can be pieces of finished garments.
<b>Productivity</b>	<p>In garment factory productivity is expressed in terms of number of garments produced per sewing machine per shift or per operator per shift.</p> <p>Productivity, in simple words, is the relationship between output and input.</p>
<b>Properties of fibres acid</b>	All natural fibres are hygroscopic, which also makes them stronger when they are wet. - Thermal property: It is the heat resistancy of fibre, conductivity and melting point on which the fibre melts. - Chemical property: It is the effect of acids, alkalis, bleaches and normal laundering reagents on the fibre
<b>Properties of textiles</b>	Fibre length, strength, cohesiveness and flexibility are the four essential textile fibres properties. 1. Fibre Length: This is the most important property, along with its strength. Most natural textile fibres exist as staple fibres and their length varies considerably.
<b>Quilt</b>	A quilt is a multi-layered textile, traditionally composed of two or more layers of fabric or fiber. Commonly three layers are used with a filler material. These layers traditionally include a woven cloth top, a layer of batting or wadding, and a woven back combined using the techniques of quilting.

<b>Raising</b>	Raising is the technique whereby a surface effect is produced on the fabric that gives the fabric a brushed or napped appearance. It is achieved by teasing out the individual fibers from the yarns so that they stand proud of the surface
<b>Rayon</b>	- a textile fibre or fabric made from regenerated cellulose (viscose). “clothing made of rayon”  -Rayon is a fiber from regenerated cellulose, generally derived from wood pulp. Rayon is usually made from eucalyptus trees,
<b>Rayon</b>	a yarn, thread, or fabric made from fibers produced chemically from cellulose.  -Rayon is produced by dissolving cellulose, then converting this solution back to insoluble fibrous cellulose.  -Various processes have been developed for this regeneration.  -The most common methods for creating rayon are the cuprammonium method, the viscose method, and the lyocell process.
<b>Reeling</b>	Reeling is the process of unwinding raw silk filament from the cocoon directly onto a holder. When several filament strands, either raw silk or synthetic, are combined and twisted together, producing yarn of a specified thickness, the process is called throwing.
<b>Refractory and related fibres</b>	Refractory ceramic fibres (RCFs) are amorphous man-made fibres produced from the melting of calcined kaolin clay or a combination of alumina and silica.
<b>Repair</b>	Repairs can include replacing broken or lost components such as zippers, buttons or rivets or the repairing of rips and snags in the fabric itself.  Mending is the act of repairing clothes with imperfections from being well-worn.
<b>Repair techniques</b>	There are two common types of mending: visible mending and invisible mending. Invisible mending is a repair technique that is used when you don't want the mended area to stand out – the less obvious, the better. The aim is for the garment to look as close to its original condition as possible.
<b>Sash</b>	A sash is a wide band of fabric that either secures clothing around your waist or decorates a uniform.

<b>Scouring</b>	“Scouring” is the textile term for cleaning fibers prior to mordanting and dyeing, and does not refer to washing fabrics in a washing machine. If the fiber is not clean, the mordant and dyes will not adhere well to the fiber. Fabrics sold as gray goods or “greige” require a thorough scour.
<b>Scouring Process</b>	Scouring is the process of washing the sheared hair. Wool scouring is the process of washing wool in hot water and detergent to remove the non-wool contaminants and then drying it. The woolen fibres are thoroughly washed in big tanks to remove grease, dust, and dirt by fully mechanized machines.
<b>Seams</b>	A seam is a method of binding two or more pieces of fabric together, usually using thread to form stitches.
<b>Sericulture</b>	This is the term used to describe the process of gathering the silkworms and harvesting the cocoon to collect the materials.
<b>Setting up maintenance</b>	Preventive maintenance is the systematic care and protection of tools, equipment, machines, and vehicles in order to keep them in a safe  -Equipment maintenance is any process used to keep a business’s equipment in reliable working order. It may include routine upkeep as well as corrective repair work. Equipment may include mechanical assets, tools, heavy off-road vehicles, and computer systems.
<b>Sewing kit</b>	A sewing kit is a small package containing items, such as needles and thread, that you need to sew something. Needles and thread are included in the sewing kit.
<b>Shawl</b>	a piece of fabric or knitted or crocheted material worn around the shoulders by women or wrapped around a baby.  - It is usually a rectangular or square piece of cloth, which is often folded to make a triangle, but can also be triangular in shape. Other shapes include oblong shawls.

<p><b>Shearing</b></p>	<p>-Shearing is a kind of mechanical finish in which the appearance of the fabric is enhanced by cutting the loops or raised surface to a uniform and even height.</p> <p>-The removal of the fleece of the sheep along with a thin layer of skin from its body is called shearing.</p> <p>- Shearing is the process of cutting sheet metal to size out of a larger roll or flat stock. As the material moves through the shear machine, cutting blades come together in order to fracture the material into separate, smaller pieces. This process creates quality clean cuts that can be repeated quickly.</p>
<p><b>Silk</b></p>	<p>Silk is a very smooth, light fabric that's usually made of fibers from silkworm cocoons.</p> <p>- Silk is a natural fiber known for its luster, shine, strength, and durability, and it has a long trading history across the world</p>
<p><b>Silk</b></p>	<p>A fine continuous protein fiber produced by various insect larvae usually for cocoons. especially : a lustrous tough elastic fiber produced by silkworms and used for textiles.</p>
<p><b>Silk production process</b></p>	<p>Extracting raw silk starts by cultivating the silkworms on mulberry leaves. Once the worms start pupating in their cocoons, these are dissolved in boiling water in order for individual long fibres to be extracted and fed into the spinning reel.</p>
<p><b>Silk thread</b></p>	<p>Silk is a natural fiber known for its luster, shine, strength, and durability, and it has a long trading history across the world. Silk is the epitome of luxury due to its high cost to produce, soft feel, and elegant appearance, and it is thus a popular textile in high-end and couture fashion design. 12 Aug 2021</p>
<p><b>Silk thread process</b></p>	<p>Extracting silk from the cocoon is known as the processing of silk. Silk is separated from the cocoon by exposing it to sunlight. After the reeling of silk is done, the process of unwinding silk from a cocoon takes place. Silk thread is then bleached. The silk fibre is then spun into silk threads.</p>

## Textile Technology

<b>Spinning wheel</b>	<p>-Spinning wheel, early machine for turning fibre into thread or yarn, which was then woven into cloth on a loom. The spinning wheel was probably invented in India, though its origins are obscure. It reached Europe via the Middle East in the European Middle Ages.</p> <p>-The other name of the spinning wheel is Charkha. It is a small, portable and hand-cranked wheel. This device is used to draw thread or yarn from different fibres.</p> <p>- this particular device was used to make yarn from wool. Spinning wheels help to twist fibers together tightly as a person draws out the yarn with their fingers. Smaller spinning wheels with a foot pedal are also common and were used to spin flax into linen.</p>
<b>Synthetic polymer</b>	<p>Synthetic polymers are those which are human-made polymers. Polymers are those which consist of repeated structural units known as monomers.</p>
<b>Tailoring</b>	<p>Tailoring is the art of designing, cutting, fitting, and finishing clothes. The word tailor comes from the French <i>tailleur</i>, to cut, and appears in the English language during the fourteenth century</p>
<b>Technology</b>	<p>-Technology is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment.</p> <p>- the application of scientific knowledge for practical purposes, especially in industry.</p>
<b>Telemarketing</b>	<p>Telemarketing refers to contacting, qualifying, and canvassing customers and prospective customers by telephone and other devices.</p>
<b>Textile</b>	<p>-Textile is an umbrella term that includes various fiber-based materials, including fibers, yarns, filaments, threads, different fabric types, etc</p> <p>-Textiles are made from fibres, classified as either natural or manufactured. Fibres are twisted into yarns before being made into woven, knitted or bonded fabrics.</p>
<b>Textile construction</b>	<p>Basically, a constructed textile is a textile made by processes that involve connecting threads to form a larger fabric. These processes often involve specific tools and techniques. You can make constructed textiles in many ways, and examples of them have been found dating to prehistoric times.</p>



## Textile Technology

<b>Textile designer</b>	A textile designer is a person who manages the aesthetic aspect of textile production, including texture, color, and patterns. Basically, they're in charge of the designs printed, woven, knit, or sewn into textiles.
<b>Textile technology</b>	Textile technology deals with the fabrication, manipulation, and assembly of fiber-shaped (i.e., line-shaped) materials. Textile techniques can not only be used to weave cloths from cotton fibers but also to hold wounded tissues together with surgical sutures.
<b>Textile Tools storage safety</b>	Textile tools can be divided into categories depending on the stage of the chain of operation, in which they are used. This way we distinguish tools used in the processing of raw materials, in yarn and textile production, in textile dyes and finally in textile finishing.
<b>Thread Extraction:</b>	Once the silkworms have spun their cocoon, they will eventually enclose themselves inside it and then it's time to extract.
<b>Threads</b>	A thread is a long strand of material, often composed of several filaments or fibres, used for joining, creating or decorating textiles. Thread can be made of many different materials including cotton, wool, linen, nylon, and silk. Metal threads, sometimes used in decorative textiles, can be made of fine wire.
<b>Tools storage safety</b>	Safety and health in textiles, clothing, leather and footwear. Contents ... Transport, storage and disposal of hazardous substances.
<b>Tools Storage safety</b>	Safe Storage Of Equipment Treat your fabric shears with great respect and never cut anything than fabric or textile material with them.  - Reduce the chance of an accident by following the below safety measures
<b>Trade shows</b>	Trade shows are often business-to-business (B2B) events attended by businesses in a specific market. Visitors are typically representatives of companies, distributors, resellers, suppliers, and media in the industry. Examples: Beauty, software, architecture and medical trade shows.6 Oct 2022
<b>Trading and commodity</b>	Commodity trading is where various commodities and their derivatives products are bought and sold. A commodity is any raw material or primary agricultural product that can be bought or sold, whether raw cotton fibres , silk etc

## Textile Technology

<b>Water repellent</b>	Water repellency is a term related to the ability of a fabric to resist wetting. Here, due to the fabric pores and permeability to air and water vapor, protection against water is not complete under high hydrostatic pressure and the wearer will become wet in downpour when the hydrostatic pressure is high enough.
<b>Water repulsive</b>	Water repellency is, therefore, a step up from water resistance. This means that water can't easily penetrate the material (the technical term is that it's hydrophobic). Meaning: Not easily penetrated by water, especially as a result of being treated for such a purpose with a surface coating.
<b>Wool</b>	Wool is a type of fabric derived from the hairs of various animals. To make wool, producers harvest the hairs of animals and spin them into yarn.
<b>Yarn</b>	Yarn is a material made from staple fibre or continuous filaments used to make fabrics, sweaters, scarfs, and sewing garments.  - A textile yarn is a continuous strand of staple or filament fibers arranged in a form suitable for weaving, knitting, or other form of fabric assembly.
<b>Zipper</b>	a device consisting of two flexible strips of metal or plastic with interlocking projections closed or opened by pulling a slide along them, used to fasten garments, bags, and other items.  "zipper bags"

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## **APPENDICES**

### **Appendices # 1: BLOOM'S TAXONOMY**

<b>LEVEL OF UNDERSTANDING</b>	<b>KEY VERBS</b>
<p><b>CREATING</b></p> <p>Can the student create a new product or point of view?</p>	<p>Construct, design, and develop, generate, hypothesize, invent, plan, produce, compose, create, make, perform, plan, produce, assemble, formulate,</p>
<p><b>EVALUATING</b></p> <p>Can the student justify a stand or decision?</p>	<p>Appraise, argue, assess, choose, conclude, critique, decide, defend, evaluate, judge, justify, predict, prioritize, provoke, rank, rate, select, support, monitor,</p>
<p><b>ANALYZING</b></p> <p>Can the student distinguish between the different parts?</p>	<p>Analysing, characterise, classify, compare, contrast, debate, criticise, deconstruct, deduce, differentiate, discriminate, distinguish, examine, organize, outline, relate, research, separate, experiment, question, test,</p>
<p><b>APPLYING</b></p> <p>Can the student use the information in a new way</p>	<p>Apply, change, choose, compute, dramatise, implement, interview, prepare, produce, role play, select, show, transfer, use, demonstrate, illustrate, interpret, operate, sketch, solve, write,</p>
<p><b>UNDERSTANDING</b></p> <p>Can the student comprehend ideas or concepts?</p>	<p>Classify, compare, exemplify, conclude, demonstrate, discuss, explain, identify, illustrate, interpret, paraphrase, predict, report, translate, describe, classify,</p>
<p><b>REMEMBERING</b></p> <p>Can the student recall or remember the information?</p>	<p>Define, describe, draw, find, identify, label, list, match, name, quote, recall, recite, tell, write, duplicate, memorise, recall, repeat, reproduce, state,</p>

## Appendices # 2: 21<sup>ST</sup> CENTURY SKILLS

<p>WAYS OF THINKING</p>	<p>Creativity and innovation</p> <ul style="list-style-type: none"> <li>• Think creatively</li> <li>• Work creatively with others</li> <li>• Implement innovations</li> </ul> <p>Critical thinking, problem solving and decision making</p> <ul style="list-style-type: none"> <li>• Reason effectively and evaluate evidence</li> <li>• Solve problems</li> <li>• Articulate findings</li> </ul> <p>Learning to learn and meta-cognition</p> <ul style="list-style-type: none"> <li>• Self-motivation</li> <li>• Positive appreciation of learning</li> <li>• Adaptability and flexibility</li> </ul>
<p>WAYS OF WORKING</p>	<p>Communication</p> <ul style="list-style-type: none"> <li>• Competency in written and oral language</li> <li>• Open minded and preparedness to listen</li> <li>• Sensitivity to cultural differences</li> </ul> <p>Collaboration and teamwork</p> <ul style="list-style-type: none"> <li>• Interact effectively with others</li> <li>• Work effectively in diverse teams</li> <li>• Prioritise, plan and manage projects</li> </ul>

<p>TOOLS FOR WORKING</p>	<p>Information literacy</p> <ul style="list-style-type: none"> <li>• Access and evaluate information</li> <li>• Use and manage information</li> <li>• Apply technology effectively</li> </ul> <p>ICT literacy</p> <ul style="list-style-type: none"> <li>• Open to new ideas, information, tools and ways of thinking</li> <li>• Use ICT accurately, creatively, ethically and legally</li> <li>• Be aware of cultural and social differences</li> <li>• Apply technology appropriately and effectively</li> </ul>
<p>LIVING IN THE WORLD</p>	<p>Citizenship – global and local</p> <ul style="list-style-type: none"> <li>• Awareness and understanding of rights and responsibilities as a global citizen</li> <li>• Preparedness to participate in community activities</li> <li>• Respect the values and privacy of others</li> </ul> <p>Personal and social responsibility</p> <ul style="list-style-type: none"> <li>• Communicate constructively in different social situations</li> <li>• Understand different viewpoints and perspectives</li> </ul> <p>Life and career</p> <ul style="list-style-type: none"> <li>• Adapt to change</li> <li>• Manage goals and time</li> <li>• Be a self-directed learner</li> <li>• Interact effectively with others</li> </ul>

## Appendices # 3: *TEACHING AND LEARNING STRATEGIES*

STRATEGY	TEACHER	STUDENTS
<p>CASE STUDY</p> <p>Used to extend students' understanding of real life issues</p>	<p>Provide students with case studies related to the topic of the lesson and allow them to analyse and evaluate.</p>	<p>Study the case study and identify the problem addressed. They analyse the problem and suggest solutions supported by conceptual justifications and make presentations. This enriches the students' existing knowledge of the topic.</p>

## Textile Technology

<p><b>DEBATE</b></p> <p>A method used to increase students' interest, involvement and participation</p>	<p>Provide the topic or question of debate on current issues affecting a bigger population, clearly outlining the expectations of the debate. Explain the steps involved in debating and set a criteria/standard to be achieved.</p>	<p>Conduct researches to gather supporting evidence about the selected topic and summarising the points.</p> <p>They are engaged in collaborative learning by delegating and sharing tasks to group members.</p> <p>When debating, they improve their communication skills.</p>
<p><b>DISCUSSION</b></p> <p>The purpose of discussion is to educate students about the process of group thinking and collective decision.</p>	<p>The teacher opens a discussion on certain topic by asking essential questions.</p> <p>During the discussion, the teacher reinforces and emphasises on important points from students responses. Teacher guide the direction to motivate students to explore the topic in greater depth and the topic in more detail.</p> <p>Use how and why follow-up questions to guide the discussion toward the objective of helping students understand the subject and summarise main ideas.</p>	<p>Students ponder over the question and answer by providing ideas, experiences and examples.</p> <p>Students participate in the discussion by exchanging ideas with others.</p>
<p><b>GAMES AND SIMULATIONS</b></p> <p>Encourages motivation and creates a spirit of competition and challenge to enhance learning</p>	<p>Being creative and select appropriate games for the topic of the lesson.</p> <p>Give clear instructions and guidelines. The game selected must be fun and build a competitive spirit to score more than their peers to win small prizes.</p>	<p>Go into groups and organize.</p> <p>Follow the instructions and play to win</p>

## Textile Technology

<p><b>OBSERVATION</b></p> <p>Method used to allow students to work independently to discover why and how things happen as the way they are. It builds curiosity.</p>	<p>Give instructions and monitor every activity students do</p>	<p>Students possess instinct of curiosity and are curious to see the things for themselves and particularly those things which exist around them. A thing observed and a fact discovered by the child for himself becomes a part of mental life of the child. It is certainly more valuable to him than the same fact or facts learnt from the teacher or a book.</p> <p>Students</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Observe and ask essential questions</li> <li><input type="checkbox"/> Record</li> <li><input type="checkbox"/> Interpret</li> </ul>
<p><b>PEER TEACHING &amp; LEARNING</b></p> <p>(power point presentations, pair learning)</p> <p>Students teach each other using different ways to learn from each other. It encourages; team work, develops confidence, feel free to ask questions, improves communication skills and most importantly develop the spirit of inquiry.</p>	<p>Distribute topics to groups to research and teach others in the classroom.</p> <p>Go through the basics of how to present their peer teaching.</p>	<p>Go into their established working groups.</p> <p>Develop a plan for the topic.</p> <p>Each group member is allocated a task to work on.</p> <p>Research and collect information about the topic allocated to the group. Outline the important points from the research and present their findings in class.</p>
<p><b>PERFORMANCE RELATED TASKS</b></p> <p>(dramatization, song/lyrics, wall magazines)</p> <p>Encourages creativity and take on the overarching ideas of the topic and are able to recall them at a later date</p>	<p>Students are given the opportunity to perform the using the main ideas of a topic.</p> <p>Provide the guidelines, expectations and the set criteria</p>	<p>Go into their established working groups.</p> <p>Being creative and create dramas, songs/lyrics or wall magazines in line with the topic.</p>



## Textile Technology

<p>PROJECT (individual/group)</p> <p>Helps students complete tasks individually or collectively</p>	<p>Teacher outline the steps and procedures of how to do and the criteria</p>	<p>Students are involved in investigations and finding solutions to problems to real life experiences. They carry out researches to analyse the causes and effects of problems to provide achievable solutions. Students carefully utilize the problem-solving approach to complete projects.</p>
<p>USE MEDIA &amp; TECHNOLOGY to teach and generate engagement <u>depending on the age of the students</u></p>	<p>Show a full movie, an animated one, a few episodes' from documentaries, you tube movies and others depending on the lesson.</p> <p>Provide questions for students to answer before viewing.</p>	<p>Viewing can provoke questions, debates, critical thinking, emotion and reaction.</p> <p>After viewing, students engage in critical thinking and debate.</p>

### **Appendices # 4: *Samples of Student Response System Applications***

These are web based apps that work with a multitude of devices and operating systems. Here are the 4 best student response systems that interface with multiple devices.

#### **1. Kahoot**

Kahoot is a utility that allows teachers to create quizzes and surveys, and then send them to students. Teachers may allow students an unlimited amount of time to respond to questions, or they may set a time limit on each questions. Points are awarded to students both for correct answers and for responding quickly with those correct responses. Teachers can track students as they make progress.

#### **2. Socrative**

Socrative works excellently both for students working on their own or for students who are collaborating with one another. Socrative offers several different ways for instructors to engage their students. There are space races in which students can compete in teams or as individuals to answer questions as quickly and accurately as possible. Polls allow instructors to receive student feedback.

#### **3. Infuse Learning**

Infuse learning is (was!) an excellent student response system for teachers who must support students with a variety of learning styles. With infusion a teacher can create questions, quizzes and writing prompts and send them to students who are participating in virtual classrooms or in an online learning program. What makes Infuse Learning unique is that it allows the teacher to give the student multiple response options.

#### **4. Verso**

This is a free utility that teachers can use to create virtual classrooms. Verso works with the teacher's Google Drive account. This means that links, files, videos, images, and documents from the instructor's Google Drive can be added to the Verso classroom for students to access. Students who enter the classroom will be shown new items that have been added to the classroom since their last visit.

**<https://www.emergingedtech.com/2015/09/top-5-multi-platform-student-response-systems/>**

## Appendices # 5: Assessment Strategies

### 1. Reflective writing

Give your students journals and ask them to reflect on the day's lesson by writing about what they learned as well as what they found challenging. Encourage them to explain how they might apply the lesson or skill they learned in real life. You can then review their entries to determine your students' level of understanding and identify areas to focus on.

### 2. Choral responses

A choral response is a quick and easy way to assess your students' understanding of a concept they just learned. Ask the entire class a question, and evaluate their level of understanding based on the number and type of responses you receive. This exercise also encourages all students to participate in the question-and-answer process.

### 3. Presentations

Have students give short presentations to you or the class sharing what they have learned about a particular topic. You could also ask them to summarize the lesson's most important concepts. Rather than grading the presentations, use them as an assessment tool to determine students' level of understanding.

### 4. Four corners

Four corners is an engaging assessment strategy that gets students moving around the room. Label each corner of the room with a different level of comprehension: strongly agree, agree, disagree and strongly disagree. State facts or details about the current lesson, and ask them to stand in the corner of the room that represents their response. Encourage students to explain why they chose a certain response so that you can make decisions about future lessons.

### 5. Lists

Midway through a lesson, pause and ask your students to list a certain number of things they've learned. Review their lists to determine if students are at the appropriate level of understanding. You can also use these lists to identify misunderstandings and areas you need to focus on more.

### 6. One-minute response

Ask your class a question about a topic, and give them one minute to write a response. Encourage them to focus on their ideas and information rather than correct spelling, grammar and writing conventions. Alternatively, you can ask your students to write a one-sentence summary of what they have learned about that topic. Look for detail and understanding in their responses

### 7. Think-pair-share

Think-pair-share is useful for encouraging students to think critically about a topic and allowing you to check for understanding. Prompt students with questions about topics

like what they learned from a lesson or how they connect with what you discussed in class today. Pair them with another student, and have them discuss their ideas. Reconvene as a group, and call on different pairs to ask them to share their thoughts.

### 8. Socratic seminar

Hosting a Socratic seminar empowers students to facilitate their own discussions to develop their ideas further. Students ask each other questions about a certain topic, text or starting question. This prompts more questions and comments to enhance their understanding of the main topic.

### 9. ABC brainstorming

ABC brainstorming challenges students to create a list of all the letters in the alphabet and write down something that begins with each letter that relates to the unit. This can be an effective individual, pair or group activity. Reviewing these lists may help you learn what students understand and what requires more attention, allowing you to modify your lesson plans as needed.

### 10. 3-2-1

This is another technique to encourage students to reflect on the lessons. It's particularly useful to check for understanding at the end of or near the end of lessons. While the format may vary, this strategy typically involves asking students to write down:

- Three things they learned
- Two things they want to learn more about
- One question they have about

### 11. Concept maps

Concept maps are useful for helping students visualize what they understand about a topic. Students can create individual concept maps, or this may be an activity you complete as an entire class. Start with the main topic or idea in the middle of the paper, then draw lines out to circles that discuss information related to it. Depending on the subject and the age of the students, you may also ask them to draw lines connecting similar ideas.

### 12. 30-second share

During a 30-second share, each student discusses something they learned during the lesson. Things like what the student discusses, what language they use and how their response connects to the learning targets can help you assess their understanding.

### 13. Graffiti wall

Creating a graffiti wall is another assessment strategy that may be useful for working with visual learners. Cover one of your classroom walls with a large piece of paper, and invite students to write or draw on it to show what they learned about a topic. Using this activity allows you to identify what students understand and what may require additional lessons for them to master. Consider completing this activity during the middle of a unit and leaving the wall up for them to continue to add to as they learn more.

**Reference sources:** <https://www.indeed.com/career-advice/career-development/assessment-strategies>

**Appendices # 6: LESSON PLAN TEMPLATE**

**Strand:** .....

**Unit:** .....

**Content Standard:** .....

**Benchmark:** .....

**Topic :** .....

**Lesson Topic:** .....

**Lesson Objective (s):** By the end of the lesson, students will be able to;

.....

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**Essential Questions:**

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**Knowledge:**

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**Skill(s):**

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**Values:**

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**Attitudes:**

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.....

## Appendices # 7: A Sample Scoring Rubric

Criteria	Achieved 3	Progressing 2	Novice 1	Scoring
Collecting Data for Electronic Stock Taking System (ESTS)	Well organized paper with clarity identifying, classifying and enumerating the different items.	Organized paper with some clarity identifying, classifying and enumerating the different items.	Poorly organized paper that lacked clarity identifying, classifying and enumerating the different items.	2/3
Development of ESTS	Collaboratively organise and categorise data of different items. Illustrate the most likeable way the Data can displayed in the MS Excel Application format.	Display some collaboration to organise and categorise data of different items. Illustrate a likeable way the Data can displayed in the MS Excel Application format.	Display very little collaboration to organise and categorise data of different items. Illustrate a way the Data can displayed in the MS Excel Application format.	1/3
Content and Formulae Functions in ESTS	Typed accurately all the appropriate contents for each columns and typed in the all correct formulae function symbols for the 'SUMrange function' and 'SUMIF function' in all their correct MS Excel cell references	Typed most contents in their appropriate columns and typed in most of the correct formulae function symbols for the 'SUMrange function' and 'SUMIF function' in some of their MS Excel cell references	Typed very few contents in their appropriate columns and typed in very few formulae function symbols for the 'SUMrange function' and 'SUMIF function' in very few of their MS Excel cell references	3/3
Presentation of ESTS	Displayed time consciousness with adequate delivery skills (posture, language), expected communication skills and social skill (relativity and connectivity)	Mostly time consciousness with some adequate delivery skills (posture, language), some expected communication skills and some social skill (relativity and connectivity) displayed	Very little time consciousness with little adequate delivery skills (posture, language), little expected communication skills and little social skill (relativity and connectivity) displayed	3/3

**Annotation 1**  
A statement (descriptors) describing the expected the level of competency for each prescribed criteria

**Annotation 2**  
Rating scales includes either numerical or descriptive labels

**Annotation 3**  
Indicators or qualifiers ensures that the levels reflect variance in quality

**Annotation 4**  
Shaded descriptors indicating Student's Marks for the corresponding criteria

## Textile Technology

Portfolio of ESTS Developments and MS Excel ESTS – The Product	A comprehensive portfolio with all the Steps in planning, designing and developing the ESTS with a complete and functional MS Excel of the ESTS.	A portfolio with most of the Steps in planning, designing and developing the ESTS with a complete and malfunctioned MS Excel of ESTS.	A portfolio with very few of the Steps in planning, designing and developing the ESTS with an incomplete and malfunctioned MS Excel of ESTS.	3/3
				12/15

### Appendices # 8: *Steps in Developing a Rubric*

1. List the Main parts of the Unit of Work for the Rubric.
2. Derive the purpose of Assessing the TASK in the Topic (Benchmark).
3. List the Lesson Title and Objective of the assessment task.
4. Organise how the Assessment Task would be done: Individually or in Groups.
5. Derive the Performance Standard from the Benchmark.
6. Describe the Minor Tasks under the Main Task Description .
7. Rephrase the Minor Tasks to create the Categories.
8. List Task Descriptions and Categorise them.
9. Unpack the Essential KSAV to be assessed from Task Descriptions.
10. Design the Rubric type and decide the point-scale rubric for the assessment task.
11. Re-word the Task Descriptions including KSAVs and create the Descriptors.
12. Use Appropriate Qualifiers for Descriptors for each Achievement Level .

### Appendices # 9: *Performance Assessment Template*

Subject: \_\_\_\_\_

Strand: \_\_\_\_\_

Unit: \_\_\_\_\_

Content Standard: \_\_\_\_\_

Benchmark: \_\_\_\_\_

Topic: \_\_\_\_\_

Learning Objective: \_\_\_\_\_

Purpose of Assessment: \_\_\_\_\_

Assessment Strategy: \_\_\_\_\_



## Textile Technology

Duration: \_\_\_\_\_

Time/Date of Administration: \_\_\_\_\_

Due Date/Time: \_\_\_\_\_

Performance Standard: \_\_\_\_\_

Performance Tasks;

Performance Assessment Criteria: \_\_\_\_\_

Assessment Scoring: \_\_\_\_\_

Scoring Tool: \_\_\_\_\_

## Appendices # 10: *Project Rubric*

Category	Advanced	Satisfactory	Partial Credit	Unacceptable
	9-10 points	7-8 points	1-6 points	0 points
Quality/ Workman- ship	Maximum effort was put forth to complete the project in a professional manner. Project demonstrates a high degree of quality and attention to detail. Workmanship is excellent.	Some effort was made to complete the project to a level that was sufficient for grading, but does not meet a professional level of quality or appearance. Workmanship is of acceptable quality.	Minimal effort was made to complete the project and the quality and workmanship is sub-par, but still meets the minimal standard.	Little or no effort was made to produce a quality project.  Project obviously does not meet minimal standards.
Creativity/ Design	Project reflects many fundamental elements of design and creativity.  Project demonstrates an advanced understanding of creative thinking and attention to aesthetics and presentation.	Project reflects some of the elements of design and creativity, but lacks attention to aesthetics and presentation.	Project was completed, but does not reflect the acceptable levels of design and creativity.  Effort was minimal and project is mediocre at best.	Project was not completed on time or reflects little or no effort to complete assignment at an acceptable level.
Function- ality	Project meets or exceeds the design requirements of purpose and functionality.  All elements of the design have been met and the project does what it was designed to do.	Project meets some of the design requirements of purpose and functionality.  Not all elements of the design have been met, but the project does what it was designed to do.	Project is somewhat functional, but reflects minimal effort. It is intermittent and doesn't always do what it was designed to do.	Project does not work and demonstrates a lack of effort or understanding of the basic elements of functionality and purpose.

## Textile Technology

Design Process	Project reflects a clear understanding and application of design process including evidence of research, brainstorming, design and problem solving, prototyping and testing.	Project reflects some understanding and application of accepted design loop principles and sequence including evidence of research, brainstorming, design and problem solving, prototyping and testing.	Project reflects minimal understanding and application of design process.	Project does not show evidence that design process was used.  Project does not meet accepted levels of design criteria.
Criteria/ Constraints	Project was completed with all constraints and criteria met or exceeded.  Reflects attention to detail and quality.	Project was completed with some of the constraints and criteria met.  Reflects some attention to detail, but quality is minimal.	Project was completed with a few of the constraints and criteria met.  Reflects minimal effort and lacks detail or quality.	Project was not completed and does not reflect the adherence to the constraints or criteria.
Time Management	Project completed and turned in on time.  Student worked diligently when project time was available.  Student was on task most of the time.	Project was completed, but had notable errors.  Student utilised project time somewhat efficiently, but spent time socialising.  Student was on task 70% - 80% of the time.	Project was not turned in on time and/or complete.  The student was on task less than 60% of the time.	Project was not turned in on time and was not completed.  Student wasted project time and at times was disruptive to others.
Resource Management	Always takes responsibility for use and care of all building components and resources.  Always returns building components and materials to proper storage compartments.	Consistently takes responsibility for use and care of building components and resources.  Somewhat consistent in returning building components to proper storage compartments.	Sometimes takes responsibility for use and care of building components and resources.  Inconsistent in returning building components to proper storage compartments.	Does not take responsibility for the proper use and care of building components and resources.  Is careless and does not practice proper storage and safety practices.

## Textile Technology

Teamwork	Notable teamwork shown with a determination to participate/contribute to team success. Completed required individual tasks that contributed to the success of the team.	Teamwork was noted, but was sometimes off task or working on non-related tasks. Contributed to the success of the team, but could have been more engaged to complete tasks sooner.	Notable time off-task with minimal effort given for team success, or did the project alone without relying on others to do their share of the project.	Was not a team player.  Either took over project completely, or did not engage in team direction or plans.
Writing/ Reflection	Writing/reflection is very well organised and explained. Student includes all details in design process.  Document has almost no grammatical errors.	Writing/reflection is somewhat organised and explained. Student includes most details in design process.  Document has very few grammatical errors.	Writing/reflection is not organised and explained. Student includes only a few details in design process.  Document has many grammatical errors.	Writing/reflection is incomplete or not turned in. Student includes no details in design process.  Document has many grammatical errors.
Presentation	Presentation was well organised and presented in a logical sequence.  Presentation reflects a full knowledge of the topic with clear answers and explanations to questions asked.	Presentation was fairly organised and most information presented in a logical sequence.  Answers to questions were vague or lacked clarity or accuracy.	Presentation was unorganised and lacked a logical sequence.  Presentation reflected little attention to detail. Answers to questions were inaccurate and confusing.	Presentation was not acceptable and reflects a lack of organisation or knowledge of the topic.  Presentation shows little effort to meet expectations.

### Appendix # 11:

This extra content knowledge that teachers will need to enhance the knowledge on Fibres and fabrics in the benchmarks of the first unit of this strand

## 10 Differences Between Fibre and Fabric

Fibre refers to the individual threads or strands that are used to make a yarn, which is then woven into a fabric. Fabrics, on the other hand, are the finished product that is created by weaving, knitting, or otherwise joining fibers together.

So the fiber can be compared to a brick used in the construction of a building, and the fabric is the building itself. The properties of a textile, such as strength, durability, and appearance, are determined by the type and quality of the fibers used. In this article, we discuss 10 differences between fibre and fabric.



### Difference between fibre and fabric

### Difference between fibre and fabrics:

Fibre refers to the individual threads or strands that is used to make fabrics. Fabrics, on the other hand, are the finished product that is created by weaving, knitting, or otherwise joining fibres together.

Fibres can be natural as well as synthetic. For example, fibres such as cotton, wool, and silk are natural, and fibres such as polyester and nylon are synthetic. They can also be blended together to create different types of fabrics. Fabrics, on the other hand, can be used to make a wide range of products, including clothing, blankets, and upholstery. They can also have different properties, such as being lightweight, stretchy, or waterproof.

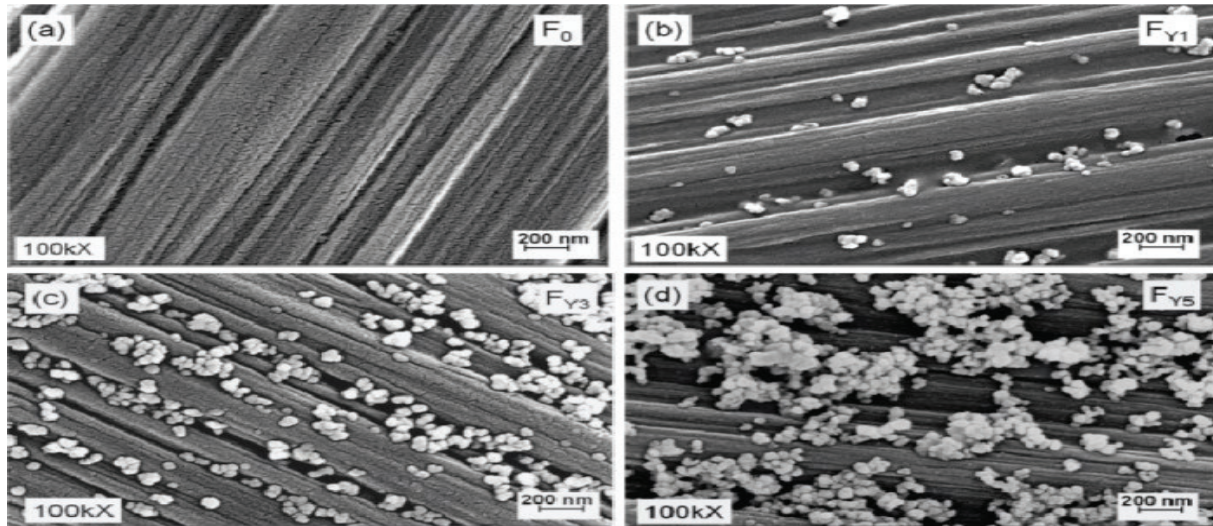
In short, fibres are the raw materials that are used to make fabrics, and fabrics are the finished products that are created from those fibres. In the below table, we have tried to summarize the 10 differences between fibre and fabric based on different parameters like definition, hierarchy, origin, examples, production, properties, uses, durability, and cost.

Differentiation	Fibre	Fabric
<b>Definition</b>	Fibre refers to the raw materials used to make fabric, such as cotton fibre is used to make cotton fabric, wool fibre is used to make woolen fabric, silk fibres to make silk fabrics, etc	Fabric refers to the finished product made from these fibers, such as cotton T-shirts, <u>wool sweaters</u> , and <u>silk scarves</u> .
<b>Hierarchy</b>	The raw material used to make textiles.	The finished product is made from fibres.
<b>Origin</b>	Can be synthetic or natural.	Can be a combination of synthetic and natural or pure.
<b>Examples</b>	Examples include cotton, wool, silk, etc	Examples include cotton shirts, wool suits, silk curtains
<b>Processing</b>	Can be spun into yarn or thread.	Can be woven or knitted into various textures and patterns
<b>Production</b>	Fibre is produced through natural processes such as growing cotton plants or raising sheep for wool.	Fabric production involves spinning the fibers into yarn and then weaving or knitting the yarn into fabric.
<b>Properties</b>	Fibers have different properties such as absorbency, strength, and elasticity.	The property of the fiber affects the properties of the fabric, such as how well it absorbs moisture or how stretchy it is.
<b>Uses</b>	Fibres are used in a wide range of products, from clothing and textiles to industrial materials such as rope and insulation.	Fabrics are used primarily in clothing and home furnishings, but also in industrial and medical applications.
<b>Durability</b>	Fibres are generally more durable than fabrics as they can withstand more wear and tear.	Fabrics made from natural fibers such as cotton and linen are more durable than those made from synthetic fibers such as polyester.
<b>Cost</b>	Fibres are generally cheaper than fabrics as they are the raw materials used to make the fabric.	However, the cost of fabric can depend on the type of fiber used, the quality of the yarn, and the type of fabric.

## Difference between fibre and fabric

### Research articles to understand the difference between fibre and fabrics

In this article titled "[Strengthening of a Fibre-Matrix Interface: A Novel Method Using Nanoparticles](#)" authors have tried to improve the properties of a carbon fabric made from carbon nanofibers by adding Ytterbium nanoparticles on the surface of the individual fibres. They used electron microscopy to view the increased roughness of the fiber surface and the adhesion of NPs on the fiber surface.



\* *Field emission scanning electron microscope images of a simple carbon fibre fabric and a nanoparticle modified carbon fibre fabric.*

### Is a yarn similar to a fibre?

A yarn is a long, thin strand (or thread) consisting of many fibres that can be woven into fabric. So, yarn is made up of many fibres, and fabric is made up of many yarns. Ply is a term used to describe the number of threads or yarns that are twisted together to create a single strand of thread or yarn.

And Denier is used to measuring the fineness of a fibre or yarn, which is determined by the weight of the fibre or yarn per unit length. A warp in a fabric is a set of threads or yarns that run lengthwise in a fabric and are interlaced with the weft to create a woven fabric. A weft in a fabric is a set of threads or yarns that run width wise in a fabric and are interlaced with the warp to create a woven fabric.

**Note:** Your Assessment Plan must include the National Department of Education Observable events, Commemorated events and Official Public Holidays or any calendar dates that may disrupt schooling, to help you plan your termly assessment plans.





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