GHANA EDUCATION SERVICE

(MINISTRY OF EDUCATION)

REPUBLIC OF GHANA

CAREER TECHNOLOGY

COMMON CORE PROGRAMME CURRICULUM

(BASIC 7 - 10)

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NaCCA NATIONAL COUNCIL FOR CURRICULUM & ASSESSMENT OF MINISTRY OF EDUCATION

Career Technology Curriculum for B7- B10

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INTRODUCTION

In the first four years of high school education, learners are expected to take a Common Core Programme (CCP) that emphasizes a set of high, internationally-benchmarked career and tertiary education ready standards. Learners need to acquire these for post-secondary education, the workplace or both. The standards articulate what learners are expected to know, understand and be able to do by focusing on their social, emotional, cognitive and physical development. The (CCP) runs from Basic 7 through to Basic 10.

The common core attributes of the learner, which describe the essential outcomes in the three domains of learning (i.e. cognitive, psychomotor and affective), are at the centre of the CCP (see Figure 1). Inspired by the values which are important to the Ghanaian society, the CCP provides an education of the heart, mind and hands in relation to the learner's lifetime values, well-being, physical development, metacognition and problem-solving. Ultimately, this will produce character-minded learners who can play active roles in dealing with the increasing challenges facing Ghana and the global society.

The features that shape the common core programme are shown in Figure 1. These are

- learning and teaching approaches – the core competencies, 4Rs and pedagogical approaches
- learning context – engagement service and project
- learning areas – mathematics, science, computing, language and literacy, career technology, social studies, physical and health education, career technology and design and religious and moral education.

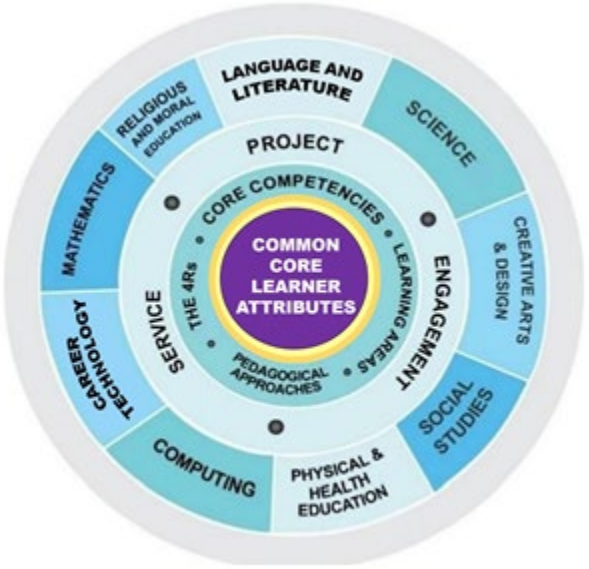

Figure 1: Features of the CCP

These are elaborated subsequently:

Learning and teaching approaches

- *The core competences:* Describe the relevant *global skills for learning* that the CCP helps learners to develop in addition to the 4Rs. The global skills for learning allow learners to become critical thinkers, problem-solvers, creators, innovators, good communicators, collaborators, digitally literate, culturally and globally sensitive citizens who are life-long learners that have keen interest in their personal development.
- *Pedagogical approaches:* The CCP emphasises creative and inclusive pedagogies that are anchored on authentic and enquiry-based learning, collaborative and cooperative learning, differentiated learning, and holistic learning as well as cross disciplinary learning.
- *The 4Rs across the Curriculum:* The 4Rs refer to Reading, wRiting, aRithmetic and

cReativity, which all learners must become fluent in.

Learning context

The CCP places emphasis on engagement of learners in the classroom activities, projects (in and outside the classrooms). These projects can involve individual or group tasks which all learners are required to complete by the end of Basic 10. The CCP project provides learners with contexts to demonstrate creativity and inventiveness in various areas of human endeavour. Community service offers opportunity for learners to nurture, love and care for their community and solve problems in the community.

Learning Areas

The CCP comprises the following subjects:

1. Languages (English, Ghanaian Languages, French, Arabic)
2. Mathematics
3. Science
4. Creative Arts and Design
5. Career Technology
6. Social Studies
7. Computing
8. Religious and Moral Education (RME)
9. Physical and Health Education

This document sets out the standards for learning Career Technology in the Common Core Programme (CCP). The standards in the document are posited in the expectation that CCP (B7 – B10) will offer quality education for all types of learners. The design of this curriculum is based on the features of the CCP as shown in Figure 1. It emphasizes a set of high internationally-benchmarked career and tertiary education ready standards. Learners need to acquire these competencies in Career Technology for post-secondary education, the workplace training or both. The curriculum has been designed to be user friendly because it provides a detailed preamble that covers the rationale, philosophy, aims, profile of expected learning behaviours (i.e. knowledge, skills, attitudes and values), pedagogical approaches, core competencies and the 4Rs, assessment practices and instructional expectations.

ASSESSMENT IN THE CCP

Assessment is a process of collecting and evaluating information about learners and using the information to make decisions to improve their learning. Assessment may be formative, summative, diagnostic, or evaluative depending on its purpose. It is integral to the teaching-learning process, promotes student learning and improves instruction. In CCP, it is suggested that assessment involves assessment for learning, assessment of learning and assessment as learning, which are described in the subsequent paragraphs.

In Career Technology, it must be emphasized that all forms of assessment are based on the domains of learning. In developing assessment procedures, try to select indicators in such a way that you will be able to assess a representative sample from a given strand. Each indicator in the curriculum is considered a criterion to be achieved by the learners. When you develop assessment items or questions that are based on a representative sample of the indicators taught, the assessment is referred to as a "Criterion-Referenced Assessment". In many cases, a teacher cannot assess all the indicators taught in a term or year. The assessment procedure you use i.e. class assessments, homework, projects and group work presentations must be developed in such a way that the various procedures complement each other to provide a representative sample of indicators taught over a period of time.

Assessment for Learning (AfL)

Assessment for Learning (AfL) is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learner is in their learning, where they need to be (the desired goal), and how best to get them there. AfL is one of the most suitable methods for improving learning and raising standards (Black and Wiliam, 1998)[1]. Assessment for Learning also refers to all their activities undertaken by teachers and/or by their learners, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. AfL can be achieved through processes such as sharing criteria with learners, effective questioning, and feedback.

AfL, therefore, provides timely feedback to ensure individual learners are assisted during the teaching and learning process using various strategies and questioning to measure the learning that has actually taken place. It is a continuous process that happens at all stages of the instructional process to monitor the progress of a learner and to offer feedback or change teaching strategies to achieve [performance standards of a lesson.

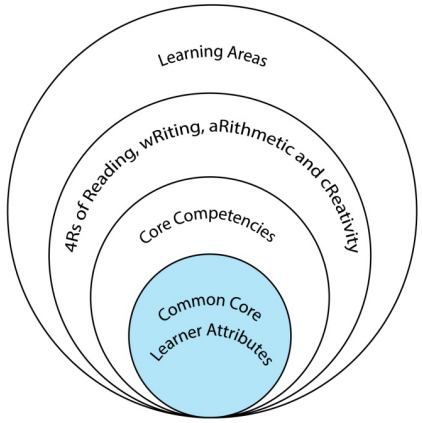

Figure 2. Essential Assessment Features

Assessment of Learning (AoL)

Assessment of learning provides a picture of the achieved standards of the teacher and performance of students at the terminal stage of the learning process. This information provides data for accountability and educational decisions such as grading, selection and placement, promotion and certification. Through AoL, stakeholders such as parents and guardians are informed about the extent students have attained expected learning outcomes at the end of their grade or program.

Assessment as Learning (AaL)

Assessment as Learning develops and supports students' sense of ownership and efficacy about their learning through reflective practices. This form of self-assessment helps in building the competencies of learners to achieve deeper understanding of what their own learning and what they are taught.

[1] Paul Black & Dylan Wiliam (1998) Assessment and Classroom Learning, Assessment in Education: Principles, Policy & Practice, 5:1, 7-74, DOI: 10.1080/0969595980050102

What do we assess?

Emphasis in assessment in the CCP is on the Common Core Learner Attributes, which are essential outcomes in the three domains of learning (i.e. cognitive, psychomotor and affective).

Knowledge and skills with emphasis on the 4Rs in the learning areas

Core competencies with emphasis on attitudes and values developed through the learning and its context as well as the pedagogical approaches.

The Process is illustrated diagrammatically in Figure 2.

How do we monitor progress?

School Based Assessments (SBA) covers all forms/modes of assessment including AfL, AaL and AoL (see Table 1), that can be undertaken by any school-level actor (learner, teacher, head teacher) to monitor the learner's achievement over a period of time. Data collection and keeping records of the data are central to the conduct of SBA.

Table 1 Modes of Assessment

Assessment for Learning	Assessment of Learning	Assessment as Learning
Class exercises	Class Assessment Task (CAT)	Portfolio
Quizzes	End of term	Journal entries
Class tests (written, oral, aural and/or practical)	End of year	Project work
Class Assessment Task (CAT)		Checklist
		Questionnaire

The following are samples of relevant records that can be kept on the student's learning.

- Student's Progress Record (Cumulative Record)
- Student's Report Card
- School Based Assessment Termly Recording Register

Details of guidelines on SBA can be found in *the National Pre-tertiary Learning Assessment Framework (NPLAF)* document (Ministry of Education, 2020a)[2] and *the School-Based Assessment Guidelines* (Ministry of Education, 2020b)[3].

Reporting School-Based Assessment (SBA) in the CCP

The CCP uses a criterion-referenced model of presenting and reporting school-based assessment data. School-based assessment throughout the four-year duration of CCP, is done against criteria linked to performance standards and not against the work of other learners. The CCP provides levels of proficiency to be attained and descriptors for all grade levels of the programme (see Table 2). These levels and descriptors cannot be changed by individual schools and are, therefore, common to all learners as well as learning areas nationwide. For each assessment criterion or (benchmark for the level of proficiency), a number of descriptors are defined as shown in Table 2.

Table 2: Benchmarks, levels of proficiency and the grade level descriptors

Level of Proficiency	Benchmark	Grade Level Descriptor
1: Highly proficient (HP)	80% +	Learner shows high level of proficiency in knowledge, skills and values and can transfer them automatically and flexibly through authentic performance tasks.
2: Proficient (P)	68-79%	Learner demonstrates sufficient level of proficient knowledge, skills and core understanding; can transfer them independently through authentic performance tasks
3: Approaching Proficiency (AP)	54-67%	Learner is approaching proficiency in terms of knowledge, skills and values with little guidance and can transfer understanding through authentic performance tasks
4: Developing (D)	40-53%	Learner demonstrates developing level of knowledge, skills and values but needs help throughout the performance of authentic tasks
5: Emerging (E)	39% and below	Learner is emerging with minimal understanding in terms of knowledge, skills, and values but needs a lot of help.

The grading system presented, shows the letter grade system and equivalent grade boundaries. In assigning grades to pupils' test results, or any form of evaluation, the above grade boundaries and the descriptors may be applied. The descriptors (Highly Proficient [HP], Proficient [P], Approaching Proficiency [AP], Developing [D], Emerging [E]), indicate the meaning of each grade.

[2] Ministry of Education (2020a). National Pre-tertiary Learning Assessment Framework (NPLAF). Accra: Ministry of Education.

[3] Ministry of Education (2020b). School-Based Assessment Guidelines. Accra: Ministry of Education.

In addition to the school-based assessment (SBA), a national standards assessment test is conducted in Basic 8 to provide national level indicators on learners' achievement.

CREATIVE PEDAGOGICAL APPROACHES

The CCP emphasizes creative pedagogies that are anchored on authentic and enquiry-based learning, collaborative and cooperative learning, differentiated learning, and holistic learning, cross disciplinary learning (i.e. the 4Rs across the Curriculum) as well as developing the core competencies. This section describes some of the creative pedagogical approaches required for the CCP.

Core Competencies

The core competencies describe a body of skills that teachers at the basic level should seek to develop in their learners. The competencies describe a connected body of core skills that are acquired throughout the processes of teaching and learning. They are the relevant global skills for learning that allow learners to develop, in addition to the 4Rs, to become critical thinkers, problem-solvers, creators, innovators, good communicators, collaborators, culturally identified individuals, digitally literate and global citizens who are have keen interest in their personal development. In using this curriculum, we hope the core competencies will be developed in learners to help them develop our country, Ghana. These competencies include communication skills, problem solving skills, critical thinking and innovative skills, digital literacy, team work and collaboration.

For effective lesson planning for teaching, learning and assessment, it is suggested that teachers refer to Appendix A for details of the components of the core competencies. These details comprise the unpacked skills such as: listening, presenting and team work for collaboration.

INTRODUCTION

The programme Career Technology, is the new image which projects Technical and Vocational related subjects with the intention to make specific subjects more achievement focused and attractive to the up- and-coming Ghanaian students based on the effective and efficient delivery of all the courses to ensure in-depth knowledge attitude and skills acquisition to facilitate the teaching of Career Technology lessons competently. The Curriculum contains the necessary contents to ensure its successful implementation. The description and explanation of the Strands; Sub-strands; Content standards, Learning Indicators and Exemplars as the key features, words and concepts are to enhance clear understanding of the Curriculum and its facilitation in handling the teaching and learning of Career Technology progressively.

The Career Technology Curriculum also involves the facilitation and harmonization of learning in the classroom and workshops, worksites, laboratories, and communities to consolidate effective career skills acquisition. In this regard, the foundations for discovering and understanding the science and technological world around have been emphasized, laying the grounds for Career Technology and technology- related studies at higher levels of education. The Curriculum also describes how Learners should be encouraged to use Career Technology subjects to explain what is occurring, predict how things will behave and analyze the causes and origin of things, and how things are created in our environment. The Career Technology Curriculum also considers the

expected outcomes of education for learners at the Basic level of education to enable them progress to higher level. On a general outlook, Career Technology contains developmental attitudes to ensure that persons who study the subject are scientifically and technologically literate for sustainable development. Career Technology as a Technical and Vocational subject will provide the needed background for hands-on and minds-on training for learners to find as a motivation to adopt Career Technology as a culture.

RATIONALE

The Career Technology programme is intended to introduce a new dimension of approach to the presentation of Technical and Vocational inclined courses for effective and efficient acquisition of Knowledge, Skills and Attitude to ensure competent training of students for the various identifiable areas from Basic 7 to Basic 10 levels of education in Ghana.

Career Technology as the sole area that offers Technical and Vocational training for job opportunities form an integral part of everyday life of the ever increasing youth of Ghana as a nation. Also the universal truth that development is hinged on industrial Technology, amongst others, therefore makes Career Technology the prospective backbone of, social, economic, political, and physical development of the country. It is an ever ending creative process, which serves to promote discovery, understanding, and production. It consists of a body of knowledge which attempts to explain and interpret phenomena and experiences, and creation of goods and services. In Career Technology, Ghana as a country can significantly use the numerous professions to provide the needed employable jobs to boost Ghana's future development.

To provide quality Career Technology education, teachers are to facilitate learning in the classroom/workshops, worksites, laboratories, and communities. This will provide the foundations for discovering and understanding the science and technological world around us and laying the grounds for Career Technology and technology- related studies at higher levels of education. Learners are to be encouraged to understand how Career Technology can be used to explain what is occurring, predict how things will behave, analyse causes and origin of things, and how things are created in our environment. The Career Technology Curriculum considers the desired outcomes of education for learners at the basic education level. Career Technology is also concerned with the development of attitudes, and therefore it is important for all citizens to be scientifically and technologically literate for sustainable development. Career Technology therefore need to be taught using hands-on and minds-on approaches which learners will find as fun and adopt Career Technology as a culture. The expectations of Career Technology seeks to achieve the goals of Education Strategic Plan (ESP 2018-2030) which layouts Ghana`s vision and goals for education sector up to 2030, as well as detailed strategies for the proposed goals to be achieved.

The ESP 2018–2030 lays out Ghana's vision and goals for the education sector up to 2030, as well as detailed strategies for how these goals will be achieved. The Basic education sub-sector thus has a clear roadmap for delivery of it's' responsibilities and contributions to the achievement of the vision. As part of the policy objectives, the teaching of Career Technology subject from Basic 7 to Basic 10 as a Common Core Programme has become a very meaningful aspect of the education vision of Ghana. Since Career Technology forms part of the Common Core Curriculum, which is also referred to as general education or essential learning, it is necessary that common body fundamental knowledge and skills in Technical and Vocational subjects are taught to all pupils.

Career Technology as one of the Common Core Programme (CCP) subjects, is very important for learners survival, in terms of the rights and responsibilities in society. Career Technology also employs Pedagogical approaches or strategies of social constructivism, differentiation, scaffolding, inclusion, amongst others which are to cater for differences in ability and aspirations of the learners.

The main strengths of Career Technology as a Common Core Programme are:

- It provides learners with basic knowledge, skills and values to enable them function in society
- It creates opportunity for the development of special aptitudes and talent trough elective courses
- Learners are able to solve real life problems since content is built around problems in the society
- Learners' understanding of concepts is reinforced since there is some form of integration of subjects.

Career Technology inclusion as a Common Core Programme comes in as one of the main responses that Government of Ghana can use as an effective measure to develop human resources for rapid growth and development.

In the Education Strategic Plan 2018 – 2030, Career Technology will play a key role to stimulate growth and restore economic competitiveness and a socially acceptable level of employment together with promoting the development of the individual and the values of citizenship Career Technology Course is thus expected to;

- Improve the national economics by tightening a connection between schooling, employment, productivity and trade.
- Enhance student outcomes in employment-related skills and competencies.

PHILOSOPHY FOR TEACHING CAREER TECHNOLOGY

Ghana as a developing country, believes that an effective Career Technology education should be inquiry-based to ensure sustainable development. Career Technology education must therefore, provide learners with opportunities to expand, change, enhance and modify the ways in which they view the scientific, technological, industrial, and economic world. It is pivoted on learner-centred technology, teaching and learning approaches that engage learners physically and cognitively in the knowledge, skills and attitudes. This involves rigorous inquiry of an enriched skills of inquiry, innovativeness, creativity, critical thinking, problem solving, collaboration and communication in an activity-driven environment.

PHILOSOPHY OF LEARNING CAREER TECHNOLOGY

Career Technology as a subject, recognizes the unique endowment of every learner. It promotes the development of individual talents based on the creativity, innovation, critical thinking, and graphical expression of ideas of learner's capacity as an individual. It offers learners the opportunity to work at their own pace without discrimination or comparison. Activities in the Career Technology provide the learner with various options that promote,

brainstorming, decision making and expressive learning self-assessment and evaluation. This approach of learner centredness helps learners to appreciate every aspects of the subject.

Based on the interactive, exciting and stimulating nature of the Career Technology, it enables learners to discover their talents and develop their lifelong, core competencies, functional and foundational skills. The Learning environment (classrooms, workshops, sites and laboratories) in Career Technology should encourage learners to participate and collaborate inclusively, understand and respect their skills, abilities and experiences as well as those of others. This sets a sustainable pace in achieving expected learning outcomes in the 4Rs – Reading, wRiting, aRithmetric and cReativity.

AIMS OF CAREER TECHNOLOGY CURRICULUM

The Career Technology Curriculum is aimed at developing individuals to become creative, innovative, technologically minded, digital literates and problem solvers. They should have the ability to think critically and have both the confidence and competence to participate fully in Ghanaian society as responsible local and global citizens. Furthermore, the subject aims to:

- Educate the learner in Career Technology through (head, heart and hands or 3-H Therapy).
- Develop the learners' thinking capacity, reasoning power and an understanding of the environment.
- Provide learners with the opportunity to respond and act creatively according to intuition.
- Instill in the learner a lifelong independent and critical mind for analytical and problem solving skills like critical analysis, creativity and innovation.
- Develop the personality in terms of emotional balance, material, spiritual, cultural and intellectual life of an individual.
- Strengthen the power of imagination, creative thinking, self- expression, critical analysis, synthesis and evaluation.
- Predispose the learner to the technical and vocational identities of Career Technology and entrepreneurial skills needed for industrialization.
- Develop in the learner the skill of appreciation and appraisal of Career Technology skills of the specific areas for future development.

OBJECTIVES OF CAREER TECHNOLOGY CURRICULUM

In this regard, a Career Technology Curriculum is designed to help learners to:

- Develop the spirit of curiosity, creativity, innovation and critical thinking for investigating and understanding their technological environment.
- Develop skills, habits of mind and attitudes necessary for scientific and technological inquiry.
- Communicate graphically, the technological, engineering, industrial, scientific ideas effectively.

- Use technological, engineering, industrial, scientific, nutritional, textile, entrepreneurial, employment concepts in explaining their own lives and the world around them.
- Develop humane and responsible attitude towards the use of resources in Ghana and elsewhere.
- Show concern and understanding of the interdependence of all living things, and manufactured products and the Earth on which they live.
- Design activities for exploring and applying scientific, technological, engineering, industrial, nutritional, textile, entrepreneurial, employment ideas and concepts.
- Develop skills for using science, technology, and entrepreneurship to enhance learning.
- Use resources and materials in their environments in a sustainable manner.

INSTRUCTIONAL EXPECTATIONS OF CAREER TECHNOLOGY

Career Technology teachers are expected to respect each learner's unique individual ability and put in place appropriate teaching and learning strategies to meet the unique needs of the individual learner. The approach is intended to create the awareness that each learner has distinctive skills, talents and capabilities. This approach requires for the application of a range of different pedagogical strategies that place emphasis on the needs of individual learners. The most important thing is that they are always ready to participate in Career Technology lessons. The expectations of Career Technology instructions are through the following:

1. Classroom, workshop, laboratory and sites discussions, guide learners to be aware that creative activities are used to solve identified problems. For example:
    a. The Career Technology products are used to provide food, clothing, shelter and furniture for our homes, schools, churches, mosques, palaces and work places.
    b. The Career Technology subjects can provide job opportunities for various endeavours in life.

2. Lead learners to identify problems in their environment; home, school and community that affect the individual, family, community and the country.

3. Guide them to discuss the effects of these problems on their education, health and sanitation, cultural beliefs and practices, job creation and employment, etc.

4. Lead them to investigate the causes of these problems through interviews, visits, observations, reading and group or class discussions, etc.

5. Guide learners through brainstorming, discussions, exploration with available tools, materials, instruments and techniques (individually or in groups) to design and make projects to help solve identified problems.

6. Get learners to plan, display and share their artifacts through exhibitions and performances with peers and other members of the community.

7. Guide learners to appreciate, appraise and critique their works, document the outcomes, reflect creatively on their findings and use the feedback to make modifications or undertake new projects.

CORE COMPETENCIES IN THE CAREER TECHNOLOGY

The core competencies outlined in the Career Technology curriculum are a body of skills which the teachers are expected to use to help learners to develop. These skills involve critical thinking, problem solving, creativity, innovation, communication and collaboration, citizenship, personal development and leadership, as well as digital literacy.

CRITICAL THINKING AND PROBLEM SOLVING

Developing learners' ability to think and reason to enable them analyze issues and situations leading to the solution of problems. This skill enables learners to draw on and demonstrate what they have learned and from their own experiences, analyze situations, choosing the most appropriate out of a number of possible solutions. It requires that learners embrace the problem at hand, persevere and take responsibility for their own learning.

CREATIVITYAND INNOVATION

This competence promotes in learners an entrepreneurial skill through their ability to think of new ways of solving problems and developing technologies for addressing the problem at hand. It requires imagination and predisposition to the arts, technology and enterprise. Learners having this competency are able to think independently and creatively as well.

COMMUNICATION AND COLLABORATION

This competence promotes in learners the skills to make use of languages, symbols and texts to exchange information about themselves and their life experiences. Learners actively participate as a team and share ideas, engage in dialogue with others by listening to and learning from others in ways that respect and value all persons involved.

CULTURAL IDENTITY AND GLOBAL CITIZENSHIP

This involves developing in learners the competency to put country and service as foremost through an understanding of what it means to be active citizens by inculcating in them a strong sense of environmental, social, and economic awareness. Learners make use of the knowledge, skills, attitudes acquired to contribute effectively towards the socioeconomic development of the country and on the global stage. They build skills to identify and critically analyse cultural and global trends to contribute to the world community.

PERSONAL DEVELOPMENT AND LEADERSHIP

This competence involves improving self-awareness and building self-esteem. It also entails identifying and developing talents, fulfilling dreams and aspirations. Learners are able to learn from their mistakes and failures of the past. They acquire skills to develop other people to meet their needs. It involves recognizing the importance of values such as honesty and empathy and seeking the well-being others. Personal development enables learners to distinguish between right and wrong. The skill helps them to foster perseverance, resilience and self-confidence. It helps them to acquire the skill of leadership, self-regulation and responsibility for lifelong learning.

DIGITAL LITERACY

Digital literacy develops learners to discover, acquire and communicate through ICT to support their learning. It also makes them use digital media responsibly to seek for information.

LEARNING DOMAINS (EXPECTED LEARNING BEHAVIOURS)

A central aspect of this curriculum is the concept of three integral learning domains that should be the basis for instruction and assessment. These are:

- Knowledge, Understanding and Application
- Process Skills
- Attitudes and Values.

KNOWLEDGE, UNDERSTANDING AND APPLICATION

Under this domain, learners acquire knowledge through learning experiences. They may also show understanding of concepts by comparing, summarising, re-writing, etc. in their own words and constructing meaning from instruction. The learner may also apply the knowledge acquired in some new contexts. At a higher level of learning behaviour, the learner may be required to analyse an issue or a problem. At a much higher level, the learner may be required to synthesise knowledge by integrating a number of ideas to formulate a plan, solve a problem, compose a story, or a piece of music. Furthermore, the learners may be required to evaluate, estimate and interpret a concept. At the highest level, learners may be required to create, invent, compose, design and construct. These learning behaviours: "knowing", "understanding", "applying", "analysing", "synthesising", "evaluating" and "creating" fall under the domain of "Knowledge, Understanding and Application".

In this curriculum, learning indicators are stated with action verbs to show what the learner should know and be able to do. For example, the learner will be able to describe something. Being able to "describe" something after teaching and learning has been completed means that the learner has acquired "knowledge". Being able to explain, summarise, and give examples, etc. means that the learner has understood the concept taught.

Similarly, being able to "develop", "defend", etc. means that the learner can "apply" the knowledge acquired in some new context. You will note that each of the indicators in the curriculum contains an "action verb" that describes the behaviour the learner will be able to demonstrate after teaching and learning has taken place. "Knowledge, Understanding and Application" is a domain that should be the prime focus of teaching and learning in schools. Teaching in most cases tend to stress knowledge acquisition to the detriment of other higher-level behaviours such as applying knowledge.

Each action verb in any indicator outlines the underlying expected outcome. Each indicator must be read carefully to know the learning domain towards which you have to teach. The focus is to move teaching and learning from the level of mere acquisition of "knowledge" that involved memorisation of facts, reliance on formulas, remembering of facts learned without reviewing or relating them to the real world known as ***surface learning*** to a new position called ***deep learning***. Learners are expected to deepen their learning by applying their knowledge to develop critical thinking skills, to explain issues, and reason to generate creative ideas to solve real life problems they would face in school and in their later adult lives. This is the position where learning becomes beneficial to the learner.

The explanations and the key words involved in the "Knowledge, Understanding and Application" domain are as follows:

Knowing: The ability to remember, recall, identify, define, describe, list, name, match, state principles, facts and concepts. Knowledge is the ability to remember or recall concepts already learnt and this constitutes the lowest level of learning.

Understanding: The ability to explain, summarise, translate, rewrite, paraphrase, give examples, generalise, estimate or predict consequences based upon a trend. Understanding is generally the ability to grasp the meaning of some material that may be verbal, pictorial or symbolic.

Applying: This dimension is also referred to as "Use of Knowledge". Ability to use knowledge or apply knowledge, apply rules, methods, principles, theories, etc. to situations that are new and unfamiliar. It also involves the ability to produce, solve, plan, demonstrate, discover, etc.

Analysing: The ability to break down material/information into its component parts; to differentiate, compare, distinguish, outline, separate, identify significant points etc., ability to recognise unstated assumptions and logical fallacies; ability to recognise inferences from facts, etc.

Synthesising: The ability to put parts or ideas together to form a new whole. It involves the ability to combine, compile, compose, devise, plan, revise, organise, create, generate new ideas, and solutions.

Evaluating: The ability to appraise, compare features of different things and make comments or judgment, contrast, criticise, justify, support, discuss, conclude, make recommendations, etc. Evaluation refers to the ability to judge the worth or value of some material based on some guide.

Creating: The ability to use information or materials to plan, compose, produce, manufacture or construct other products.

From the foregoing, creating is seen as the highest form of thinking and learning and is therefore the most important behaviour. This, unfortunately, is the area where most learners perform poorly. In order to get learners to acquire critical thinking skills right from the lower primary level, it is advised that teachers do their best to help the learners develop reasoning skills.

To be effective, competent and reflective citizens who will be willing and capable of solving personal and societal problems, learners should be exposed to situations that challenge them to raise questions and attempt to solve problems.

Suggested Activities:

Teachers are to:

- select teaching and learning activities that will ensure maximum learner participation
- avoid rote learning and drill-oriented approaches and rather emphasise participatory teaching and learning with special focus on the cognitive, affective and psychomotor domains wherever appropriate
- re-order the suggested teaching and learning activities and also add to them where necessary in order to achieve the best learner learning
- make learners able to apply their knowledge in dealing with issues both in and out of school
- help learners to be problem solvers.

In Career Technology, learners are expected to acquire valuable basic practical skills to serve as a foundation for further skills development. Observe and also ensure that learners exhibit skills and values in their behaviour and in career activities.

Evaluation: Suggested mode of evaluating learners' performance in Career Technology lessons/activities are as follows:

1. Concept/Ideation: Originality, Creativity, Idea Development, Visualisation, Pre-imaging, Sketching, etc.

2. Planning/Preparation: Acquisition of Tools, Props Materials, Costumes, Equipment and Instruments

3. Process (Making/Composing): Selection and use of tools/instruments, materials etc. according to design specification. Demonstration of Core Values and Competence; observation of rules, guidelines

4. Product/Composition: Finishing, Suitability, Usefulness, Aesthetic and Cultural Value

5. Presentation/Performance/Exhibition and Response: Analysis, Appreciation, Appraisal, Criticism, Judgment.

Teachers should:

- Design sets of tasks and assignments that will challenge learners to apply their knowledge to issues and problems
- engage learners in creating new and original items/compositions
- assist learners to develop positive attitudes for creative activities
- emphasise the issues of conceptualization, planning and making/composing as key components in evaluating learners work
- guide learners to transform what they know, understand and can do into creative products
- observe and guide learners as they work independently or in groups in the performance of various tasks since both process and products are equally important
- select and plan other learning activities to assist learners acquire, develop and demonstrate the **subject specific practices and Core Competencies outlined under the specific indicators** and exemplars of each content standard of the sub-strands/strands in addition to what have been suggested
- bear in mind that the curriculum cannot be taken as a substitute for lesson plans. It is therefore necessary that teachers develop a scheme of work and lesson plans for teaching the indicators and exemplars of this curriculum.

Note that:

- Career Technology should be taught as a practical subject. Learners are to be taught and evaluated practically.
- Career Technology is basically for acquisition of practical skills.

- Though learners are to be taken through some theoretical lessons, these are to be reinforced through their learning of designing, idea, conceptualization, brainstorming and critical thinking to find solutions to identified problems.
- Learners must observe, listen, reflect, brainstorm, discuss, compose, perform, respond, talk, report, describe.

SKILLS AND PROCESSES

These are specific activities or tasks that indicate performance or proficiency in the learning of Career Technology. They are useful benchmarks for planning lessons, developing exemplars and are the core of inquiry-based learning.

Practical Skills

Practical skills refer generally to the psychomotor domain. This involves the demonstration of manipulative skills using tools/equipment and materials to carry out practical operations, pre-image to solve practical problems, and produce items. The teaching and assessment of practical skills should involve projects, case studies and creative practical tasks. Skills required for effective practical work are the following:

1. Handling of Tools/Equipment/Materials
2. Observation
3. Craftsmanship/Draftsmanship
4. Perception
5. Creativity
6. Communication.

Tools/Equipment/Material Handling: Learners should be able to handle and use tools/equipment/materials properly for practical to acquire skills through creative activities.

Observation: The learner should be able to use his/her senses to make accurate observation of skills and techniques during demonstrations. The learner in this case should be able to apply or imitate the techniques he/she has observed for performing other tasks.

Craftsmanship/Draftsmanship: This involves the skillful and efficient handling of materials and tools for accomplishing specific tasks according to the level of the learners.

Perception: The learner should be able to respond to his/her environment using all the senses (seeing, hearing, smelling, touching, tasting and movement or kinesthetic. The learner should be encouraged to apply these senses to every project that is undertaken.

Originality/Creativity: Learners should be encouraged to be creative or original and be able to use new methods in carrying out projects. Encourage them to be original in making own artworks and not to copy existing work. You can help them to be creative and original by encouraging any little creative effort, technique and product they may develop.

Communication: Learners should be guided to develop effective oral and written communication skills necessary for group work, reporting and appreciation.

The action verbs provided under the various profile dimensions should help you to structure your teaching such as to achieve the set objectives. Select from the action verbs provided for your teaching, in evaluating learning before, during and after the instruction.

ATTITUDES AND VALUES

To be effective, competent and reflective citizens, who will be willing and capable of solving personal and societal problems, learners should be exposed to situations that challenge them to raise questions and attempt to solve problems. Learners therefore need to acquire positive attitudes, values and psychosocial skills that will enable them participate in debates and take a stand on issues affecting them and others.

The Career Technology curriculum aims at helping learners to acquire the following:

i. Commitment: determination to contribute to national development.

ii. Tolerance: willingness to respect the views of others.

iii. Patriotism: readiness to defend the nation.

iv. Flexibility in ideas: willingness to change opinion in the face of more plausible evidence.

v. Respect for evidence: willingness to collect and use data on one's investigation, and also have respect for data collected by others.

vi. Reflection: the habit of critically reviewing ways in which an investigation or observation has been carried out to see possible faults and other ways in which the investigation or observation can be improved upon.

vii. Comportment: conforming to acceptable societal norms.

viii. Co-operation: the ability to work effectively with others.

ix. Responsibility: the ability to act independently and make decisions; morally accountable for one's action; capable of rational conduct.

x. Environmental Awareness: being conscious of one's physical and socio-economic surroundings.

xi. Respect for the Rule of Law: obeying the rules and regulations of the land.

The teacher should ensure that learners cultivate the above attitudes and skills as basis for living in the nation as effective citizens.

VALUES

At the heart of this curriculum is the belief in nurturing honest, creative and responsible citizens. As such, every part of this curriculum, including the related pedagogy, should be consistent with the following set of values.

Respect: This includes respect for the nation of Ghana, its institutions and laws and the culture and respect among its citizens and friends of Ghana.

Diversity: Ghana is a multicultural society in which every citizen enjoys fundamental rights and responsibilities. Learners must be taught to respect the views of all persons and to see national diversity as a powerful force for nation development. The curriculum should promote social cohesion.

Equity: The socio-economic development across the country is uneven. Consequently, it is necessary to ensure an equitable distribution of resources based on the unique needs of learners and schools. Ghana's learners are from diverse backgrounds which require the provision of equal opportunities to all and that, all strive to care for each other.

Commitment to achieving excellence: Learners must be taught to appreciate the opportunities provided through the curriculum and persist in doing their best in any field of endeavour as global citizens. The Career Technology curriculum encourages innovativeness through creative and critical thinking and the use of contemporary technologies.

Teamwork/Collaboration: Learners are encouraged to be committed to team-oriented working and learning environments. This also means that learners should have an attitude of tolerance to be able to live peacefully with all persons.

Truth and Integrity: The Career Technology curriculum aims to develop learners into individuals who will consistently tell the truth irrespective of the consequences. In addition, be morally upright with the attitude of doing the right thing even when no one is watching. Also, be true to themselves and be willing to live the values of honesty and compassion. Equally important, is the practice of positive values as part of the ethos or culture of the workplace, which includes integrity and perseverance. These values underpin the learning processes to allow learners to apply skills and competences in the world of work.

SUGGESTED TIME ALLOCATION

For effective teaching of Career Technology, a total of **Four (4)** periods a week with each period consisting of **50** minutes, is allocated for the teaching/learning of Career Technology from Basic 7 to 10. It is recommended that the Career Technology be allocated **Two (2)** double periods per week (for two days) on the school time table. The six strands and the sub strands of the Career Technology curriculum should be harmonized and every aspect given the needed attention. It is suggested that teachers of Career Technology teach one strand after the other in alternate weeks. This means the teaching of Career Technology curriculum in the subsequent weeks must be in line to ensure full coverage of the curriculum.

PEDAGOGICAL APPROACHES

These are approaches, methods and strategies for ensuring that every learner benefits from appropriate and relevant teaching and learning episodes which are timely assessed and feedback provided to the learner and other stakeholders such as parents and education authorities. It includes the type and use of appropriate and relevant teaching and learning resources to ensure that all learners make the expected level of learning outcomes. The curriculum emphasises:

- The creation of learning-centred classrooms through the use of creative approaches to teaching and learning as strategies to ensuring learner empowerment and independent learning.
- the positioning of inclusion and equity at the centre of quality teaching and learning
- the use of differentiation and scaffolding as teaching and learning strategies for ensuring that no learner is left behind
- the use of Information Communications Technology (ICT) as a pedagogical tool
- the identification of subject specific instructional expectations needed for making learning in the subject relevant to learners
- the integration of assessment for learning, as learning and of learning into the teaching and learning process and as an accountability strategy
- use questioning techniques that promote deepen learning.

LEARNING-CENTRED PEDAGOGY

The learner is at the centre of learning. At the heart of the curriculum is learning progression and improvement of learning outcomes for Ghana's young people with a focus on the Reading, wRiting, aRithmetic and cReativity (4Rs). It is expected that at each curriculum phase, learners would be offered the

essential learning experiences to progress seamlessly to the next phase. Where there are indications that a learner is not sufficiently ready for the next phase a compensatory provision through differentiation should be provided to ensure that such a learner is ready to progress with his/her cohort. At the level 7 school, the progression phases are: (B7,B8, B9 and B10)

The curriculum encourages the creation of a learning-centred classroom, workshop, laboratory and building sites with the opportunity for learners to engage in meaningful "hands-on" activities that bring home to the learner what they are learning in school and what they know from outside of school. The learning- centred environment, is a place for the learners to discuss ideas and through the inspiration of the teacher actively engage in looking for answers through working in groups to solve problems. This also includes researching for information and analysing and evaluating the information obtained. The aim of the learning-centred approach is to develop learner autonomy so that learners can take ownership of their learning. It provides the opportunity for deep, creative, innovative and resourceful learning to take place.

The teacher should create a learning atmosphere that ensures:

- learners feel safe and accepted.
- learners are given frequent opportunities to interact with varied sources of information, teaching and learning materials and ideas in a variety of ways.
- the teacher assumes the position of a facilitator or coach who: Helps learners to identify a problem suitable for investigation via project work.
- problems are connected to the context of the learners' world so that it presents authentic opportunities for learning.
- subject matter around the problem, not the discipline.
- learners responsibly define their learning experience and draw up a plan to solve the problem in question.
- learners collaborate whilst learning.
- demonstration of the results of learning through a product or performance.

It is more productive for learners to find answers to their own questions rather than for teachers to provide the answers and their opinions in a learner-centred environment.

In this regard, the teacher is a facilitator or a coach who:

- helps students to identify a problem suitable for investigation
- connects the problem with the context of the students' world so that it presents authentic opportunities for learning

- organizes the subject matter around the problem, not the discipline
- gives students responsibility for defining their learning experience and planning to solve the problem
- encourages collaboration by creating learning teams
- expects all learners to demonstrate the results of their learning through a product or performance.

It is more productive in learning for teachers to use their knowledge, understanding and skills to motivate learners to find answers to their own questions than teachers provide the answers and their opinions. It takes good and skilful teachers to provide the enabling environment for learners to set their learning objectives, agenda and the process.

INCLUSION

Inclusion is to ensure access and learning for all learners, especially, those are disadvantaged. All learners are entitled to a broad and balanced curriculum in every school in Ghana. The daily learning activities to which learners are exposed should ensure that the learners' right to equal access to quality education are being met. These approaches, when used in lessons, will contribute to the full development of the learning potential of every learner. Learners have individual needs and learning experiences and different levels of motivation for learning. Planning, delivery and reflection on daily learning episodes should take these differences into consideration. The curriculum therefore promotes:

1. learning that is linked to the learner's background and to their prior experiences, interests, potential and capacities;

2. learning that is meaningful because it aligns with learners' ability (e.g. learning that is oriented towards developing general capabilities and solving the practical problems of everyday life); and

3. the active involvement of the learners in the selection and organisation of learning experiences, making them aware of their importance and also enabling them to assess their own learning outcomes.

DIFFERENTIATIONAND SCAFFOLDING

This curriculum is to be delivered through the use of creative approaches. Differentiation and Scaffolding are pedagogical approaches to be used within the context of the creative approaches.

Differentiation is a process by which differences between learners (learning styles, interest and readiness to learn etc.) are accommodated so that all learners in a group have best possible chance of learning. Differentiation could be by content, task, questions, outcome, groupings and support. This ensures maximum participation of all learners in the learning process.

Differentiation by task involves teachers setting different tasks for learners of different ability (e.g. in sketching the plan and shape of their classroom some learners could be made to sketch with free hand while others would be made to trace the outline of the plan of the classroom).

Differentiation by support involves the teacher providing a targeted support to learners who are seen as performing below expected standards or at risk of not reaching the expected level of learning outcome. This support may include a referral to a Guidance and Counselling Officer for academic support.

Differentiation by outcome involves the teacher allowing learners to respond at different levels. In this case, identified learners are allowed more time to complete a given task.

Scaffolding in education refers to the use of a variety of instructional techniques aimed at moving learners progressively towards stronger understanding and ultimately greater independence in the learning process.

It involves breaking up the learning episodes, experiences or concepts into smaller parts and then providing learners with the support they need to learn each part. The process may require a teacher to assign an excerpt of a longer text to learners to read, engage them to discuss the excerpt to improve comprehension of its rationale, then guiding them through the key words/vocabulary to ensure learners have developed a thorough understanding of the text before engaging them to read the full text. Common scaffolding strategies available to the teacher include:

- giving learners a simplified version of a lesson, assignment, or reading, and then gradually increasing the complexity, difficulty, or sophistication over time
- describing or illustrating a concept, problem, or process in multiple ways to ensure understanding
- giving learners an exemplar or model of an assignment, they will be asked to complete
- giving learners a vocabulary lesson before they read a difficult text
- clearly describing the purpose of a learning activity, the directions learners need to follow, and the learning goals they are expected to achieve
- explicitly describing how the new lesson builds on the knowledge and skills learners were taught in a previous lesson.
- increased opportunities for more learner-centred pedagogical approaches
- improved inclusive education practices by addressing inequalities in gender, language, ability

- improved collaboration, creativity, higher order thinking skills
- enhanced flexibility and differentiated approach of delivery.

INFORMATION COMMUNICATIONS TECHNOLOGY

ICT has been integrated into this curriculum as a teaching and learning tool to enhance deep and independent learning. Some of the expected outcomes that this curriculum aims to achieve through ICT use, for teaching and learning are:

- improved teaching and learning processes
- improved consistency and quality of teaching and learning

The use of ICT as a teaching and learning tool is to provide learners access to large quantities of information online. It also provides the framework for analysing data to investigate patterns and relationships in a geographical context. Once pupils have made their findings, ICT can then help them organise, edit and present information in many different ways.

Learners need to be exposed to the various ICT tools around them that include calculators, radios, cameras, phones, television sets and computer and related software like Microsoft Office packages – Word, PowerPoint and Excel as teaching and learning tools. The exposure that learners are given at the Primary School level to use ICT in exploring learning will build their confidence and will increase their level of motivation to apply ICT use in later years, both within and outside of education. ICT use for teaching and learning is expected to enhance the quality and learners' level of competence in the 4Rs.

STRUCTURE AND ORGANISATION OF CAREER TECHNOLOGY CURRICULUM

The Career Technology Curriculum has been structured into four columns, namely; Strands, Sub-strands, Content Standards and Indicators with Exemplars.

Organization

The curriculum is organized under the following key headings:

Strands are the broad areas/sections of the Career Technology Curriculum content to be studied.

Sub-strands are the topics within each strand under which the content is organised.

Content standard refers to the pre-determined level of knowledge, skill and/or attitude that a learner attains by a set stage of education.

Indicator is a clear outcome or milestone that learners have to exhibit in each year to meet the content standard expectation. The indicators represent the minimum expected standard in a year.

Exemplar – support and guidance which clearly explains the expected outcomes of an indicator and suggests what teaching and learning activities could take to support the facilitators/teachers in the delivery of the curriculum.

Structure of Career Technology Curriculum

The structure of the Career Technology Curriculum is presented in table one showing the examples of the columns involved indicating the strands, sub-strands, content standards and the indicators with the accompanying exemplars and the style of numbering for each column to serve as a guide.

Table 1: Structure of the Career Technology Curriculum

STRANDS	SUB-STRANDS	CONTENT STANDARDS	INDICATOR(S) with Exemplars
B7. 1	B7.1.1	B7.1.1.1	B7.1.1.1.1

A unique annotation is used for numbering the learning indicators in the curriculum for the purpose of easy referencing as indicated in Table 2, below.

Table 2: Example of numbering the learning indicators in the curriculum: B7 .1.1.1.1

ANNOTATION	MEANING / REPRESENTATION
B7	Year or Class
1	Strand Number
1	Sub-Strand Number
1	Content Standard Number
1 , 2 , 3	Indicators and Exemplars Number

Explanations of key vocabularies:

Strands are the broad areas/sections of the subject content to be studied.

Sub-strands are the topics within each strand under which the content is organised.

Content standard refers to the pre-determined level of knowledge, skill and/or attitude that a learner attains by a set stage of education.

Indicator is a clear outcome or milestone that learners have to exhibit in each year to meet the content standard expectation. The indicators represent the minimum expected standard in a year.

Exemplar support and guidance which clearly explains the expected outcomes of an indicator and suggests what teaching and learning activities could take, to support the facilitators/teachers in the delivery of the curriculum.

BASIC 7

CLASS: B7
STRAND 1: HEALTH AND SAFETY
SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.1.1.1 Demonstrate knowledge of basic concept of the need to stay healthy and safe	**B7.1.1.1.1: Explain the need to stay healthy and safe** **Exemplars** 1. Explain what is meant by staying healthy and safe. E.g. • Staying healthy: physical, mental, and social wellbeing, and as a resource for living a full life – exercise the body, have enough rest, eat balanced diet, avoid drug abuse and negative peer pressure • Staying safe: Keeping oneself from harm- observe safety precautions, wear safety gears 2. Discuss and present in groups the consequences of not taking good care of one's body E.g. Contract disease and fall ill. **NB:** Use different ways or means for presentation - Power point, posters, pictures, illustrations (Differentiation) 3. Research and write on materials and strategies (ways) used for improving personal hygiene and discuss, in groups.	**Subject Specific Practices** Cleanliness Healthy eating habits Physical fitness Safety consciousness **Core Competencies** Teamwork Presentation skills Inclusivity

	B7.1.1.1.2: Explain what is meant by food hygiene **Exemplars** 1. Explain what is meant by food hygiene. E.g. Conditions and measures needed to ensure safety of food from production to consumption. 2.Research into food hygiene practices in groups and report in class for discussion E.g. Proper storage and preservation of food.	**Subject Specific Practices** Practice of good hygiene, Skills in food storage and preservation **Core Competencies** Presentation skills Teamwork
	B7.1.1.1.3: Describe ways of maintaining personal hygiene **Exemplars** 1. Discuss ways of maintaining personal hygiene in groups. E.g. • Wash the body often • Clean the teeth at least twice a day • Wash hands after visiting the toilet 2.Demonstrate the following in groups E.g. Care of finger nails, hair, nose, ear, mouth and teeth	**Subject Specific Practices** Cleanliness Teamwork **Core Competencies** Presentation skills Teamwork

CLASS: B7
STRAND 1: HEALTH AND SAFETY
SUB-STRAND 2: PERSONAL, WORKSHOP AND FOOD LABORATORY SAFETY

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.1.2.1 Demonstrate knowledge of preventing accidents in the workshop and food laboratory	**B7.1.2.1.1: Describe accidents in the workshop/food laboratory** **Exemplars** 1. Explain what is meant by accidents. E.g. Accidents in the workshops are injuries that occur in the workshop unexpectedly. 2. Discuss the types of accidents that occur in the workshop. E.g. Falls, cuts, bruises and explosions. 3. Predict the causes of accidents that can occur in the workshop/food laboratory. E.g. Tiredness/fatigue, poor lightening and ventilation.	**Subject Specific Practices** Awareness creation **Core Competencies** Communication and collaboration
	B7.1.2.1.2: Enumerate the need to keep the workshop and in the food laboratory safe **Exemplars** 1. Identify and discuss personal safety measures in the workshop/food laboratory. E.g. Proper use of protective wears in the workshop and laboratory and adherence to safety rules and regulations.	**Subject Specific Practices** Safety consciousness Skills in care and maintenance Manipulative skills

	2. Discuss how to keep the tools and equipment safe to prevent accidents in the workshop /food laboratory. E.g. Proper storage of food, materials, tools and equipment. 3. Demonstrate ways of minimizing accidents in the workshop/food laboratory E.g. • Follow instructions and do not rush through work • Good lightening and ventilation, work systematically and carefully	**Core Competencies** Communication
	B7.1.2.1.3: Demonstrate basic skills in applying first aid to self and others **Exemplars** 1. Explain what is meant by first aid. E.g. It is help given to an injured/sick person till full medical treatment is available. 2. List and discuss the content of a first aid box. E.g. Plaster, gauze, scissors, methylated spirit 3.Demonstrate how to administer first aid to persons affected with any of the following: i. Cuts: Rinse the cut with water and apply pressure with sterile gauze, a bandage, or a clean cloth ii. Burns: After holding the burn under cool, running water, apply cool, wet compresses until the pain subsides iii. Scalds: cool the burn with cool or lukewarm running water for 20 minutes – don't use ice, iced water, or any creams or greasy substances such as butter. iv. Falls: Place a cold compress or ice pack on any bumps or bruises	**Subject Specific Practices** Manipulative skills Skills in the application of first aid **Core Competencies** Communication

CLASS: B7
STRAND 1: HEALTH AND SAFETY
SUB-STRAND 3: ENVIRONMENTAL HEALTH

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.1.3.1 Demonstrate knowledge of basic concept of Environmental Health	**B7.1.3.1.1: Enumerate the constituents of environmental health** **Exemplars** 1. Discuss the constituents of environmental health, in groups E.g. Disease control, clean water, sanitation and hygiene. 2. Identify the causes of environmental health using ICT tools and other sources and report in class E.g. Air, water and soil pollutions, chemical exposures 3.Research the consequences of poor environmental health, in groups and present for class discussion E.g. Transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio and exacerbates stunting	**Subject Specific Practices** Environmental health consciousness Differentiation **Core Competencies** Digital literacy Presentation skills Teamwork
	B7.1.3.1.2: Enumerate the preventive measures of environmental health **Exemplars** 1. Identify preventive measures of environmental health; E.g. • Avoid polluting water bodies • Avoid littering • Avoid defecating indiscriminately	**Subject Specific Practices** Cleanliness Environmental health management Self-confidence **Core Competencies**

	2. Present findings in groups. 3. Undertake a project in tree planting around the school/community.	Teamwork Presentation Problem solving Creativity

CLASS: B7
STRAND 2: MATERIALS FOR PRODUCTION
SUB-STRAND 1: COMPLIANT MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.2.1.1 **Demonstrate knowledge of basic concept of compliant materials**	**B7.2.1.1.1: Describe compliant materials** **Exemplars** 1. Explain what is meant by compliant materials E.g. Compliant materials are materials that have recognised, predictable and consistent properties such as paper/card, fabric/textiles. 2. Sort out compliant materials from the variety of available materials. 3. Write a summary of the explanation and sorting	**Subject Specific Practices** Writing skills Analytical skills **Core Competencies** Creativity and innovation Critical thinking skills
	B7.2.1.1.2: Distinguish between types of compliant materials **Exemplars** 1. Classify the various compliant materials under their types;	**Subject Specific Practices** Analytical skills

	• Paper • Card • Fabric/Textile 2. Give examples of each class of compliant materials; • Paper – copy paper, construction paper • Card – solid white board, corrugated card, • Fabric/Textile – cotton, nylon 3. Read out the summary of the lesson	Reading skills **Core Competencies** Critical thinking
	B7.2.1.1.3:**Explain how compliant materials are obtained** **Exemplars** 1. Search for information on how paper/card is obtained, in groups E.g. Paper is made from wood; a tree is felled, broken into chips, chips boiled in water and chemicals added to form pulp; pulp is squeezed with rollers. The more the layers, the thicker the paper i.e. card 2. Find information from books and other sources on how fabric/textile is obtained in groups E.g. Fabric/Textile is obtained from natural and artificial fibres which are turned into yarns and threads. They are made through weaving, knitting, crocheting, braiding or bonding, knotting, and felting. 3. Write out findings and present in class	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Communication skills Digital literacy Presentation skills

CLASS: B7
STRAND 2: MATERIALS FOR PRODUCTION
SUB-STRAND 2: RESISTANT MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.2.2.1 Demonstrate knowledge of basic concept of resistant materials	**B7.2.2.1.1: Describe resistant materials** **Exemplars** 1. Explain what is meant by resistant materials E.g. Resistant materials are materials that are not pliable or flexible and cannot be easily compressed with bare hands (plastic, wood, metal, ceramics, glass) 2. Sort out resistant materials from the variety of available materials E.g. Plastic, wood, metal, ceramics, glass and their composites 3. Write down the summary of the explanation and sorting.	**Subject Specific Practices** Writing skills Analytical skills **Core Competencies** Critical thinking skills
	B7.2.2.1.2: Distinguish between the types of resistant materials **Exemplars** 1. Sort out different resistant materials into various categories • Plastics – thermosetting plastics and thermoplastics • Wood – hardwoods and softwoods • Metals – ferrous, non-ferrous, alloys and smart	**Subject Specific Practices** Writing skills Analytical skills **Core Competencies** Critical thinking skills

	2. Write the various types of resistant materials under their categories and present in class for discussion.	Creativity Presentation skills
	B7.2.2.1.3: Explain how each of the resistant materials is obtained **Exemplars** **PLASTICS** 1. Discuss the two main sources(natural and synthetic) from which plastics are obtained E.g. • Natural resources:- Plants (cellulose), trees, animals, insects • By-products:- table tennis balls, acetate films, wrapping; rubber, roads, paint, decoration, glues, polish • Synthetic sources:- Crude oil, coal and natural gas • By-products:- Chemically produced plastics – Polymerizing Vinyl Chloride (PVC), Polystyrene, Polyethylene, Acrylic 2. Find out information from different sources including online, on the two types of plastics and give examples E.g. • Thermoplastics:- Polythene, PVC, nylon • Thermosetting plastics;- Urea formaldehyde, polyester resin, epoxy resin 3. Make a table and match products to the types of plastics they are made from	**Subject Specific Practices** Research skills Writing skill **Core Competencies** Digital literacy Critical thinking Creativity

E.g.

Material	Products
Polythene	Toys, carrier bags, packaging film
Urea formaldehyde	Textile, (white) electrical fittings, adhesives (wood)

WOOD

1. Explain briefly how wood is obtained

E.g. A mature living tree is felled, the branches are cut off to obtain the log, which is then converted (sawn) to standard sizes, then seasoned.

2. Distinguish between solid timber and man-made boards and give examples

E.g.

- Solid timber is made from harvested trees or similar natural sources, whereas man-made boards are often produced from small pieces of wood or waste wood

3. Compare the weight of products made from solid timber and man-made boards

E.g.

- Solid timber products:- Heavier in weight, less flexible
- Man-made board products:- Lighter in weight, more flexible

Subject Specific Practices
Analytical skill
Writing skill

Core Competencies

Critical thinking
Creativity

Subject Specific Practices
Analytical skill

	METALS 1. Explain briefly how metals are obtained E.g. The raw material is mined from the earth; it undergoes processes such as crushing, washing and grading; several other processes are carried out to get it in a refined form 2. Identify products made from each category of metals E.g.: • Ferrous metals:- Machine parts, nails, hand tools • Non-ferrous metals:- Kitchen cooking utensils, window frames, electrical wires • Alloys:- Sculptures, statues, ornaments • Smart:- Shape memory alloy (SMA) **BUILDING** 1. Identify and classify materials used for building. E.g. • Natural: - sand, stones, clay • Artificial: - cement, lime 2. Discuss the sources of the natural building materials E.g. • Sand is obtained from pits, river banks, sea • Stone is obtained from quarries	Writing skill **Core Competencies** Critical thinking **Subject Specific Practices** Analytical skill **Core Competencies** Critical thinking Communication

CLASS: B7
STRAND 2: MATERIALS FOR PRODUCTION
SUB-STRAND 3: SMART AND MODERN MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.2.3.1 **Demonstrate understanding of the properties of smart and modern materials**	**B7.2.3.1.1: Explore the general properties of smart and modern materials** **Exemplars:** 1. Describe smart and modern materials E.g. Smart and modern materials (intelligent or responsive materials) are designed materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, moisture, electric or magnetic fields, light, temperature, pH or chemical compounds. They are materials developed through the invention of new or improved process to have improved properties and use for sportswear, medical and safety wear, and fashion clothing 2. Identify the main factors that affect the properties of smart and modern materials E.g. Light, temperature (hot/cold/warm), moisture 3. Describe the effects of light on smart and modern material and products. E.g. • Light causes photomechanical materials to change shape when exposed to it • Photochromic materials change colour in response to light 4. Explain the effects of temperature on smart and modern material and products E.g. Thermochromic materials change in colour depending on temperature 5. Discuss how moisture affects products made from smart and modern materials E.g. Graphene oxide (electrical insulator) based materials bend when exposed to moisture.	**Subject Specific Practices** Exploratory Analytical thinking **Core Competencies** Communication skills

CLASS: B7

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 4: FOOD COMMODITIES (ANIMAL AND PLANT SOURCES)

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars

By the end of B7, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B7.2.4.1
Demonstrate knowledge of basic food commodities</td><td>B7.2.4.1.1: Discuss food commodities
Exemplars
1. Explain what is meant by food
E.g. Food is any edible substance either solid or liquid which when eaten is used by the body to maintain life.
2. Explain what is meant by food commodities
E.g. Food commodities generally refer to ingredients needed to produce different varieties of food.

3. Give examples of common food commodities in the community
E.g. Fish, cassava, okro, orange, milk, meat

4. Classify food commodities under the two main sources, i.e. plant source and animal source

<table><tr><th>Plant</th><th>Animal</th></tr><tr><td>Cassava, okro, orange</td><td>Fish, milk, meat</td></tr></table>
5. Discuss reasons for eating food; e.g. to satisfy our hunger, build body, provide heat energy, protect body from diseases</td><td>Subject Specific Practices
Research skills

Core Competencies
Critical thinking
Analytical
Communication</td></tr>
</table>

CLASS: B7

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 1: MEASURING AND MARKING OUT

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars

By the end of B7, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B7.3.1.1
Demonstrate understanding measuring and marking out tools and equipment for production</td><td>B7.3.1.1.1: Identify measuring and marking out tools and equipment for production and classify them

Exemplars

1. Identify the type of measuring and marking out tools and equipment
Example:
<table><tr><th>Place of work</th><th>Measuring</th><th>Marking out</th></tr><tr><td>Food laboratory (kitchen)</td><td>Measuring cups</td><td>Kitchen Knives</td></tr><tr><td>Sewing workshop/laboratory</td><td>Tape measure, Yard rule</td><td>Pencil, Tailors Chalk</td></tr><tr><td>Building site</td><td>Surveyor’s tape</td><td>Profile board,
Peg,
Chalk</td></tr><tr><td>Wood workshop</td><td>Tape measure, folding rule</td><td>Pencil, Marking Gauge,
Marking knife</td></tr><tr><td>Metal/plastic workshop/laboratory</td><td>Steel rule</td><td>Pair of compasses,
Scriber
Pair of dividers</td></tr></table></td><td>Subject Specific Practices

Writing skills

Core Competencies

Communication and collaboration

Critical Thinking and Problem solving

Creativity</td></tr>
</table>

Content Standard	Indicators and Exemplars **By the end of B7, learners will:**	Subject Specific Practices and Core Competencies
	2.Think-write- pair and share at plenary session, the uses of each tool and equipment found in: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastic workshop 3. Discuss the importance of measuring and marking out tools. E.g. Accuracy, avoidance of waste of material, achieving desired results 4. Identify from displayed realia or pictures, tools and equipment used for measuring and marking out: • Food laboratory (kitchen for liquids/dry ingredients -weighing scale, measuring cups, spoons, calabash, 'olonka' • Sewing workshop/laboratory - tape measure, yard rule • Building site – tape measure, builder's square, head pan, straight edge • Wood workshop – tape measure, folding rule, try-square, marking knife • Metal workshop- tape measure, steel rule, pair of compasses 5. Sketch and label parts of measuring and marking out tools and display sketches for appraisal.	
	B7.3.1.1.2: Demonstrate how to care and maintain measuring and marking out tools used for production	**Subject Specific Practices** Manipulative skills

	Exemplars 1. Share experiences from home on how to care for tools and equipment used for production. 2.Discuss cleaning agents/materials used to clean and maintain tools and equipment based on the respective material used in making the tool E.g. Silvo for cleaning silver, Brasso for cleaning brass, oil to avoid rust, cloth for cleaning and dusting 3. Demonstrate how to care for measuring and marking out tools and equipment according to the material used in making them.	**Core Competencies** Communication Team work and collaboration

CLASS: B7

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 2: CUTTING/SHAPING

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices And Core Competencies
B7.3.2.1 Demonstrate understanding of cutting/shaping tools and equipment for production	**B7.3.2.1.1:Identify cutting and shaping tools and equipment used for production** **Exemplars** 1.Identify the displayed cutting tools: • Food laboratory - Kitchen knives, cutters: pairing, chopping, bread, biscuit cutters ,cake tins, moulds, scoops for ice cream • Sewing workshop/laboratory e.g. Scissors, pinking shears, seam ripper and French curves) • Woodwork - Saws, chisels, spoke shave, rasp file • Building - Bolster, brick hammer, mould box • Plastic - Coping saw, junior hacksaw, files, drills • Metal/plastics - Saws, files, chisels	**Subject Specific Practices** Personal Development Manipulative skills **Core Competencies** Creativity and Innovation Communication and collaboration Critical Thinking and Problem solving
	B7.3.2.1.2 : Use appropriate skills in cutting, chopping , slicing, dicing and shaping products **Exemplars** 1. Demonstrate the appropriate techniques in cutting, chopping, slicing and dicing in food	**Subject Specific Practices** Manipulative skills

	production 2. Demonstrate the appropriate techniques in cutting, paring, moulding in wood, metal and building	Operational skills **Core Competencies** Creativity and Innovation
	B7.3.2.1.3: Demonstrate how to care for and maintain cutting and shaping tools used for production **Exemplars** 1. Share experiences on how to care for and maintain cutting and shaping tools and equipment for production. E.g. Oil metal parts of tools, wash and clean mould box 2. Identify cleaning agents used to clean tools and equip according to the material used in cleaning cutting and shaping tools E.g. Silvo and grounded and sifted egg shell for cleaning stainless steel, oil for cleaning metal parts of tool. 3. Demonstrate how to care for cutting and shaping tools and equipment according to the material used in making them and discuss in class.	**Subject Specific Practices** Operational skills Maintenance culture **Core Competencies** Communication and collaboration

CLASS: B7

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 3: JOINING AND ASSEMBLING

Content Standard	Indicators And Exemplars By the end of B7, learners will:	Subject Specific Practices And Core Competencies
B7.3.3.1 **Demonstrate understanding of joining and assembling materials, tools and equipment used for production**	**B7.3.3.1.1: Identify joining and assembling materials, tools and equipment used for making artifacts/products** **Exemplars** 1.Identify joining and assembling materials, tools and equipment used for: • Sewing and crocheting - e.g. thread, needle, crocheting hooks/ pins sewing machine • Food production - skewers, spoons, ladles, utensils • Woodwork - mallet, glues, clamps, screws • Metal work - soldering bit, bolts and nuts • Plastic – epoxy resin, rivets, mallet, screw driver • Building - cement • Paper - glue 2.Research for more joining and assembling materials, tools and equipment using ICT tools and other sources and discuss in groups. 3.Sketch joining and assembling tools and equipment 4. Display the sketches for appraisal.	**Subject Specific Practices** Research skills Manipulative skills Analytical skills **Core Competencies** Critical Thinking and Problem solving Personal Development Creativity and Innovation Communication and collaboration

	B7.3.3.1.2 : Use appropriate skills for joining and assembling artifacts using the materials, tools and equipment **Exemplar** 1.Demonstrate the appropriate techniques in using joining and assembling materials and tools in: • Sewing and crocheting - stitching, knotting/looping • Food production - cooking methods - boiling, baking ,roasting) • Wood products - nailing, bolting, screwing, gluing • Metal products - soldering, using bolts and nuts • Plastic products - screwing, using adhesives, bolts and nuts • Building - bonding • Paper work - gluing	**Subject Specific Practices** Manipulative skills **Core Competencies** Communication and collaboration Critical Thinking and Problem solving Personal Development Creativity and Innovation
	B7.3.3.1.3:Demonstrate how to care for and maintain cutting and shaping materials, tools used for production **Exemplars** 1.Share experiences on how to care for and maintain joining and assembling materials, tools and equipment making artifacts/products (in groups) in: • Sewing and crocheting • Food production • Woodwork • Metal work • Plastic • Brick/block work • Paper work	**Subject Specific Practices** Manipulative skills Maintenance culture **Core Competencies** Communication and collaboration Critical Thinking and Problem solving

	2. Discuss materials used in cleaning joining and assembling tools E.g. Abrasives- braso, silvo, ground sifted egg shell, powdered charcoal, steel wool and scourers 3. Demonstrate how to care and maintain joining and assembling materials, tools and equipment used for making artifacts/products in groups E.g. Cleaning, oiling, keeping at safe and appropriate places, in groups.	

CLASS: B7
STRAND 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 4: KITCHEN ESSENTIALS

Content Standard	**Indicators** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.3.4.1 **Demonstrate knowledge and understanding of basic concept of Kitchen Essentials**	**B7.3.4.1.1: Explain what is meant by basic Kitchen Essentials** **Exemplar** Explain what is meant by basic Kitchen Essentials. E.g. Kitchen Essentials are indispensable/vital tools and equipment needed/necessary for meal preparation and service, e.g. saucepan, plate, can opener, colander, cutting board, vegetable peeler, soup tureen ,crockery	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Communication
	B7.3.4.1.2: Demonstrate skills in the classification of Kitchen Essentials **Exemplar** 1. Classify and discuss kitchen essentials according to sizes. E.g. • Small – spoons, can opener • Large – refrigerator, cooker, broilers, cupboard • Mechanical – blender, food mixers 2. Present the classified Kitchen essentials for appraisal	**Subject Specific Practices** Analytical skills **Core Competencies** Critical thinking Communication Presentation skills

CLASS: B7

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 5: FINISHES AND FINISHING

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.3.5.1.1 **Demonstrate knowledge of finishes and finishing**	**B7.3.5.1.1: Identify finishing and finishes applied to products/artifacts** **Exemplars** 1.Explain what is meant by finishing and finishes E.g. Finishing is the final surface treatment given to products/ artifacts to improve their beauty, attractiveness and protection. Finishes are the substances applied on the surfaces of products/artifacts. 2. Identify types of finishes E.g. Lacquer, emulsion paint, oil paint, vanish, ceramic tiles, stones, plaster of Paris (P.O.P), 3-D floor, wall paper 3. Identify solvents used to thin finishes E.g. Thinner for lacquer polish, turpentine for oil paint, water for emulsion paint. Solvents make mixture flow easily.	**Subject Specific Practices** **Core Competencies** Communication Critical thinking
	B7.3.5.1.2: Demonstrate knowledge in basic processes for finishing raw edges of articles in sewing **Exemplars**	**Subject Specific Practices**

	1. Explain what is meant by edge finishes. E.g. processes worked on raw edges to neaten them 2. Identify types of edge finishes E.g. turning a hem and binding 3. Discuss reasons why edges of articles are finished E.g. prevent edges from fraying, neaten raw edges, strengthen raw edges and decorate raw edges. 4. Identify edges of articles that require finishing. E.g. necklines, armholes, hem of articles.	**Core Competencies** Communication Critical thinking

CLASS: B7

STRAND 4: TECHNOLOGY

SUB-STRAND 2: SIMPLE STRUCTURES AND MECHANISMS, ELECTRIC AND ELECTRONIC SYSTEMS

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.4.1.1 **Demonstrate understanding of structures in frame construction**	**B7.4.1.1.1: Outline the uses of structures in frame construction** **Exemplars** 1. Explain what is meant by structures in construction E.g. Method of supporting loads (triangulation, truss) to prevent collapse. 2. Identify and classify structures under natural and man-made E.g. • Natural; Structures created by nature to provide support (spider web, honeycomb and human skeleton) • Man-made: Structures made by man to provide protection and support, (chairs, helmets, suspension bridge) 3. Classify structures under frame and shell E.g. • Frame structures: Crane, electricity pylon and building • Shell structures: Body of motor car shaped from panels.	**Subject Specific Practices** Analytical skills **Core Competencies** Communication Critical thinking Creativity and Innovation

	4. Discuss the uses of structures in construction E.g. • carrying loads for which they were designed without toppling over or collapsing • supporting the various parts of artifacts 5. Make sketches of both frame and shell structures and prepare photo albums to use as materials for learning structures. **6.** Display photo albums for appraisal	

	B7.4.1.1.2 : Examine the need to understand the causes of structural failure in construction **Exemplars** 1. Explain what is meant by structural failure in construction. E.g. When a structure collapses or fails to do its job. 2. Identify types of structural failures E.g. Cracks, splits, breakages 3. Observe where structural failures occur in structures in the environment**.** E.g. Buildings, bridges ,furniture 4. Discuss causes of structural failure E.g. poor design, poor material, weak joint and fatigue 5. Discuss how static and dynamic forces can cause structures to fail E.g. • Static force – stationary force due to the structure's own weight or the load being carried • Dynamic forces -moving force produced by wind, sea, vehicles and people. 6. Make sketches and notes on structural failures in groups. 7.Display sketches for appraisal	**Subject Specific Practices** Manipulative skills **Core Competencies** Communication Critical thinking Creativity and Innovation

	B7.4.1.1.3 : Design and make simple structures **Exemplars** 1. Identify compliant and resistant materials, tools and equipment for making structures. E.g.: Paper, cardboards, wood, metal and plastic 2. Plan and design the artifact E.g. Prepare working drawings showing dimensions 3. Make mock-ups of simple structures E.g. Frame and shell. **Note:** Examples of structures are car bodies, types of roofing, chairs, aircraft, train, radio and cupboard. 4. Test and evaluate the mock-ups by indicating the strengths and weaknesses of the structures and make modifications 5. Display the mock-ups for appraisal	**Subject Specific Practices** Planning skills Analytical skills **Core Competencies** Communication Critical thinking Creativity and Innovation

CLASS: B7

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 1: COMMUNICATING DESIGNS

Content Standard	Indicators and Exemplars By the end of B7, learners will:	Subject Specific Practices and Core Competencies
B7.5.1.1 **Demonstrate knowledge and skills of drawing materials, instruments, lines and their applications, and freehand sketching**	**B7.5.1.1.1: Identify drawing materials, instruments and equipment used for Graphic Communication** **Exemplars** 1.Identify drawing materials, instruments and equipment E.g. Drawing materials, instruments and equipment (drawing paper, drawing board, tee square, pencils, a pair of compasses, a pair of dividers, rule) 2. Discuss the uses of drawing materials, tools and equipment E.g. • Drawing paper- drawings are made on it • Drawing board – drawing paper is fixed on it for work to be done 3. Demonstrate appropriate uses and manipulation of drawing materials, instruments and equipment E.g. How to manipulate the instruments/equipment-proper handling of compass, T-square, set squares	**Subject Specific Practices** Graphic communication skills Manipulative skills Maintenance culture **Core Competencies** Creativity and innovation Teamwork

	3.Demonstrate how to care for and maintain the drawing materials and instruments/equipment E.g. • Use a clean tissue to wipe the surface of the instruments • Do not drop instruments	

	B7.5.1.1.2: Identify the types of lines used in Graphic Communication **Exemplars** 1.Identify lines used in communicating ideas E.g. Horizontal lines, vertical lines, inclined lines, arcs, continuous thick and thin lines, short dashes, 2.Describe the features and uses of the lines E.g. • Continuous thick lines:- for drawing outlines; • Continuous thin lines:- for drawing construction lines 3. Illustrate the applications of lines in drawn objects E.g. Indicate dimension line showing the dimension of a line 4. Make a chart on how the lines are applied in drawing 5. Present the chart for appraisal	**Subject Specific Practices** Graphic communication skills Manipulative skills Maintenance culture **Core Competencies** Creativity and innovation Teamwork
	B7.5.1.1.3:Make sketches of lines, curves, objects, and write the letterings **Exemplars** 1. Identify lower and upper case letters E.g. • lower case – a, b, c, d • upper case – A, B, C, D 2.Discuss the principles of lettering	

	E.g. • Titles should be 8mm high • General information is usually about 6mm high • Titles and dimensions are written in upper case 3. Set out drawing paper and prepare title block indicating name, school, class, date and drawing number	
	B7.5.1.1.4: Make sketches of objects **Exemplars** 1. Discuss what is meant by sketching E.g. A quick way of putting ideas down using freehand with a pencil or any other marker. 2.Illustrate the techniques of sketching objects in two dimensional (2-D) plane figures E.g. Square, triangle, circle, rectangle, oval 3.Illustrate the techniques of sketching objects in three dimensional (3-D) E.g. Isometric, oblique, perspective 4. Practice sketching plane objects and pictorial objects to build an album for display.	**Subject Specific Practices** Graphic communication Coordination skills Manipulative skills Arithmetic **Core Competencies** Creativity and innovation Communication

CLASS: B7

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 2: DESIGNING

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.5.2.1 Demonstrate understanding of Designing	**B7.5.2.1.1: Work with a given design brief** **Exemplars** 1. Study a given design brief to identify the problem. 2. Analyse the problem and list the possible ideas for the solution. 3. Discuss ideas in groups	**Subject Specific Practices** Analytical skills **Core Competencies** Teamwork Communication
	B7.5.2.1.2: Generate Ideas **Exemplars** 1. Use freehand sketching to generate three possible ideas for solving the identified problem and write descriptive notes. 2. Verify if the generated ideas satisfy the solution for the problem identified. 3. Select the best design and draw it in a pictorial form. 4. Provide suitable dimensions to the selected design. 5. Prepare a simple working drawing of the selected design for the working drawing prepared in	**Subject Specific Practices** Graphic communication **Core Competencies** Teamwork Critical thinking skills

	communication design such as front elevation, plan and end view.	Creativity and Innovation
	B7.5.2.1.3: Make artifacts using compliant materials **Exemplars** 1. Study the design folio to understand the selected design. 2. Study the working drawing developed in the communication design. 3. Study and use the operational sequence for making the artifact. 4. Identify materials to be used and use it to make the artifact. **Note:** Make provision for mixed ability groupings	**Subject Specific Practices** Manipulative skills **Core Competencies** Creativity and innovation Inclusivity
	B7.5.2.1.4: Test and Evaluate the manufactured artifact **Exemplars** 1. Test the manufactured artifact whether it has met the specifications. **Note:** Consider the shape, finish, function, strength and others as a guide for testing. 2. State the strengths and weaknesses of the artifact for consideration. 3. Suggest modifications for the artifact. 4. Grade the artifact whether it has solved the problem or not. **Note:** Present judgment rate of the artifact whether it is Excellent, Very good, Good, Fair or Bad.	**Subject Specific Practices** Making judgement **Core Competencies** Decision making

	Excellent, Very Good	

CLASS: B7

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 3: PLANNING FOR MAKING ARTIFACTS/PRODUCTS

Content Standard	**Indicators** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.5.3.1 **Demonstrate understanding of planning for making artifacts/products**	**B8.5.3.1.1: Outline the factors to consider when planning meal for supper** **Exemplars** 1. Discuss the different types of meals served in a day. E.g. Breakfast, Lunch, Snack, Elevenses, Brunch and Supper. 2. Discuss the factors to consider when planning meals. E.g.: • Nutritional needs of family members • Food available • Family budget	**Subject Specific Practices** Planning skills **Core Competencies** Decision making
	B8.5.3.1.2:Plan for making artifacts/products in sewing and crocheting **Exemplars** 1. Identify basic tools and materials for sewing and crocheting, in groups**.** E.g. Sewing tool (needle), Sewing material (threads) and Crocheting tool **(**hook/pin made	**Subject Specific Practices** Analytical skills Classification

	from metal, plastic, bone or wood) Crocheting material (threads and yarns). 2. Identify basic stitches for sewing E.g. tacking (long and short), machine stitches, running stitches, back stitches, basting, tailor's tacking, tailor's tacks. 3. Classify basic stitches into groups. E.g. • Temporary Stitches- tacking (long and short), basting, tailor's tacking and tacks. • Permanent Stitches- machine stitches, running stitches, back stitches, over sewing, overcasting, chain, blanket **Exemplars (CROCHETING)** 1. Identify basic crocheting stitches E.g. chain, slip stitches, double crochet, trebles. 2 .Explain the abbreviations used in crocheting. E.g. • ch.- chain • dc.-double crochet • tr- treble	**Core Competencies** Teamwork Critical thinking

CLASS: B7

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 4: MAKING ARTIFACTS FROM COMPLIANT, RESISTANT MATERIALS AND FOOD INGREDIENTS

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.5.4.1 **Demonstrate skills of making artifacts/products**	**B7.5.4.1.1: Demonstrate skills in preparing food using moist and dry methods of cooking** **BOILING** **Exemplars** 1. Discuss reasons for cooking food, in groups E.g. To make food edible, To improve flavour of food, To kill germs. 2. Identify and classify the different methods of cooking. E.g.: • Moist Method - Boiling, Steaming • Dry Method - Baking, Grilling 3. Identify foods that can be boiled. E.g. yam, rice, egg, meat 4. Discuss the three types of boiling E.g.	**Subject Specific Practices** Operational skills Analytical skills **Core Competencies** Teamwork Creativity **Subject Specific**

	• Boiling where the food absorbs the water – rice • Boiling where the water forms part of the food – porridge, soup • Boiling where the water is thrown away –yam, cassava 5. Discuss the advantages and disadvantages of boiling foods. E.g. • Advantage – it is a safe and simple method of cooking • Disadvantage - water soluble nutrients are lost if the water in which food is boiled is discarded. 6.Describe the principles/guidelines of boiling E.g. The food items should be completely immersed throughout the process. 7. Prepare a dish using boiling method and display for appraisal **STEWING** **Exemplars** 1. Explain what is meant by stewing; E.g. It is a slow long method of cooking food in a small amount of liquid over a gentle heat. 2. Identify foods that can be stewed. E.g. Mushrooms, carrots, yam, onions, beans, peppers and tomatoes. 3. Discuss the principles/ guidelines for stewing.	**Practices** Operational skills **Core Competencies** Analytical skills

	E.g. • A tight fitting lid is important to retain steam • Temperature must be well controlled 4. Discuss the advantages and disadvantages of stewing foods. E.g. • Advantage - economic on fuel • Disadvantage - takes very long time to be prepared 5. Prepare a dish using stewing method and display for appraisal.	
	B7.5.4.1.2: Demonstrate skills of making artifacts/products in sewing and crocheting **SEWING** **Exemplars** 1. Make specimen or samples of basic sewing stitches individually. E.g. tacking (long and short), running stitches, back stitches chain stitches, overcasting. 2. Display specimens for appraisal **CROCHETING** 1. Make specimen of basic crocheting stitches. E.g. Chain, slip stitches, double crochet, treble. 2. Display specimens for appraisal.	**Subject Specific Practices** Manipulation skills Operational skills **Core Competencies** Creativity and Innovation

	B7.5.4.1.3: Making of card board or paper mock ups **Exemplars** 1. Organise the card board or paper as the main materials in place for the work. 2. Use the cutting list together with the working drawing to undertake the measuring, marking out and cutting of the various parts of the design using appropriate tools and equipment. 3. Check the various parts and dimensions to ensure an accurate surface development of the artifact. 4. Fold the parts of the surface developed to obtain the required artifact. 5 Use appropriate jointing materials, tools to complete the required artifact. 6. Apply a suitable finish on the artifact 7. Test and evaluate artifact for modifications.	**Subject Specific Practices** Operational skills **Core Competencies** Creativity

CLASS: B 7

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 1: CAREER PATHWAYS AND CAREER OPPORTUNITIES

Content Standard	**Indicators and exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.6.1.1 **Demonstrate awareness of own learning styles, interests, biases, beliefs and reasons for pursuing Career Technology**	**B7. 6.1:1.1: Evaluate own learning styles, interests and reasons for pursuing Career Technology** **Exemplars** 1. Think, pair, share with whole class own learning styles, interests and reasons for pursuing Career Technology. Why are you studying Career Technology? E.g. • To determine my future career path based on my interest and ability • To have a distinctive knowledge of the various courses available 2. Examine own biases and beliefs, as a male or female, about some vocations. E.g. • Women are not to offer courses such as Building Construction, Mechanical Engineering, Carpentry, Plumbing • Men are not supposed to study courses such as Food and Nutrition, Home Management, Hair Dressing	**Subject Specific Practices** **Core Competencies** Decision making Communication Presentation skills Teamwork Personal development

CLASS: B7

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 2: ESTABLISHING AND MANAGING A SMALL BUSINESS ENTERPRISE

Content Standard	**Indicators and Exemplars** **By the end of B7, learners will:**	**Subject Specific Practices and Core Competencies**
B7.6.2.1 **Demonstrate understanding of Establishing and Managing a Small Business Enterprise**	**B7.6.2.1.1: Explain what is meant by 'entrepreneurship' and 'entrepreneur'** **Exemplars** 1. Look at pictures of various entrepreneurs provided and discuss what entrepreneurship means, in groups 2.Discuss the forms of business – sole owner business, limited liability, partnership, and cooperatives, in groups 3.Discuss the different trades such as welding, hairdressing, car washing, catering, masonry, carpentry, tiling, wood-working, mechanical engineering, in groups	**Subject Specific Practices** Observation skills **Core Competencies** Teamwork Communication
	B7.6.2.1.2:Explain the characteristics of an entrepreneur **Exemplar** Describe the characteristics of an entrepreneur in relation to welding, hairdressing, car washing, catering, masonry, carpentry, tiling, wood-working, mechanical engineering, in groups.	**Core Competencies** Teamwork

	B7.6.2.1.3: Describe the characteristics that lead to a successful entrepreneur **Exemplar** Discuss the characteristics that lead to successful entrepreneurship using illustrations, ICT tools and other sources. E.g. Opportunity seeking, goal setting, risk taking, perseverance and persistence, self-confidence, commitment to work, hardworking, planning, information seeking, and problem solving skills	**Subject Specific Practices** Research skills **Core Competencies** Problem solving skills Communication Team work Collaboration Digital literacy
	B7.6.2.1.4: Explain the advantages and disadvantages of being an entrepreneur **Exemplar** Discuss in groups, the advantages and disadvantages of being an entrepreneur E.g. • Advantage: Self- management, employment creation • Disadvantage: Irregular income stream, Difficulty in securing funds	**Subject Specific Practices** **Core Competencies** Problem solving skills Communication Team work Collaboration

	B7.6.2.1.5: Explain what is meant by Career Technology Entrepreneurship **Exemplar** Look at a picture of a Career Technology entrepreneur and explain what is Career Technology entrepreneurship **N.B**: Give examples of different trade areas, such as mechanical engineering, fitting, welding, hairdressing, car washing, catering, masonry, block work, wood work, tiling	**Subject Specific Practices** Fact-finding **Core Competencies** Communication
	B7.6.2.1.6: Identify an entrepreneurial opportunity in the locality **Exemplars** 1. Explore your locality, observe, and interact with entrepreneurs. 2. Research for entrepreneurial opportunities E.g. Mechanical engineering, welding, fitting, hairdressing, car washing, catering, masonry, block work, wood work, tiling, fashion designing) in the locality. 3. Write down the names of a few of the popular enterprises sighted in your locality. 4.Visit a few enterprises in your potential trade area and find out the following: i.) How the business was started ii.) The challenges the business is facing iii.) Solutions to the challenges 5.Write down the findings for presentation in class	**Subject Specific Practices** Investigative skills Research skills Writing skills **Core Competencies** Problem solving skills Communication Team work Collaboration

BASIC 8

CLASS: B8

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.1.1.1 **Demonstrate understanding of basic practices that depicts personal and food hygiene**	**B8.1.1.1.1:Demonstrate skills of personal hygiene** **Exemplars** 1. Think-pair-share the causes of bad body odour. E.g. Not bathing well. 2. Prepare personal hygiene cards /posters in groups to show one cause of bad body odour. 3. Identify the appropriate materials used to prevent bad body odour. E.g. Lime/lemon, deodorant. 4. Demonstrate how to prevent bad body odour using the materials. 5. Plan and organize campaigns to educate the school community on the elimination of bad body odour. **Note:** Include the following in the planning: Message , Target group	**Subject Specific Practices** Cleanliness **Core Competencies** Personal development and Leadership Skills Communication and Collaboration

	B8.1.1.1.2: Demonstrate skills of food hygiene **Exemplars** 1. Watch videos and pictures of the processes and skills of maintaining food hygiene and write down the observations. E.g. • Store foods appropriately both before and after cooking. • Keep hair clean and cover with a cap • Cut/ trim of finger nails short • Not wearing jewelry at work. • Sneeze and cough into a handkerchief. • Wash hands regularly, before and after handling food. • **Note**: Use the following website **www.foodandbeveragetrainer.com** to search for more information. 2. Role-play the skills of food hygiene in class.	**Subject Specific Practices** Observation Skills **Core Competencies** Writing Digital Literacy Creativity and Innovation

CLASS: B8

STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

SUB-STRAND 2: PERSONAL, WORKSHOP AND FOOD LABORATORY SAFETY

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.1.2.1 **Demonstrate understanding of basic practices that depict personal, workshop/site/ food laboratory safety**	**B8.1.2.1.1: Identify safety measures in the workshop/site/food laboratory.** **Exemplars** 1. Discuss safety measures in the workshop/site and food laboratory, in groups. E.g. Avoid running in the workshop, do not throw tools about, avoid spilling liquids on the floor and work in a well-ventilated and clean workshop/site/ food laboratory. 2. Explore the basic practices that depict safety in the workshop/site/food laboratory using ICT tools and other sources. E.g. • Wear the right clothes - work clothes should fit properly. • Use The Right Tools - if you need a hammer, get a hammer	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Communication Creativity Presentation skills

	3. Present and discuss ways of observing safety practices in class. E.g. • Wear the right protective wear – goggles/ear muffs should fit properly. • Use the right tools for the right job- if you need a screw driver, get a screw driver.	
	B8.1.2.1.2: Demonstrate basic practices that depict safety in the workshop/site/food laboratory **Exemplar** Demonstrate ways of observing safety in the workshop/site/food laboratory, in groups. E.g. Wear personal protective equipment: • Goggle - eye • Helmet – head • Apron – body • Cap – hair • Boot - foot	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Creativity

CLASS: B8

STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

SUB-STRAND 3: ENVIRONMENTAL HEALTH

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.1.3.1 **Demonstrate understanding of the basic concept of Environmental health**	**B8.1.3.1.1: Illustrate the causal factors, effects and prevention of desertification and deforestation** **Exemplars** 1. Discuss the causal factors, effects and preventive measures of desertification and deforestation, in groups. E.g. • Deforestation i. Causal factors – mining, bush fires ii. Effects - polluted water bodies, global warming iii. Prevention – alternative livelihood (agriculture), greening the environment • Desertification i. Causal factors – deforestation, urbanization, ii. Effects - plant species may be lost, climate change iii. Prevention – afforestation, ruralization 2. Group Project: Research the causal factors, effects and preventive measures of desertification and deforestation and develop a folder 3. Present project findings in a report for appraisal	**Subject Specific Practices** Writing skills Research skills **Core Competencies** Communication Teamwork Presentation skills

CLASS: B8

STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

SUB-STRAND 3: ENVIRONMENTAL HEALTH

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.1.3.2 **Demonstrate understanding and practice of basic ways of disposing of household and industrial/workshop waste**	**B8.1.3.2.1: Identify proper management and disposal of household and industrial wastes** **Exemplars** 1. Research the proper management and disposal of household and industrial wastes, in groups. 2.Discuss and report on the following: • The different ways of disposing off home and industrial waste; e.g. Landfills, combustion. • The proper ways of disposing off household and industrial wastes; e.g. Sanitary Landfill Disposal and Incineration Disposal. • Ways of recycling household and industrial wastes. 3. Undertake a project on how to recycle wastes at home and school.	**Subject Specific Practices** Research skills **Core Competencies** Teamwork Communication Personal development and leadership

CLASS: B8

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 1: COMPLIANT MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.2.1.1 **Demonstrate understanding of properties of compliant materials**	**B8.2.1.1.2: Discuss the basic characteristics of compliant materials** **Exemplars:** 1. Identify the properties of paper and card board that make them suitable for use E.g. **Paper** • Medium weight, fairly smooth and fairly stiff; • Ideal for making small paper models. **Cardboard** • Stiff, smooth and thin; • Good for creating greeting cards, paper models and other stand-up building projects. 2. Describe the properties of fabrics/textiles that make them suitable for use E.g. • Absorbent - can allow moisture vapour to pass through easily • Durable - can last longer	**Subject Specific Practices** **Core Competencies** Analytical Communication

CLASS: B8

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 2: RESISTANT MATERIALS

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars

By the end of B8, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B8.2.2.1
Demonstrate understanding of properties of resistant materials</td><td>B8.2.2.1.1: Explain the basic properties of resistant materials

Exemplars
1.Discuss the physical properties of resistant materials;
E.g. Density, fusibility, electrical conductivity, thermal conductivity

2. Investigate the working properties of resistant materials;
E.g. Strength, hardness, toughness, malleability, ductility, elasticity

3. Make a chart on the various properties of resistant materials
E.g.

<table><tr><th>Physical Properties</th><th>Working Properties</th></tr><tr><td>Density
Fusibility</td><td>Strength
Hardness</td></tr></table></td><td>Subject Specific Practices
Research skills

Core Competencies
Communication
Creativity</td></tr>
<tr><td></td><td>B8.2.2.1.2: Describe the properties of building materials

Exemplars
1. Describe the properties of cement, sand, stones</td><td>Subject Specific Practices
Manipulative skills</td></tr>
</table>

	E.g. Cement- binds Sand – fine Stone - hard, coarse 2.Discuss reasons for choosing a type of material for a building project E.g. Cement binds aggregates (sand and stone) in making mortar and concrete 3. Prepare a chart on properties of building materials	**Core Competencies** **Communication** Analytical Creativity

CLASS: B8

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 3: SMART AND MODERN MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.2.3.1 **Demonstrate understanding of use of smart and modern materials**	**B8.2.3.1.1: Discuss smart and modern materials** **Exemplars** 1. Identify areas where smart and modern materials are in use E.g. Food industry, Textile industry, Electricals/Electronics industry, Healthcare industry, Building industry 2.Explore for products made from smart and modern materials using ICT tools and other sources E.g.: • Modified starches: - used in pizza topping • Sanitised fabrics: - for sportswear and socks • Liquid Crystal Displays (LCDs):- for organic light-emitting diodes • Photochromic pigments;- for lens in glasses, windows	**Subject Specific Practices** Research skills **Core Competencies** **Creativity** Digital literacy Communication

CLASS: B8

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 4: FOOD COMMODITIES (ANIMAL AND PLANT SOURCES)

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.2.4.1 **Demonstrate understanding of the functions of food commodities**	**B8.2.4.1.1: Explore the functions of food to the body** **Exemplars** 1. Classify food according to their basic functions E.g. Body-building foods, energy-giving foods and protective foods 2. Relate food commodities to their functions. E.g. • Body-building: - meat, egg, beans • Energy-giving: - cereals, fats and oils • Protective: - Fruits, vegetables 3. Draw a chart on the 3 functions of food commodities, and display for appraisal	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Analytical Creativity

CLASS: B8

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 1: MEASURING AND MARKING OUT

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.3.1.1 **Demonstrate understanding of measuring and marking out tools and equipment for production**	**B8.3.1.1.1: Identify tools and equipment for measuring and marking out** **Exemplars** 1. Identify measuring and marking out tools from charts or realia for each aspect/area of Career Technology used to produce an artifacts/products. 2. Describe the processes craftsmen/women go through to measure and mark out artifacts/articles/products in/at the: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastic workshop	**Subject Specific Practices** Manipulative skills **Core Competencies** Communication and Collaboration Creativity Presentation skills

	3. Sketch and label parts of measuring and marking out tools and equipment. 4. Present the sketched measuring and marking out tools and equipment for appraisal.	
	B8.3.1.1.2: Take measurements of products/artifacts **Exemplars** **(A) Take body measurements** 1. Discuss the importance of taking body measurements in sewing or making an artifact. 2. Discuss the guidelines for taking body measurements. E.g. • Take measurements over well-fitted foundation garment • Use a firm tape measures for accurate measurements • Record all measurement taken 3. Take each other's body measurements for garment construction. E.g. Bust, Waist, Hips, Across back, Chest **Note:** Check for accurate measurements and record.	**Subject Specific Practices** Arithmetic skills Writing skills **Core Competencies** Communication and Collaboration Creativity Teamwork Analytical skills

	(B) Take measurements of artifacts/products **Exemplars** 1. Demonstrate how to handle the tape measure to take measurements in millimeters, in groups 2. Demonstrate how to mark out measured part(s),in groups 3. Demonstrate how to record measured part(s), in groups 4. Demonstrate how to indicate dimensions on marked out part(s), in groups 5. Care and maintain measuring and marking out tools and equipment. **Note:** Check for accurate measurements and record.	
	B8.3.1.1.2 : Use appropriate techniques to measure **Exemplars** 1. Measure liquids, dry ingredients, objects and other materials using tape measure, rule, scales and handy measures such as spoons, jugs 2.Discuss the inaccuracies in using tampered/faulty measuring tools and equipment and how they affect individuals and others	**Subject Specific Practices** Manipulative skills **Core Competencies** Communication

	E.g. Affects quantity and quality of products/works/produce 2. Develop a plan and organize a community education on addressing the issues of using tampered/faulty measuring tools, in groups E.g. Message to deliver, target groups 3. Measure the ingredients for pancake, and make the pancake. 4. Measure objects or materials, and make models/mock-ups using compliant and resistant materials. 5. Display pancakes and artifacts for appraisal.	Teamwork Analytical skills Critical Thinking and Problem solving Creativity
	B8.3.1.1.3: Demonstrate how to care and maintain measuring and marking out tools used for production **Exemplars** 1. Share experiences from home on how to care for tools and equipment for production. 2.Identify cleaning agents/materials used to clean and maintain tools and equipment based on the respective material used in making the tool E.g. Silvo for cleaning silver, Brasso for cleaning brass, oil to avoid rust, cloth for cleaning and dusting 3. Demonstrate how to clean measuring and marking out tools and equipment according to the materials used in making them.	**Subject Specific Practices** Manipulative skills Maintenance culture **Core Competencies** Communication Teamwork

CLASS: B8

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 2: CUTTING/SHAPING

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.3.2.1 **Demonstrate understanding of cutting and shaping tools and equipment for making artifacts /products**	**B8.3.2.1.1: Identify cutting and shaping tools and equipment** **Exemplars** 1.Identify cutting and shaping tools and equipment used in the following areas: • Food laboratory (kitchen) E.g. kitchen knives, cake tins, moulding bowls • Sewing workshop/laboratory E.g. paper cutting scissors, French curves, tailors chalk, pencil • Building site E.g. bolster, brick hammer • Wood workshop E.g. firmer chisels, jack plane, rip saw	**Subject Specific Practices** Cutting out skills **Core Competencies** Communication and collaboration Designing skills Creativity Presentation skills

	• Meta/plastics workshop E.g. cold chisel, hack saw, hand file 2.Discuss the uses of the various types of cutting and shaping tools, in groups, and present in class 3.Sketch and label cutting and shaping tools, and display them for appraisal	
	B8.3.2.1.2: Use appropriate techniques to design and shape artifacts/products **Exemplars** 1.Use appropriate techniques to shape a design in: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastics workshop 2. Display works for appraisal.	**Subject Specific Practices** Operational skills **Core Competencies** Critical thinking Creativity and Innovation Decision making
	B8.3.2.1.3: Use appropriate techniques to cut out marked designs 1. Use appropriate techniques to cut out a design in: • Food laboratory (kitchen)	**Subject Specific Practices** Operational skills

	• Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastics workshop 2.Display products for appraisal	**Core Competencies** Critical thinking Creativity and Innovation Decision making
	B8.3.2.1.4: Demonstrate how to care and maintain shaping and cutting tools and equipment **Exemplars** 1.Discuss how to care for and maintain cutting and shaping tools and equipment used in: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastics workshop	**Subject Specific Practices** Maintenance culture **Core Competencies** Communication

CLASS: B8

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 3: JOINING AND ASSEMBLING

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.3.3.1 **Demonstrate understanding of joining and assembling materials, tools and equipment used for making artifacts/products**	**B8.3.3.1.1: Identify joining and assembling materials, tools and equipment used for making artifacts/products** **Exemplars:** 1. Identify materials, tools and equipment used for joining and assembling artifacts/products from displayed charts, pictures or realia in the following areas: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/ plastic workshop 2. Sketch and label tools in each of the trade areas E.g. Hand sewing machine, clamps 3. Display sketches for appraisal	**Subject Specific Practices** Maintenance culture **Core Competencies** Communication Communication Creativity Analytical

	B8.3.3.1.2: Use appropriate tools, equipment and techniques to join and assemble patterns/artifacts/products **Exemplars** 1.Demonstrate the appropriate techniques used in the sewing workshop/laboratory E.g. Handling and using the sewing machine to make stitches on paper patterns correctly for straight stitching, stitching in circles, stitching around curves. 2. Demonstrate appropriate techniques for handling and using the crochet pin/hook in making stitches for production. E.g. Chain, slip, double and treble stitches 3. Demonstrate the appropriate techniques used for joining the following products made from the following materials: • Wood • Metal • Bricks/blocks • Plastics • Paper 4.Display specimens and artifacts for appraisal	**Subject Specific Practices** Operational Skills Manipulative skills **Core Competencies** Analytical skills

	B8.3.3.1.3: Demonstrate how to care for and maintain tools and equipment used for joining and assembling **Exemplars** 1. Demonstrate how to care for and maintain tools and equipment used for joining and assembling the following: (a) Sewing workshop/laboratory - dust and oil sewing machine after use (b) Building site – was and clean tools (c) Wood workshop – clean tools, oil metal parts of tools (d) Metal/plastic workshop – clean tools, oil metal parts of tools	**Subject Specific Practices** Operational Skills Manipulative Skills **Core Competencies**

CLASS: B8

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 4: KITCHEN ESSENTIALS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.3.4.1 **Demonstrate understanding of maintaining kitchen essentials**	**B8.3.4.1.1: Demonstrate how to care and maintain kitchen essentials** **Exemplars** 1. Discuss suitable materials for cleaning kitchen essentials according to the materials used in making them. E.g. • Aluminum –steel wool, vim • Stainless steel –Silvo, ground sifted egg shell 2. Demonstrate how to care for and maintain basic kitchen essentials. E.g. Washing, cleaning, sterilizing	**Subject Specific Practices** Operational skills Manipulative skills Maintenance culture **Core Competencies** Communication

CLASS: B8

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 5: FINISHES AND FINISHING

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.3.5.1 **Demonstrate understanding of application of finishes**	**B8.3.5.1.1: Demonstrate how to mix the various finishes** **Exemplars:** 1. Identify tools used for mixing finishes E.g. Containers, stirring rod 2. Demonstrate the procedure for mixing lacquer E.g. Lacquer is diluted with thinner about 10-15% 3. Demonstrate the procedure for mixing emulsion paint E.g. Add water bit by bit and stir with stirring rod 4. Demonstrate the procedure for mixing oil paint E.g. Dilute oil paint with turpentine between 10-30% and stir. 5.Display mixture for appraisal	**Subject Specific Practices** Operational skills Manipulative skills Arithmetic **Core Competencies** Analytical skills

CLASS: B8

STRAND 4: TECHNOLOGY

SUB-STRAND 1: SIMPLE STRUCTURES AND MECHANISMS, ELECTRIC AND ELECTRONIC SYSTEMS

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.4.1.1 **Demonstrate understanding of application of principles of forces acting on structures**	**B8.4.1.1.1: Experiment the principles of forces on structures.** **Exemplars** 1.Research for types of forces that can act on structural members in frame construction E.g. Tension, compression, shear, torsion and bending **Note**: Use ICT tools and other sources to identify types of forces acting on structures 2.Describe the features of the forces that can act on structural members in frame construction E.g. • tension force can cause a member to stretch • compression force can cause a member to be squashed 3.Make sketches and notes of the types of forces acting on structural members E.g. Tension, compression, shear, torsion and bending 4. Identify suitable resistant materials that can be used to experiment the various	**Subject Specific Practices** Manipulative skills Research skills Experimentation Writing Skills **Core Competencies** Digital Literacy Creativity and Innovation Analytical skills Teamwork

	kinds of forces acting on structural members. E.g. Wood , metal , brick 5.Perform experiments to show the following: • how tension force can force a member to 'stretch' • how compression force can cause a member to 'squash' or 'buckle' • how shear force can cause materials to slide over another • how torsion force can cause a member to twist • how a bending force which acts at an angle to a member tends to make it bend 6.Write their observations and discuss in class, in groups	
	B8.4.1.1.1.2: Design and make simple school technology projects **Exemplars** 1. Identify simple school technology projects E.g. See-saw, pushchair for babies, cantilever, beams, types of roof, mobile stage, bridge 2. Explain reasons for choosing the project E.g. Availability of materials and tools, preference, skills 3. Identify suitable materials, tools and equipment for making the project. E.g. Cardboard, empty tins, plastic bottles	**Subject Specific Practices** Decision- making Differentiation **Core Competencies** Analytical thinking Operational skills Inclusivity

	4. Prepare a folio for the project **Note**: Follow the design process 5. Plan and make a mock-up 6. Test and evaluate the project indicating the strengths and weaknesses 7. Make modifications where needed	

CLASS: B8

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 1: COMMUNICATING DESIGN

Content Standard	Indicators and Exemplars By the end of B8, learners will:	Subject Specific Practices and Core Competencies
B8.5.1.1 **Demonstrate understanding of drawing plane figures and solid objects using drawing instruments**	**B8.5.1.1.1:Draw plane figures using instruments** **Exemplars** 1. Identify two dimensional (2-D) objects (plane figures) E.g. Circles, triangles, quadrilaterals, polygons 2. Draw circles, triangles, quadrilaterals and polygons using instruments 3. Cut shapes of plane figures drawn and prepare an album 4.Use the cut out shapes to make a game E.g. Flash cards 5.Display works for exhibition	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Analytical skills Creativity and innovation
	B8.5.1.1.2: Draw objects in pictorial using instruments **Exemplars:** 1. Explain what is meant by pictorial drawing	**Subject Specific Practices** Manipulative skills Operational skills

	E.g. Drawing objects to show the three dimensions i.e. length, width and height/thickness 2. Identify methods of drawing objects in pictorial form E.g.: Isometric, oblique and perspective 3. Illustrate the techniques of drawing objects in isometric, oblique and perspective 4. Draw objects in isometric, oblique and perspective using instruments 5. Display drawings for appraisal	**Core Competencies** Analytical skills Decision making skills

CLASS: B8

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 2: DESIGNING

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.5.2.1 **Demonstrate knowledge of Designing**	**B8.5.2.1.1: Write a Design Brief** **Exemplars** 1. Observe problem situations in the environment. 2 .Write the problem situation. 3. State a suitable design brief to address the problem.	**Subject Specific Practices** Observational skills Writing skills **Core Competencies** Critical thinking and problem solving
	B8.5.2.1.2: Research into design problem **Exemplars** 1. Develop analysis chart of the problem. 2. State questions to address the analysis chart. 3. Conduct a research into the problem analysis through prepared questionnaires and interview guides. 4. Develop observation schedules and take photos/make sketches. 5. Analyse the research data and write report.	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Analytical skills Communication Critical thinking

	B8.5.2.1.3: Write Design Specifications **Exemplars** 1. Develop and write the design specifications based on the areas analysed, to serve as a guide for idea generation 2. Give reasons for the specifications developed	**Subject Specific Practices** Writing skills **Core Competencies** Analytical skills Decision making
	B8.5.2.1.4: Generate Ideas **Exemplars** 1. Use freehand to sketch three possible ideas. 2. Write descriptive/annotated notes to each of the generated ideas. 3. Compare and select the best idea or design 4. Develop the selected idea and prepare the working drawings and folios.	**Subject Specific Practices** Writing skills **Core Competencies** Analytical skills
	B8.5.2.1.5: Make artifact using resistant materials **Exemplars** 1. Study the design folios with reference to the design, working drawings and cutting list developed in communication design. 2. Identify the materials, tools and manufacturing processes involved, and check the conditions suitable for working. 3. Organise the working environment to ensure health and safety during the making of the artifact. 4. Undertake in sequence the making of the artifact using the appropriate materials, tools and processes suitable for the design.	**Subject Specific Practices** Writing skills Operational skills **Core Competencies** Analytical skills Critical thinking Creativity and innovation

	5. Select the appropriate finishing materials and apply on artifact	
	B8.5.2.1.6: Test and evaluate made products/artifacts **Exemplar** 1. Test the artifact using the design specifications as a guide. E.g. Check shape, function, finish, material 2. State the strengths and weaknesses of the artifact and verify. 3. State the proposed suggestions for modifications on the artifact. 4. Present judgment rate of the artifact whether it is Excellent, Very good, Good, Fair or Bad.	**Subject Specific Practices** Writing skills **Core Competencies** Analytical skills Decision making

CLASS: B8

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 3: PLANNING FOR MAKING ARTIFACTS/PRODUCTS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.5.3.1 **Demonstrate understanding of planning for making artifacts/products**	**B8.5.3.1.1: Outline the factors to consider when planning meals** **Exemplars:** 1. Discuss the different types of meals served in a day. E.g. Breakfast, Lunch, Snack, Elevenses, Brunch and Supper. 2. Discuss the factors to consider when planning meals. E.g. Nutritional needs of family members, Food available, Family budget	**Subject Specific Practices** **Core Competencies** Communication skills
	B8.5.3.1.2: Demonstrate knowledge and skills of planning and making sewing artifacts/products **Exemplars** **A** 1. Explain what is meant by seams E.g. It is the process of joining two or more layers of fabrics together. 2. Identify commonly used seams for sewing E.g. French, plain/open , run and fell, machine and fell, overlaid	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Communication Analytical skills Creativity and innovation Decision making skills

	3. Classify basic seams into two groups. E.g. • Conspicuous seams- overlaid, machine and fell • Inconspicuous seams- French, plain/open 3. Discuss basic rules for making seams. E.g. Thread should match the colour of fabric, Seam width should be suitable for the fabric being worked on. 4. Make specimen or samples of basic seams. E.g. Open/plain, French, overlaid, run and fell, machine fell. **B. Discuss basic methods of planning for arranging fullness in sewing** **Exemplars** 1.Identify basic methods of arranging fullness in sewing E.g. Gathering, darts 2. Explain factors to consider when choosing methods for arranging fullness in sewing. E.g. Purpose for which article will be used, type of fabric	

	5. Make specimen or samples of arrangement of fullness E.g. Darts and gathering 6. Display specimens for appraisal.	
	B8.5.3.1.3: Planning to make wooden, metal and plastic artifacts **Exemplars** 1. Study the design folio and critically examine the working drawings. E.g. Plan, detailed drawings and cutting list. 2. Study the workshop environment to check on health and safety conditions of the place. 3. Identify the needs to be addressed. **Note:** • Familiarise with the workshop rules, regulations, ventilation and light situations, and get defective parts of the workshop repaired before the start of work. • Study the conditions of the timber pieces, tools and the processes involved for first-hand information to avoid any mistake. • Seek guidance or tutorials on aspects concerning materials, tools and processes or skills not conversant with before the actual work.	
	B8.5.3.1.4: Planning to make building artifact	**Subject Specific Practices** Operational skills

	Exemplars 1. Describe the properties of cement, sand, stones, 2. .Prepare a chart on properties of building materials 3. Discuss reasons for choosing a type of material for a building project 4. Make mock- ups of simple building project 5. Display mock-ups for appraisal	**Core Competencies** Communication skills Analytical skills Creativity and innovation skills

CLASS: B8

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 4: MAKING ARTIFACTS FROM COMPLIANT, RESISTANT MATERIALS AND FOOD INGREDIENTS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.5.4.1 **Demonstrate understanding of designing artifacts/models and planning meals**	**B8.5.4.1.1: Demonstrate skills in preparing food using moist method of cooking** **Exemplars** 1. Explain what is meant by steaming E.g. It is a method of cooking food in the steam which rises from boiling water. 2. Identify foods that can be steamed E.g. Fish, chicken, aboloo, kpokpoi 3.Discuss the types of steaming E.g. Pot steaming, plate steaming 4. Discuss the advantages and disadvantages of steaming. E.g. • Advantage: Nutrient preservation is assured • Disadvantage**:** Slow and simple method of cooking.	**Subject Specific Practices** Operational skills **Core Competencies** Communication skills Analytical skills Creativity and innovation skills

	5. Discuss the principles/guidelines of steaming. E.g. • Ste*am* at normal temperature (100° C), the same as boiling water. • The pot must have a tight-fitting lid. • The pots should be deep and wide so steam can circulate freely around the food to ensure even cooking. 6. Prepare a dish using steaming method. 7.Display food for appraisal	
	B8.5.4.1.2:Demonstrate skills of making artifacts/products in crocheting using advanced techniques **Exemplars** 3. Make specimen of advance crocheting stitches to produce flat articles and other useful articles E.g. Table runners, bags, belt and purse. **4.** Display specimens for appraisal	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Analytical skills Operational skills Creativity and innovation skills Teamwork

	B8.5.4.1.3: Demonstrate skills of making artifacts/products using wood, metal and plastics **Exemplars** 1. Organise the workshop in readiness for working. 2. Check the dimensions on the cutting list and on the working drawing. 3. Follow the operation sequence to make the artifact E.g. Prepare the work pieces, measure, mark out, cut the work pieces to size, cut the joints and assemble the various parts to form the artifact. 4. Prepare the surfaces of the artifact and apply the appropriate finishing 5. Test, evaluate and modify the artifact.	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Analytical skills Operational skills Creativity and innovation skills Teamwork

Class: B8

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 1: CAREER PATHWAYS AND CAREER OPPORTUNITIES

Content Standard	**Indicators and exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.6.1.1 **Demonstrate knowledge of career opportunities in Career Technology**	**B8.6.1.1.1: Explore the various career pathways and opportunities in Career Technology** **Exemplars** 1. Research in groups, the various career pathways and opportunities using different sources. 2. Write a brief report and present in class. 3.Examine your interests, skills and values in the light of the career opportunities E.g. • What are your top skills? • What interests you the most? • Compare your most promising career options against your list of prioritized skills, interests and values • What is the current demand for this field?	**Subject Specific Practices** Writing skills Research skills **Core Competencies** Communication Presentation skills Teamwork Critical thinking and problem solving Personal development

CLASS: B8

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 2: ESTABLISHING AND MANAGING A SMALL BUSINESS ENTERPRISE

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
B8.6.2.1 **Demonstrate understanding of establishing and managing a small business enterprise**	**B8.6.2.1.1: Explain what is meant by Micro Business Enterprise** **Exemplars** 1. Look at pictures of various enterprises and describe what a Micro Business Enterprise is. 2. Identify any known business that fits to be called a Micro Business Enterprise 3. Discuss the steps involved in setting up a Micro Business Enterprise **Note:** Micro Business Enterprise is the same as Small Business Enterprise	**Subject Specific Practices** Analytical skills **Core Competencies** Communication Critical thinking and collaboration

	B8.6.2.1.2: Explain what is meant by Medium-sized Business Enterprise **Exemplars** 1. Look at pictures of various enterprises and describe what a Micro-sized Business Enterprise is. 2. List four known businesses in your localities that fit to be described as Medium-sized Business Enterprises. 3. Write down how to set up a Medium-sized Business Enterprise. **Note:** Visit near -by enterprises or businesses and find out from owners how they set up their businesses 4.Present findings for discussion	**Subject Specific Practices** Writing skills Analytical skills Research skills **Core Competencies** Communication Presentation skills

BASIC 9

CLASS: B9

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

Content Standard	Indicators and Exemplars By the end of B9, learners will:	Subject Specific Practices and Core Competencies
B9.1.1.1 **Demonstrate skills that relate to personal and food hygiene to self**	**B9.1.1.1.1: Practice good grooming** **Exemplars** 1. Explain what is meant by good grooming and relate it to personal hygiene. E.g.: Good grooming means practicing good hygiene techniques and general composure. 2 .Discuss good grooming practices in groups E.g. Proper sitting, proper walking, proper talking, proper eating manners and wearing neat cloth. 3. Discuss the importance of good grooming, in groups E.g. Enhances one's personality and interpersonal relationship 4. Demonstrate good grooming practices E.g. Proper sitting, proper walking, proper talking, proper eating manners and wearing neat cloth. 5. Write short messages on good grooming and tag them in and around the	**Subject Specific Practices** Grooming skills Writing skills Operational skills Writing skills **Core Competencies** Communication skills Teamwork Analytical skills

	classroom, in groups	
	B9.1.1.1.2: Observe appropriate food hygiene practices. **Exemplars** 1. Explain what is meant by food hygiene. E.g. It is the conditions and measures necessary to ensure the safety of food from production to consumption. 2. Outline the appropriate food hygiene practices. E.g. • Wash hands before handling food. • **Do not** sneeze or cough near food. • **Do not** smoke or eat in any kitchen areas. • Put clothes/jackets/bags in a separate area away from cooking areas. 3. Watch a video on good food hygiene practices and discuss in groups. 4. Clean workshop at close of work and dispose refuse appropriately. 5. Demonstrate food hygiene practices in class.	**Subject Specific Practices** Writing skills Cleanliness Operation skills **Core Competencies** Communication skills Analytical skills Teamwork

CLASS: B9

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 2: PERSONAL, WORKSHOP AND FOOD LABORATORY SAFETY

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.1.2.1 **Demonstrate skills that relate to personal, workshop and food laboratory safety**	**B9.1.2.1.1: Demonstrate skills of preventing accidents in the workshop and in the food laboratory** **Exemplars** 1. Discuss the skills of preventing accidents in the workshop and food laboratory, in groups. E.g. Storing items safely, 2. Watch video/pictures on types, causes and prevention of accidents in the workshop/food laboratory and discuss, in groups E.g.: • TYPES**:** falls, cuts and burns**.** • CAUSES: Poor Lighting and Fatigue • PREVENTION: Wear sensible shoes, light up your living space and follow safety signs at the workshop/food laboratory.	**Subject Specific Practices** Operational skills **Core Competencies** Communicatio**n** Teamwork Analytical skills Critical thinking and problem solving

	3. Describe procedures for reporting accidents and unsafe practices in school and in the workplace. E.g.: • Check that there is no immediate risk of danger • Report to the teacher 4. Demonstrate how to prevent the following accidents. • Falls - Create and Maintain Proper Lighting • Cuts- Use the proper tool for the job at hand. • Burns -Turn the handles of pots and pans toward the side of the stove, or use the back burners • Explosions -Store flammable liquids properly	
	B9.1.2.1.2: Use appropriate personal protective equipment when working **Exemplars** 1.Identify the various personal protective equipment in groups E.g. Goggles, ear muffs, gloves 2.Discuss the importance of wearing personal protective equipment, in groups E.g. • Decreases the likelihood of injury and illness. • Ensures a safe and happy working environment for all. 3. Demonstrate the use of the personal protective equipment, in groups.	**Subject Specific Practices** Operational skills **Core Competencies** Teamwork Communication Analytical skills Creativity and innovation Personal development

	E.g. • For eye protection - goggles. • For ear protection - ear muffs and plugs. • Hand/finger protection - gloves, thimble. **Project:** Design and make personal protective equipment using compliant materials. **E.**g. Nose mask, gloves, apron, cap, goggles	
	B9.1.2.1.3: Maintain safe working environment **Exemplars** 1.Explain what is meant by maintaining safe working environment E.g. Procedures for ensuring that a surrounding environment is free from dangers that will cause harm to workers 2. Discuss the importance of keeping the working environment safe, in groups. E.g. To reduce/prevent accidents 3. Demonstrate safety practices at workplace. E.g. • Tag faulty equipment • Repair frayed flexes • Repair broken parts of tools	**Subject Specific Practices** Operational skills **Core Competencies** Teamwork Communication skills Analytical skills Creativity and innovation Personal development Creativity and innovation Citizenship

	Project work: Design posters to create awareness on the need to maintain safe working environment, and paste them around the school. **NOTE:** School Health Education Programme (SHEP) clubs to educate other learners, cooks, food vendors, and staff of the school on food hygiene practices.	

CLASS: B9

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 3: ENVIRONMENTAL HEALTH

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.1.3.1 **Demonstrate understanding and practice of environmental health in the school/hom**e	**B9.1.3.1.1: Identify the causes and prevention of poor sanitation in school/home** **Exemplars** 1. Discuss the causes of poor sanitation in the home and school. E.g. Littering around, poor disposal of waste, indiscriminate defecation 2. Discuss ways of preventing poor sanitation in school and home. E.g. Putting bins at vantage points for waste to be put in instead of putting it on the ground. 3.Undertake a project on the need for people to keep the school and community clean E.g. Clean-up exercise in the school and community 4. Undertake a project in recycling of waste, in groups **NB**: Invite an expert from the District Assembly or the Community to assist with the recycling project	**Subject Specific Practices** Cleanliness **Core Competencies** Personal development Communication and collaboration Analytical skills Decision making skills Citizenship

CLASS: B9

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 3: ENVIRONMENTAL HEALTH

Content Standard	Indicators and Exemplars By the end of B9, learners will:	Subject Specific Practices and Core Competencies
B9.1.3.2 **Demonstrate understanding of clean energy, and Improved Cookstoves (ICS) and their accompanying fuels**	**B9.1.3.2.1: Explain what is meant by Clean Energy and Improved Cookstoves and fuels** **Exemplars** 1. Explain what is meant by Environmental Health E.g. Activities of preventing or protecting against things that might harm people's health in places where they work or live. 2. Explain what is meant by Clean Energy. E.g. Is energy produced through means that do not pollute the atmosphere 3. Watch pictures and videos on Improved Cookstoves and fuels and Traditional Cookstoves and fuels and make comparison on them. **NB:** Visit the website https://www.ghacco.org for more information. 4. Identify Improved Cookstoves and fuels, and discuss what happens when clean energy is used. E.g. They are more efficient, gives less emissions and are safer than the traditional cook stoves or three-stone-fires.	**Subject Specific Practices** Cleanliness Environmental awareness **Core Competencies** Communication Analytical skills Research skills Digital Literacy

	5. Search and present in class, the various improved cookstoves and fuels using ICT tools and other sources E.g. Gyapa, holy cook, gas stoves, pellets, briquettes, Liquefied Petroleum Gas (LPG)	
	B9.1.3.2.2: Explain the benefits of Improved Cookstoves and fuels **Exemplars** 1. Discuss the benefits of Improved Cookstoves and fuels, in groups and present in class. E.g. They save money, protect the cook and people around against illness. 2. Demonstrate the uses of stoves E.g. • Improved Cookstoves and fuels • Traditional stoves 3. Plan and organize a campaign to educate the school and community on the use and benefits of improved cookstoves, in groups	**Subject Specific Practices** Operational skills **Core Competencies** Communication Analytical skills Research skills Personal development Citizenship

CLASS: B9

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 1: COMPLIANT MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.2.1.1 **Demonstrate skills in selecting compliant materials for making products and artifacts**	**B9.2.1.1.1:Discuss the factors that influence the selection of compliant materials** **Exemplars** 1. Review the knowledge on properties of compliant materials and safe practices of working with tools/equipment. **Note**: Refer to compliant materials in B7 and B8 2. Discuss the factors that influence the selection of compliant materials E.g. • Purpose/function of product • Availability of material • Skills of designer	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Communication

	3. Discuss the processes involved in working with compliant materials. E.g. Measuring, marking, cutting, folding, joining, surface finishing. 4. Make artifacts from compliant materials. 5. Display and appraise artifacts in groups.	Teamwork Creativity and innovation

CLASS: B9

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 2: RESISTANT MATERIALS

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will**	**Subject Specific Practices and Core Competencies**
B9.2.2.1 **Demonstrate skills in selecting resistant materials for making products and artifacts**	**B9.2.2.1.1: Discuss the factors that influence the selection of resistant materials** **Exemplars** 1. Review the knowledge on properties of resistant materials and safe practices of working with tools/equipment. **Note:** Refer to B7 and B8 on compliant materials 2. Discuss the factors that influence the selection of resistant materials E.g. • Purpose/function of product • Availability of material • Skills of designer 3.Discuss the processes involved in working with resistant materials E.g. Measuring and marking out, cutting/shaping.	**Core Competencies** Communication Decision making skills

	B9.2.2.1.2: Discuss the reasons why resistant materials require particular techniques and tools for their safe handling and use **Exemplars** 1. Explain why specific tools are used to work on specific resistant materials. E.g. Saws designed for woodwork should not be used to cut metals else the cutting edge will become blunt 2. Relate the correct safety precautions to the appropriate process in working with resistant materials when making an artifact E.g. • When planing wood, check that the plane is sharp and correctly set. • When using sharp edged tools, always keep both hands behind the cutting edge. • Fix the hacksaw blade such that the teeth point away from the handle/operator	**Subject Specific Practices** Manipulative skills **Core Competencies** Communication Analytical skills

CLASS: B9

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 3: SMART AND MODERN MATERIALS

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars

By the end of B9, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B9.2.3.1
Demonstrate understanding of using smart and modern materials for making products/artifacts</td><td>B9.2.3.1.1: Discuss reasons for using smart and modern materials for making products/artifacts

Exemplars

1. Review the knowledge on smart and modern materials and their properties.
Note: Refer to B7 and B8

2. Compare uses of smart and modern, and compliant/ resistant materials for production, and present in a table

E.g.
<table><tr><td>Smart/Modern Materials</td><td>Compliant/ resistant Materials</td></tr><tr><td>1.Can cause material to change shape</td><td>1.Material shape is fixed</td></tr><tr><td>2.Can cause material to change colour and revert it</td><td>2. Material colour is permanent</td></tr></table></td><td>Subject Specific Practices

Core Competencies

Analytical skills

Presentation skills</td></tr>
</table>

CLASS: B9

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 4: FOOD COMMODITIES (ANIMAL AND PLANT SOURCES)

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars

By the end of B9, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B9.2.4.1
Demonstrate skills in selecting food commodities in meal preparation</td><td>B9.2.4.1.1: Explain how to select food commodities used for meal preparation

Exemplars
1. Revise the classification of food commodities
Note: Refer to B7

2. Describe the qualities to look out for when selecting food commodities, and present in a table.
E.g.
<table><tr><th>Animal products</th><th>Plant products</th><th>Processed foods</th></tr><tr><td>1. Meat should have a deep red colour with white or creamy fat</td><td>1.Fruits and vegetables should be crisp, fine and free from bruises,</td><td>1. Cans should not be bulging, dented, or rusty.</td></tr><tr><td>2.Fish should have firm flesh and shiny skin with a lot of tightly clinging scales</td><td>2.Root crops should be free from bruises and firm to touch</td><td>2. Dried foods should not be moldy or coloured.</td></tr></table></td><td>Subject Specific Practices

Core Competencies

Communication

Creativity

Writing skills

Analytical skills</td></tr>
</table>

CLASS: B9

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 1: MEASURING AND MARKING OUT

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.3.1.1 **Demonstrate understanding of measuring and marking out tools and equipment**	**B9.3.1.1.1: Identify and classify tools and equipment used for measuring and marking out** **Exemplars** 1. Identify tools and equipment used for measuring and marking out in the following trade areas: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/ plastic workshop 2.Classify measuring and marking out tools and equipment under the following areas: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/ Plastic workshop	**Core Competencies** Critical thinking Analytical skills

	B9.3.1.1.2 : Demonstrate how to use the tools and equipment for measuring and marking out **Exemplars** 1. Demonstrate how to use measuring and marking out tools and equipment for making an artifact/product in the following areas: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/plastic workshop 2.Select appropriate measuring and marking out tools for making the following products: • Wooden chair • Sheet metal funnel • Setting out walls • Dresses • Meals 3.Prepare a chart showing the activities and the appropriate tools used 4.Display charts in class for appraisal	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Creativity and innovation Decision making skills Analytical skills

	B8.3.1.1.3: Demonstrate how to care for and maintain measuring and marking out tools **Exemplars** 1.Demonstrate how to care for and maintain measuring and marking out tools used for making artifacts/products E.g. • Wash and clean tools after use • Oil metal parts of tools	**Subject Specific Practices** Operational skills Maintenance culture

CLASS: B9

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 2: CUTTING/SHAPING

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.3.2.1 **Demonstrate the understanding of cutting/shaping tools and equipment used for making artifacts/products**	**B9.3.2.1.1: Identify and classify tools and equipment for cutting and shaping** **Exemplars** 1. Identify tools and equipment for cutting and shaping in the following trade areas: • Food laboratory (kitchen) • Sewing workshop/laboratory • Building site • Wood workshop • Metal/ Plastic workshop 2. Select appropriate cutting and shaping tools for making the following products: • Wooden tables • Bottle opener • Bricks/blocks • Shirts • Meals	**Subject Specific Practices** Writing skills **Core Competencies** Communication and collaboration Decision making skills Analytical skills Creativity

	3. Write the procedure/ steps involved in making the products 4. Prepare a chart showing the activities and the appropriate tools used **5.** Display charts for appraisal	
	B9.3.2.1.2 : Demonstrate how to use shaping and cutting tools and equipment for producing of artifacts/products **Exemplars** 1. Demonstrate how to use cutting and shaping tools and equipment for making products, in groups. E.g. • Wooden cabinets • Sheet metal dust bins • Bricks/blocks • Dresses • Meals 2. Write the procedure/ steps involved in making the products, and discuss in class. 3. Exhibit products for appraisal	**Subject Specific Practices** Manipulative skills Operational skills Writing skills **Core Competencies** Creativity and innovation Analytical skills
	B9.3.2.1.3: Demonstrate how to care for and maintain cutting and shaping tools for making artifacts/products.	**Subject Specific Practices**

	Exemplar 1. Demonstrate how to care for and maintain cutting and shaping tools and equipment used for making artifacts/products in the following trade areas. E.g. • Food laboratory (kitchen) – wash, clean and sterilize tools • Sewing workshop/laboratory – dust, wipe, oil tools • Building site – wash and dry the wooden tools • Wood workshop–clean and oil wood chisels and saws regularly • Metal/plastic workshop– clean and oil metal parts of tools	Operational skills Maintenance culture **Core Competencies** Teamwork

CLASS: B9

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 3: JOINING AND ASSEMBLING

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.3.3.1 **Demonstrate understanding of materials. tools and equipment used for joining and assembling artifacts/products**	**B9.3.3.1.1: Identify and classify joining and assembling materials, tools and equipment used for making artifacts/products** **Exemplars** 1.Identify tools and equipment used for joining and assembling production in the making the following trade areas: • Food laboratory (kitchen) • Sewing shop • Building site • Wood workshop • Metal /plastic workshop 2. Classify the joining and assembling tools and equipment under: • Food laboratory (kitchen) • Sewing shop • Building site • Wood workshop • Metal /plastic workshop	**Subject Specific Practices** **Core Competencies** Critical thinking Analytical skills

	B9.3.3.1.2: Demonstrate appropriate skills in the use of joining and assembling tools and equipment for making artifacts/products **Exemplar** 1. Demonstrate how to use materials, tools and equipment for making products/artifacts in joining and assembling products/artifacts E.g. • A wooden book shelf • Metal scoop • Bonding a wall • Garment • Meals	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Critical thinking Analytical skills
	B9.3.3.1.3 :Demonstrate how to care and maintain tools and equipment used for joining and assembling artifacts/products **Exemplar** 1. Demonstrate how to care for and maintain joining and assembling tools and equipment used for making artifacts/products, in groups	**Subject Specific Practices** Maintenance culture Operational skills

CLASS: B9

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 4: KITCHEN ESSENTIALS

Content Standard	**Indicators and Exemplars** **By the end of B8, learners will:**	**Subject Specific Practices and Core Competencies**
Demonstrate skills of selecting and purchasing kitchen essentials	**B8.3.4.1.1: Select and purchase suitable kitchen essentials to meet specific needs** **Exemplars** 1. Discuss factors to consider in the selection and purchasing of kitchen essentials E.g. • Money available • Space for storage • Intended purpose/use • Availability of spare parts	**Core Competencies** Communication Analytical skills

CLASS: B9

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 5: FINISHES AND FINISHING

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.3.5.1 Demonstrate understanding of application of finishes	**B9.3.5.1.1:Demonstrate the techniques of applying finishes to resistant materials** **Exemplars** 1. Identify finishes and tools for finishing resistant materials E.g. • Finishes - lacquer, paints, thinner, turpentine • Tools – brushes, spray can, roller 2. Identify materials used for preparing surfaces of wood, metal and wall to be finished. E.g. Sanding sealers, sand paper, emery cloth, putty 3. Prepare the surface to be finished by using glass paper for wood and emery cloth for metal and putty for walls. •	**Subject Specific Practices** Operational skills Manipulative skills Maintenance culture

	4. Demonstrate the procedure for applying finishes to resistant materials, in groups. E.g. • Mix lacquer with thinner • Apply first coat and allow to dry • Apply second coat and allow to dry 5. Demonstrate how to wash the finishing tools after use. E.g. • Use thinner to wash brush used for applying lacquer • Use water to wash brush used for applying emulsion paint	**Core Competencies** Analytical skills Creativity and innovation
	B9.3.5.1.2: Demonstrate skills for working basic processes for finishing edges of articles in sewing **Exemplars** 5. Explain what is meant by edge finishes. E.g. Processes worked to neaten the raw edges of articles. 2. State examples of edge finishes E.g. • Turning a hem • Binding	**Subject Specific Practices** Writing skills Operational skills

	• Loop or Blanket stitches • Facing 3.Discuss reasons why edges of articles are finished E.g. • To prevent edges from fraying • To neaten raw edges • To strengthen raw edges • To decorate raw edges 4. Identify edges of articles that require finishing. E.g. • Necklines • Armholes • Hem of article 3. Demonstrate how to finish edge of articles 4. E.g. Piping, Binding, Decorating, Shell edging, Facing 5. Display specimens for appraisal	**Core Competencies** Communication Analytical skills Creativity and innovation

CLASS: B9

STRAND 4: TECHNOLOGY

SUB-STRAND 1: SIMPLE STRUCTURES AND MECHANISMS, ELECTRIC AND ELECTRONIC SYSTEMS

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.4.1.1 **Demonstrate understanding of applications of mechanisms in project constructions**	**B9.4.1.1.1: Understand how mechanisms are used in everyday products** **Exemplars** 1. Explain what is meant by mechanisms E.g. It is a system of parts working together in a machine; a piece of machinery. 2. Explore different types of mechanisms using ICT tools and other sources E.g. • Pulley system • Chain and sprocket system • Gear system • Screw mechanism • The crank mechanism • Cams • Levers and linkage	**Subject Specific Practices** Writing skills **Core Competencies** Research skills Communication skills Critical thinking

	3. Identify artifacts in the environment that operate on mechanisms E.g. Bicycles, vehicles, motor bikes. 4. Research from different sources on how mechanisms operate, in groups. 5. Write findings and present in class for discussion.	Analytical skills Presentation skills Digital literacy
	B9.4.1.1.2: Design and make simple school technology projects using two or more of the mechanisms **Exemplars** 1. Use chart, models or real objects to describe the features of the various types of mechanisms 2. Use simple diagrams to illustrate the operations of the various types of mechanisms E.g. Rack and pinion, cams, levers and linkages. 3. Discuss the advantages and disadvantages of the various types of	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Communication skills Critical thinking Analytical skills Creativity and innovation

	mechanisms E.g. Pulley system: • Advantages: No lubrication, quiet in operation • Disadvantage – Slip can occur 4. Watch videos on the various types of mechanisms in operation and discuss in class. E.g. • The operations of the crank, cam, rack and pinion, chain and sprockets	
	B9.4.1.1.3: Design and make simple school technology projects using two or more of the mechanisms **Exemplars** 1. Identify simple school projects E.g. Wall clocks, crazy snake, toy cars, bicycles, aeroplane/air craft, train, wind turbine/mill 2. Identify compliant and resistant materials, tools and equipment for making mock-ups/prototypes. **Note:** Identify the appropriate mechanisms based on the function of the project	**Subject Specific Practices** Writing skills Operational skills **Core Competencies**

	3. Discuss the reasons for the choice of mechanisms for a particular job E.g. • Usage (easy to use) • Availability of mechanism • Cost of mechanism • Skills of designer 4. Plan, design and prepare a folio of products/artifacts 5. Make the product/ artifact following the appropriate procedure E.g. Measuring, marking out, cutting, joining and assembling 6. Test the product for functional 7. Write down observations and discuss in, class in groups	Communication skills Critical thinking Analytical skills

CLASS: B9

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 1: COMMUNICATING DESIGNS

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.5.1.1 **Demonstrate understanding of developing surfaces of objects for production/manufacturing**	**B9.5.1.1.1: Identify prisms and pyramids and discuss the importance of developing surfaces** **Exemplars** 1.Name and draw common types of prisms E.g.: Cylinder, square prism, triangular prism 2. Name and draw common types of pyramids E.g. Cone, square pyramid, triangular pyramid 3. Differentiate between prisms and pyramids E.g. • Prisms have their front view in the form of rectangles, whereas, Pyramids have their front view in the form of triangles	**Subject Specific Practices** **Core Competencies** Communication skills Critical thinking Analytical skills

	4. Discuss the importance of developing surfaces of objects before manufacturing them E.g. • Enables easier duplication of templates • Minimises waste of materials • Saves time spent on production	
	B9.5.1.1.2: Develop surfaces of prisms using instruments **Exemplars** 1. Illustrate the techniques of developing prisms using instruments E.g.: Draw the front view and plan, then project them to draw the surface development of the prism 2. Develop surfaces of simple objects (cylinder, square prism,) to required dimensions 3. Cut out the shapes of developed surfaces leaving flaps for joining 4. Fold and join the cutouts as expected to obtain the objects E.g. Milk tin, milo tin, match box, sugar box, pizza box 5. Plan and mount an exhibition of the objects for appraisal	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Communication skills Critical thinking Analytical skills

	B9.5.1.1.3:Develop surfaces of pyramids using instruments **Exemplars** 1.Illustrate techniques of developing types of pyramids E.g. Cone, square pyramid, triangular pyramids 2. Develop surfaces of simple objects (cone, square pyramid,) to required dimensions 3. Cut out the shapes of developed surfaces leaving flaps for joining 4. Fold and join the cutouts as expected to obtain the objects E.g. Christmas hat, funnel, Bishop's hat, Chef's hat 5. Plan and mount an exhibition for appraisal	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Critical thinking Analytical skills Creativity and innovation
	B9.5.1.1.4: Sketch and draw straight lines, curves, basic human figures, and make lettering **Exemplars**	**Subject Specific Practices** Operational skills Manipulative skills

	1. Identify types of lines used in drawing E.g. Continuous thick, continuous thin, short dashes 2. Discuss the applications of lines E.g. • Continuous thick - for outlines, • Continuous thin – for projection lines, construction lines 3. Differentiate between lower case and upper case letters. E.g. • Lower case – a, b, c, d – small letters • Upper case – A,B,C,D – Capital letters 4. Discuss the principles of lettering E.g. Shape and form of each letters, spacing of letters, size and position of letters. 5. Prepare title block **Note:** Title block should include name, class, date, subject and drawing number	**Core Competencies** Communication skills Critical thinking Analytical skills

CLASS: B9

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 2: DESIGNING

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.5.2.1 **Demonstrate knowledge of Designing**	**B9.5.2.1.1: Identify user requirements** **Exemplars** 1. Explore several situations within the community. 2. Discuss issues identified in the situations 3. State main issues identified for discussion. 4. Identify needs, wants and lacks within the environment which if not addressed can lead to problems. 5. Discuss the challenges observed in the situations, in groups 6. Analyse the problems and state the extent to which they affect people's lives in the community. 7. Write a report on problem situation and write a suitable design brief to indicate solution to the problem.	**Subject Specific Practices** Operational skills Research skills Manipulative skills Writing skills **Core Competencies** Communication skills Critical thinking Analytical skills Presentation skills

	B9.5.2.1.2 : Clarify user requirements **Exemplars** 1. Analyse the problem graphically by developing problem analysis chart. 2. Develop questions to address the analysis chart. 3. Identify sources of getting information and conduct research for the design. 4. Prepare questionnaires and interview guide to conduct research for the design. 5. Develop observation schedules, visit relevant places, and take appropriate photos linked to the problem and solution. 6. Analyse the research and write report. 7. Study the research report and develop design specifications based on the analysis of the problem. 8. Cross check the specifications to ensure that all the design requirements are met.	**Subject Specific Practices** Writing skills Report writing skills **Core Competencies** Research skills Communication skills Analytical skills Critical thinking
	B9.5.2.1.3: Generate Ideas **Exemplars** 1. Study the specifications as a guide to generate three possible ideas using freehand 2. Write short notes to describe each of the ideas.	**Subject Specific Practices** Writing skills Creativity and Innovation Analytical skills

	3. Compare the ideas with the specifications to ensure that all requirements are met.	
	B9.5.2.1.4 : Develop the selected solution **Exemplars** 1. Identify the best design that meets the specifications and select it for further considerations. 2. Indicate the reasons for selecting a design for development. 3. Examine the selected design to identify parts that need to be modified. 4. Redesign the selected solution to obtain the final design	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Creativity and Innovation Critical thinking Analytical skills

CLASS: B9

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 3: PLANNING FOR MAKING ARTIFACTS/PRODUCTS

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.5.3.1 **Demonstrate understanding for planning for making artifacts/ products/meals**	**B9.5.3.1.1: Demonstrate skills in planning for preparing food using dry methods of cooking** **Exemplars** 1. Identify and describe the basic dry methods of cooking E.g. Baking, grilling. 2. Identify foods that can be prepared using dry method of cooking E.g. • Baking - bread, cake, aboloo • Grilling - plantain, fish, chicken •	**Subject Specific Practices** **Core Competencies** Creativity and Innovation Communication Analytical **skills**

	3. Discuss advantages and disadvantages of dry methods of cooking. E.g. • **Advantage** - Promotes the caramelization of surface sugars in foods • **Disadvantage** – Food can easily burn or dry out 4. Discuss the principles of baking and grilling methods of cooking. E.g. • Baking - All ingredients need to be measured carefully. • Grilling - Marinate foods in the refrigerator, not on the kitchen counter or outdoors	
	B9.5.3.1.2: Demonstrate understanding of clarifying user requirement **Exemplars** 1. Study the working drawings and cutting list obtained from the communication design. 2. Observe the workshop environment to identify the health and safety needs of the work.	**Subject Specific Practices** Writing skills Operational skills Observational skills Experimentation skills

	3. Study workshop rules and regulations for better familiarization before the actual work. 4. Study about the needed materials, tools and processes to be employed for better understanding. 5. Write down a summary of your study and observations and discuss in class 6. Experiment with similar materials, tools and processes to gain confidence prior to the making of artifacts.	**Core Competencies** Creativity and Innovation Analytical skills Communication
	B9.5.3.1.3: Describe ways of using the natural building materials for production **Exemplars** 1.Discuss how clay/laterite is used for producing bricks/blocks E.g. • Discuss the types of bricks - • Identify the methods of manufacture- extruded, moulded, dry-pressed	**Subject Specific Practices** **Core Competencies** Communication Analytical skills

CLASS: B9

STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 4: MAKING ARTIFACTS FROM COMPLIANT, RESISTANT MATERIALS AND FOOD INGREDIENTS

Content Standard	**Indicators and Exemplar** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.5.4.1 **Demonstrate understanding of gathering materials, tools and equipment for making/preparing and meals**	**B9.5.4.1.1: Demonstrate skills in preparing food using dry method of cooking** **Exemplars** 1. Review planning of preparing food using dry methods of cooking. **NB**: Refer to B9.5.3.1.1 2. Prepare a dish each using baking and grilling methods of cooking E.g. • Baking - bread, cake, aboloo • Grilling - plantain, fish, chicken 3. Display food for evaluation and appreciation	**Subject Specific Practices** Operational skills Manipulation skills **Core Competencies** Analytical skills

	B9.5.4.1.2: Create flat articles using basic embroidery and crocheting stitches **Exemplars** 1.Review work on tools, equipment and stitches used in sewing and crocheting. NB: Refer to B7 and B8 2. Examine and discuss some crocheted and embroidered articles and their uses. 3. Design flat articles and patterns using embroidery to decorate them E.g. chair backs, centre table cloth, handkerchiefs 4. Make articles using crochet stitches. E.g. Chair backs, centre table cloth, coffee table cloth 5. Plan and mount an exhibition for appraisal	**Subject Specific Practices** Operational skills Manipulation skills **Core Competencies** Analytical skills Communication Creativity and innovation
	B9.5.4.1.3: Demonstrate knowledge and skills of	

	making artifact **Exemplars** 1. Study and examine the design folio to understand the working drawings and the operations or processes involved. 2.Check the dimensions of the working drawing and the cutting list to ensure accuracy of work 3. Apply the making operations in sequence to make the artifact. **Note**: Decide on the materials, measuring, marking out, cutting to the complete the work 4. Apply the appropriate finish to the artifact ready.	**Subject Specific Practices:** Operational skills Manipulative skills **Core Competencies** Analytical skills Critical thinking Creativity and innovation

	B9.5.4.1.4: Testing and Evaluation **Exemplars** 1. Test the manufactured artifact using the specification as a guide. E.g. Test the shape, structure, functions, strength and others 2 .Prepare a check list to indicate the good and bad comments about the artifact 3. Make value judgment of the artifact whether it is Excellent, Very good, Good, Fair or Bad. 4. State the suggested modifications for the artifact.	**Subject Specific Practices:** Operational skills Writing skills **Core Competencies** Analytical skills

CLASS: B9

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 1: CAREER PATHWAYS AND CAREER OPPORTUNITIES

Content Standard	**Indicators and exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.6.1.1 **Demonstrate understanding about the changing nature of the workplace, the value of work to society, and the connection of work to the achievement of personal goals**	**B9.6.1.1.1 :Describe how the changing nature of the workplace can bring about global competition and technology** **Exemplar** 1. Find out from various sources, how the changes at work place can bring about global competition and technology E.g. • Introduction of automation at work place • Use of ICT • Use of robots and drones • Use of machines 2. Discuss the findings, in groups and write a summary individually	**Subject Specific Practices:** Writing skills Research skills **Core Competencies** Digital Literacy Critical thinking and problem solving Teamwork Communication

	B9.6.1.1.2 :Analyze the value of work to the individual and society in general 1. Analyse and report the value of work to the individual and society in general, in groups. 2. Discuss the advantages and disadvantages of working for self and others E.g. **Self:** Advantage**:** More control income; choose the people you work with Disadvantage: Difficult to raise capital; working may be much longer and irregular; when sick, business suffers **Others:** Advantage: Get retirement benefits; free capacity building; regular work hours Disadvantage: Less job security; less freedom **B9.6.1.1.3**: **Develop a career plan that would assist in the transition from school to eventual entry into a career option** **Exemplars** 1. Discuss the need for career plan, in groups	**Subject Specific Practices:** Writing skills **Core Competencies** Critical thinking and problem solving Teamwork Communication **Subject Specific Practices:** Writing skills Reading skills

	2. Identify and discuss the steps in an effective career plan E.g. • Identify Your Career Options • Prioritize • Make Comparisons. • Consider Other Factors • Make a Choice 3. Write a summary of your discussion and read to class	**Core Competencies** Critical thinking and problem solving Teamwork Communication

CLASS: B9

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 2: ESTABLISHING AND MANAGING A SMALL BUSINESS ENTERPRISE

Content Standard	**Indicators and Exemplars** **By the end of B9, learners will:**	**Subject Specific Practices and Core Competencies**
B9.6.2.1 **Demonstrate understanding of establishing and managing a Small Business Enterprise**	**B9.6.2.1.1: Describe how to start and run own business** **Exemplars** 1. Discuss how to start and run own business, in groups. E.g. • Own business idea • Copying an existing business • Buying an existing business • Modifying an existing business 2. Read and a write on legal forms of businesses in Ghana, and discuss in class, in groups. 3. Discuss how to name a business, in groups E.g. • Giving potential names to the business, • Settle on one name as the name of the business 4. Read on licensing/registration process, and visit licensing/registration agencies to learn more about licensing/registration procedures 5. Write the summary of findings from visit and discuss in	**Subject Specific Practices** Reading skills Writing skills **Core Competencies** Communication Research skills Creativity and innovation Teamwork

	class, in groups	
	B9.6.2.1.2: Explain how to manage resources of Small Business Enterprises **Exemplars** 1.Think-pair-share on products and services that are in demand, and write down your views 2.Discuss factors to consider to run and manage a Small Scale Business E.g. • Land • Labour • Capital • Market • Location 3.Discuss the processes of managing a business, in groups E.g. • Planning • Organizing • Communicating • Delegating • Motivating • Controlling	

BASIC 10

B10

CLASS: B10

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.1.1.1 **Demonstrate practices of good personal hygiene in relation to others in real life situations**	**B10.1.1.1.1: Relate good grooming to interpersonal relationship** **Exemplars** 1. Discuss the effects of good grooming on interpersonal relationships. E.g. • Personal appearance • Manners/etiquette 2. Role-play two scenarios: • Relationship with well-groomed persons • Relationship with un-groomed persons	**Subject Specific Practices** Cleanliness Interpersonal skills **Core Competencies** Communication Creativity

	3. Discuss the two role-plays, and write the summary. E.g. • People shunning your company • Lowers one's self-esteem	
	B10.1.1.1.2: Demonstrate effective food hygiene practices **Exemplars** 1. Demonstrate the following practices: • Washing of hands before and after handling food, after break, after visiting the toilet. • Covering of hair • Sneezing and coughing into a handkerchief./tissue paper 2. Prepare posters on food hygiene practices, and paste in and around the classroom, the workshop/food laboratory. **Note**: SHEP clubs to educate other learners, staff, cooks, food vendors and others, of the school on food hygiene practices.	**Subject Specific Practices** Cleanliness Interpersonal skills Operational skills **Core Competencies** Communication Creativity

CLASS: B10

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 2: PERSONAL, WORKSHOP AND FOOD LABORATORY SAFETY

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10. 1.2.1 **Demonstrate skills that relate to personal, workshop and food laboratory safety to others in real life situations**	**B10. 1.2.1.1: Demonstrate how to relate safety practice with others** **Exemplars** 1.Identify and discuss safe practices on others, in class E.g. Handling knife with the pointing end down. 2. Dramatise the safety practices, in class. 3. Write a short note on safe practices to educate friends, parents, siblings and others in the community.	**Subject Specific Practices** Cleanliness Interpersonal skills Operational skills Writing skills **Core Competencies** Communication Creativity

CLASS: B10

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 3: .ENVIRONMENTAL HEALTH

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.1.3.1 **Demonstrate safety skills and appreciate the importance of environmental health in the community**	**B10.1.3.1.1: Outline safety skills and their importance at the work environment** **Exemplars** 1.Discuss safety skills in a work environment E.g. Use the right equipment for the right job 2. Discuss the importance of environmental health E.g. Reduce the possibility of injuries and sicknesses. 3. Make chart on safety signs and exhibit work for appraisal, in groups	**Subject Specific Practices** Cleanliness Safety skills Operational skills Writing skills **Core Competencies** Communication Creativity Teamwork

<table>
<tr>
<td></td>
<td>
B10.1.3.1.2: Distinguish between Traditional Stoves and Improved Cookstoves and types of fuels used

Exemplars

1.Conduct a simple survey on the various types of stoves and fuels used in homes

E.g.
<table>
<tr><th>Stoves</th><th>Fuels</th></tr>
<tr><td>Coal pot</td><td>charcoal</td></tr>
<tr><td>Kerosene stove</td><td>kerosene</td></tr>
<tr><td>Swiss stove</td><td>firewood.</td></tr>
<tr><td>Gas stove</td><td>(Liquefied Petroleum Gas) LPG</td></tr>
<tr><td>Electric cooker</td><td>electricity</td></tr>
</table>

2. Present information obtained from survey to class
</td>
<td>
Subject Specific Practices

Writing skills
Research skills

Core Competencies

Communication
Presentation skills
</td>
</tr>
<tr>
<td></td>
<td>
B10.1.3.1.4: Explore and adapt the innovative ways of manufacturing and using an improved Cookstove and fuel

Exemplars

1. Use ICT tools and other sources to explore innovative ways of making an improved Cookstove and fuel.

2. Visit a manufacturing firm to observe the making of improved
</td>
<td>
Subject Specific Practices

Operational skills
Manipulative skills
Writing skills
Research skills

Core Competencies

Digital literacy
Personal development
</td>
</tr>
</table>

	Cookstove and fuel, write a report and present in class 3. Demonstrate the use of improved Cookstove and fuel. E.g. Using a Gas stove- light match before turning on the gas 4. Organise an educational programme for the school and community on the adaptations of improved Cookstove and fuel. 5. **Project:** Make own improved Cookstoves and fuels. **NOTE**. Form a Clean energy club in school.	Citizenship Communication Presentation skills Creativity and innovation

CLASS: B10

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 1: COMPLIANT MATERIALS

Content Standard	**Indicators** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.2.1.1 **Demonstrate understanding of selecting available and suitable compliant materials in making models /artifacts**	**B10.2.1.1: Discuss basic techniques used on compliant materials for producing models/artifacts** **Exemplars** 1. Revise understanding of basic concept on compliant materials Refer to B7- B9 on compliant materials 2. Discuss safe techniques used to work on compliant materials to make models/artifacts E.g. • Cutting - Scissors should have sharp and pointy blade • Material should be well supported on a surface before cutting	**Subject Specific Practices** Research skills **Core Competencies** Communication

CLASS: B10

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 2: RESISTANT MATERIAL

Content Standard	Indicators By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.2.2.1 **Demonstrate understanding of selecting available and suitable resistant materials for making artifacts**	**B10.2.2.1.1: Discuss basic techniques used on resistant materials for producing models/artifacts** **Exemplars** 1. Revise understanding of basic concept on resistant materials Note: Refer to B7-B9 on resistant materials. 2. Discuss safe techniques used to work on resistant materials to make models/artifacts E.g. Shaping - Hold work firmly in a vice before shaping	**Subject Specific Practices** Research skills **Core Competencies** Communication
	B10.2.2.1.2: Discuss reasons why resistant materials are combined in different ways to produce artifact **Exemplars** 1. Revise knowledge on basic characteristics of resistant materials suitable for working. Note: Refer to B8 on resistant materials	**Subject Specific Practices** Operational skills Manipulative skills Writing skills Research skills

	2. Discuss reasons why resistant materials are combined to make artifacts E.g. Availability and affordability of resistant materials in the locality 3. Make an artifact using appropriate and safe techniques E.g. • When shaping wood, ensure that it is well secured in a vice, • In joining two dissimilar materials, ensure that appropriate adhesive is used 4. Display artifacts for appraisal	**Core Competencies** Communication Creativity and innovation Analytical skills

CLASS: B10

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 3: SMART AND MODERN MATERIAL

Content Standard	**Indicators** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.2.3.1 **Identify a problem in the community that can be solved using smart and modern materials**	**B10.2.3.1.1: Demonstrate techniques for making prototypes/projects to solve problems in the environment** **Exemplars** 1. Search for inventions and techniques on smart/modern materials products. 2. Identify some problems in the community and use smart/modern materials to make a product to solve the problem. 3. Outline the processes involved in making the prototypes/projects using smart/modern materials. **Note:** Refer to B10.5.2.3 on smart/modern materials	**Subject Specific Practices** Research skills Operational skills Writing skills **Core Competencies** Creativity and innovation Inclusion Critical Thinking

CLASS: B10

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 4: FOOD COMMODITIES (ANIMAL AND PLANT SOURCES)

<table>
<tr><th>Content Standard</th><th>Indicators and Exemplars
By the end of B10, learners will:</th><th>Subject Specific Practices and Core Competencies</th></tr>
<tr><td>B10.2.4.1
Demonstrate skills in planning meals for various members of the family</td><td>B10.2.4.1.1: Discuss the basic food requirements for different members of the family
Exemplars:
1. Identify the different members of the family and their basic food requirements
E.g.
<table>
<tr><th>Different members of the family</th><th>Basic food requirements</th></tr>
<tr><td>Toddler</td><td>Body Building
Protective</td></tr>
<tr><td>Adolescent</td><td>Body Building
Protective
Iron</td></tr>
<tr><td>Pregnant/lactating mothers</td><td>Protective
Body building
Iron</td></tr>
<tr><td>Aged</td><td>Vitamins</td></tr>
<tr><td>Invalids</td><td>Vitamins</td></tr>
</table></td><td>Subject Specific Practices

Operational skills

Inclusion

Core Competencies
Communication

Creativity and innovation

Critical Thinking

Analytical skills</td></tr>
</table>

	2. Discuss factors to consider when planning meals E.g. Nutritional requirements of family members, food in season 3. Plan a meal for a member of the family E.g. Toddler, adolescent, pregnant/lactating mothers, aged and invalids, in relation to their nutritional needs. 4. Display plan for appraisal	

CLASS: B10

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 1: .MEASURING AND MARKING OUT

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.3.1.1 **Demonstrate understanding of measuring and marking out tools and equipment for making artifacts/products**	**B10.3.1.1.1: Identify tools and equipment for measuring and marking out for glass and building** **Exemplars** 1. Identify measuring and marking out tools and equipment for glass and building. E.g. Steel rule, measuring tape, marking gauge, cutting gauge, builder's square, straight edge 2.Classify measuring and marking out tools under glass and building E.g. • Glass- Steel rule, cutting gauge, a pair of dividers • Building- Builder's square, tape measure	**Core Competencies** Analytical skills

	B10.3.1.1.2 : Demonstrate appropriate skills in the use of tools and equipment for measuring and marking out in glass and building artifacts/products **Exemplars** 1.Demonstrate how to measure and mark out dimensions on a piece of glass E.g. Identify the appropriate tools, apply the appropriate skills 2. Demonstrate how to set out a straight wall E.g. Identify the appropriate tools, mark out position of wall	**Subject Specific Practices** Operational skills Manipulative skills Arithmetic skills **Core Competencies** Analytical skills Critical thinking
	B10.3.1.1.3 : Demonstrate how to care and maintain tools and equipment used for measuring and marking out glass and building artifacts/products **Exemplars** 1. Wash and clean tools 2. Apply oil on metal parts 3. Store tools at the appropriate place	**Subject Specific Practices** **Maintenance culture** Operational skills Manipulative skills

CLASS: B10

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 1: .CUTTING AND SHAPING

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.3.2.1 **Demonstrate the understanding of cutting/shaping tools and equipment used for making artifacts/products**	**B10.3.2.1.1: Identify shaping and cutting tools and equipment used for glass and building artifacts/products** **Exemplars** 1.Identify shaping and cutting tools and equipment used for glass and building E.g. Glass cutter, stained glass cutter, bolster, brick hammer, cold chisel, diamond masonry blade 2. Classify shaping and cutting tools and equipment under glass and building E.g. • Glass- glass cutter, stained glass cutter • Building- Bolster, brick hammer, cold chisel, diamond masonry blade	**Core Competencies** Analytical Skills

	B10.3.2.1.2: Demonstrate appropriate skills for using shaping and cutting tools for glass and building artifacts/products **Exemplars** 1. Demonstrate how to shape and cut glasses 2. Demonstrate how to shape and cut bricks and blocks into bats	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Critical thinking
	B10.3.2.1.3 : Demonstrate how to care and maintain shaping and cutting tools and equipment used for glass and building artifacts/products **Exemplars** 1. Wash and clean tools 2. Apply oil on metal parts of tools 3. Store tools at the appropriate place	**Subject Specific Practices** Maintenance culture Operational skills

CLASS: B10

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 3: JOINING AND ASSEMBLING

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.3.3.1 **Demonstrate the understanding of joining and assembling tools and equipment used for making artifacts/products**	**B10.3.3.1.1 : Identify and classify joining and assembling tools and equipment used for glass and building artifacts/products** **Exemplars** 1. Identify joining and assembly tools and equipment used for glass and building E.g. Glass cutter, pistol grip, basic breakers, pliers 2. Classify shaping and cutting tools and equipment under glass and building E.g. • Glass- glass cutter pistol grip, basic breakers, pliers • Building- Trowel, float	**Core Competencies** Critical thinking

	B10.3.3.1.2 : Demonstrate appropriate skills for joining and assembling tools and equipment used for glass and building artifacts/products **Exemplars** 1. Demonstrate how to join and assemble glasses using glue 2. Demonstrate how to join and assemble bricks and blocks using Mortar	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Critical thinking Creativity and innovation
	B10.3.3.1.3 : Demonstrate how to care for and maintain shaping and cutting tools and equipment used for glass and building artifacts/products **Exemplars** 1. Wash and clean tools 2. Apply oil on metal parts of tools 3. Store tools at the appropriate place	**Subject Specific Practices** Maintenance culture Operational skills

CLASS: B10

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 4: KITCHEN ESSENTIALS

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.3.4.1 **Demonstrate understanding and skills in the choice of basic kitchen essentials**	**B10.3.4.1.1: Demonstrate understanding in the selection of basic kitchen essentials to meet specific needs** **Exemplars** 1. Discuss the reasons for using kitchen essentials to meet the following needs: • Labour saving • Energy saving • Time saving • Work simplification • Cost saving/Economy 2. Discuss the advantages and disadvantages of using mechanical or labour saving equipment. E.g. • Advantages -they speed up the physical task involved in carrying out cooking process. • Disadvantages – they are expensive. 3. Present a summary of the discussions on reasons, advantages and disadvantages using Power point or other forms, in groups	**Subject Specific Practices** Writing skills **Core Competencies** Critical thinking Creativity and innovation Communication skills Presentation skills Inclusivity

CLASS: B10

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 5: FINISHES AND FINISHING

Content Standard	Indicators and Exemplars By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.3.5.1 **Demonstrate understanding of application of finishes and finishing artifacts/products/structures**	**B10.3.5.1.1: Demonstrate the techniques of applying finishes to brick and block walls** **Exemplars** 1. Identify materials and tools used for finishing brick/block walls 2. Prepare surface of walls by filling all cracks with putty 3.Clean surface with sand paper 4. Apply first coat and allow to dry 5. Apply second and subsequent coats 6. Clean brushes and other tools/containers	**Subject Specific Practices** Manipulative skills Operational skills **Core Competencies** Analytical skills

CLASS: B10

STRAND 4: TECHNOLOGY

SUB-STRAND 1: SIMPLE STRUCTURES AND MECHANISMS, ELECTRIC AND ELECTRONIC SYSTEMS

Content Standard	Indicators and Exemplars By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.4.1.1 **Demonstrate understanding of control electric and electronics**	**B10.4.1.1.1: Discuss the application of the types of control electric and electronic devices on structures and mechanisms.** **Exemplars** 1. Explain what is meant by control electric and electronics E.g. • Control electric is the control of a machine or device by switches or relay • Electronics operates with the aid of many micro components such as micro- chips and transistors	**Subject Specific Practices** Research skills Writing skills Analytical skills **Core Competencies** Communication Digital Literacy Presentation skills

	2. Use ICT tools and other sources to search for types of control electric and electronic devices E.g. • Types of control electrics- simple electric devices-electrical control panels, motor control centers • Types of electronic devices – answering machines, video displayers, artificial pacemakers and monitors, beepers or pager 3. Discuss the importance of control electric and electronic devices used in our environment. E.g. • Control electric and electronic devices – encourages cognitive learning and the development of analytical skills **4.** Visit electrical and electronic shops to find out more about control electric and electronic devices, and report in class	
	B10.4.1.1.2: Identify basic electrical and electronic components **Exemplars** 1. Identify basic electrical and electronic components E.g. • Electrical components: Cell/battery, cables/wires, switch,	**Subject Specific Practices** Research skills Writing skills Operational skills **Core Competencies** Analytical skills Communication

	lamp/resistor • Electronic components: Capacitor, inductor, diode, light emitting diode (LED) 2.Use charts or real objects to describe the features and uses of electrical and electronic components E.g. • Battery – For power • Resistor – Opposes flow of current • Diode – Allows current to flow in one direction 3.Identify devices in their environment which use these electrical and electronic components E.g. Television, radios, blenders 4. Make charts showing the symbols used for electrical and electronic components display on the classroom walls for discussions.	Presentation skills Creativity and innovation
	B10.4.1.1.3: Use basic electric and electronic components to make simple projects **Exemplars** 1.Draw simple schematic diagrams 2.Design and construct simple electrical/electronic circuit projects	**Subject Specific Practices** Operational skills **Core Competencies**

	E.g. Torch light, doorbell/buzzer, fan, propeller car, robot car 3.Display the projects for appraisal	Analytical skills Communication Presentation skills Creativity and innovation
	B10.4.1.1.4: Design and make an artifact that requires the use of an alarm **Exemplars** 1.Identify the materials suitable for making the artifact E.g. Resistant and compliant materials 2.Plan, design and make the artifacts, E.g. money box, door, lockers, school bag, cupboard 3.Discuss the reasons for introducing the alarm E.g. Prevent thieves, sound information, tells time 4.Identify the components required for making the alarm 5.Connect the alarm to the artifact 6.Test if alarm is working/functioning 7.Write observations and discuss in class 8.Display artifact for appraisal	**Subject Specific Practices** Writing skills Operational skills **Core Competencies** Analytical skills Communication Presentation skills Creativity and innovation

Class: B10

Strand 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUBSTRAND 1: COMMUNICATING DESIGNS

Content Standard	Indicators and Exemplars By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.5.1.1 **Demonstrate understanding of planning for making artifacts/products**	**B10.5.1.1.1: Describe the principles of Orthographic Projections** **Exemplars** 1.Explain what is meant by Orthographic Projection E.g. Drawing the three views of objects in two dimensions 2. Discuss the principles of Orthographic Projections for both first and third angles E.g. • For first angle(British method), the plan is projected below the front view • For third angle(American method), the plan is projected above the front view **Note**: Use mock-ups to facilitate understanding 3. Sketch the symbols for first and third angle orthographic projections 4. Discuss the importance of drawing orthographic projections of objects E.g. To get detailed dimensions of parts for production of artifacts/products	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Analytical skills Communication Creativity and innovation

	B10.5.1.1.2: Draw objects in first angle orthographic projection **Exemplars** 1. Sketch objects in pictorial indicating the appropriate dimensions, and directions of the three views (front view, plan end view) 2. Draw the three views to the given dimensions, at their respective positions using the appropriate projection lines **Note:** Draw the front view first 3. Indicate the dimensions on the views and label the views appropriately 4. Use the idea to draw detailed drawings of artifacts to be made	**Subject Specific Practices** Manipulative skills **Core Competencies** Analytical skills Creativity and innovation
	B10.5.1.1.3: Draw objects in third angle orthographic projection **Exemplars** 1.Sketch objects in pictorial indicating the appropriate dimensions, and directions of the three views(front view, end view and plan) 2. Draw the three views to the given dimensions, at their respective positions using the appropriate projection lines	**Subject Specific Practices** Manipulative skills **Core Competencies** Analytical skills Creativity and innovation Personal development

	Note: Draw the front view first 3. Indicate the dimensions on the views and label the views appropriately 4.Use the idea to draw detailed drawings of artifacts to be made **Project work:** Go round the community, observe artifacts and draw four (4) artifact in both first and third angle projections, prepare photo album and present in class	

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STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 2: DESIGNING

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.5.2.1 Demonstrate understanding of Designing	**B10.5.2.1.1: Identify user requirements** **Exemplars** 1. Examine several problem situations. 2. Identify specific issues within the situation for discussion. 3. Identify needs, wants and lacks within the community that are very critical. 4. Analyse the needs, wants and lacks within the community and the extent to which they affect people's life in general. 5. Write a detailed situation report, highlighting on problems identified. 6. Write a suitable Design Brief to address the solution to the problem.	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Analytical skills Creativity and innovation Problem solving

	B10.5.2.1.2: Clarify user requirements **Exemplars** 1. Present a graphical illustration for the problems by developing an analysis chart. 2. Develop questions according to the analysis chart. 3 List the appropriate sources of information and conduct research for the design. 4. Prepare research sources for conducting research E.g. Questionnaires, interviews, observation and experiments. 5. Organise the results of the research, analyse and present report. 6. Use the research report to develop the design specifications, based on the problem analysis to direct the generation of ideas. 7.Write questions for the analysis	**Subject Specific Practices** Research skills Writing skills Report writing skills **Core Competencies** Analytical skills Creativity and innovation Problem solving
	B10.5.2.1.3: Generate Ideas **Exemplars** 1. Use the specifications as a guide to generate three possible design ideas using freehand and write short notes to describe each of the designs. 2. Examine the designs thoroughly to ensure that they all meet the specification requirements. E.g. Check proportionality, shape and resemblance	**Subject Specific Practices** Writing skills Manipulative skills **Core Competencies** Analytical skills Creativity and innovation

		Problem solving Decision making
	B10.5.2.1.4 :Develop the selected solution **Exemplars** 1. Compare the three possible designs and select the best one for further considerations. 2. Analyse the reasons for selecting a design for development. 3. Critically examine the selected design to identify the parts that need to be modified. 4. Select from the modified designs to redesign the artifact to obtain the developed design. 5. Sketch/draw the developed design in pictorial drawings	**Subject Specific Practices** Writing skills Manipulative skills **Core Competencies** Analytical skills Creativity and innovation Problem solving Inclusivity Decision making
	B10.5.2.1.5: Make working drawings **Exemplars** 1. Study the developed design and provide the appropriate dimensions to the sketch. 2. Select type of orthographic projection drawing (either 1st angle or 3rd angle projection) for the artifact. 3. Select an appropriate scale for the drawing. E.g. Full size, 1:100, 1:50, or 1:25 or 1:40 for the drawing. 4. Draw the elevations of the artifact. E.g. Front elevations, end elevation and plan. 5. Apply and check all the dimensions on the artifacts. 6. Provide uppercase lettering to the drawings. 7. Develop the cutting list of the parts of the artifact to guide the making of the artifacts.	**Subject Specific Practices** Writing skills Manipulative skills Arithmetic **Core Competencies** Analytical skills Creativity and innovation Problem solving Inclusivity Decision making
	B10.5.2.1.6: Plan for making the artifact	**Subject Specific Practices**

	Exemplars 1. Study the design folio and critically examine the working drawings. E.g. Front view, end view, plan and cutting list. 2. Check on the workshop environment and identify the health and safety needs that should be addressed. 3. Familiarise with the workshop rules and regulations for better understanding of the working environment. 4. Study conditions of materials, tools and processes involved for firsthand information to avoid accident during the work. 5. Seek guidance for experiment and trials on new materials, tools and processes to be updated on manufacturing operations.	Safety consciousness **Core Competencies** Analytical skills Inclusivity Decision making
	B10.5.2.1.7: Make the artifact **Exemplars** 1. Study and examine the design folio thoroughly to understand the working drawings and operational sequences involved. 2. Verify all dimensions attached to the drawings and cross check the cutting list for accuracy. 3. Follow the operational sequence to make the artifact. E.g. Measuring, marking out, chiseling and others, to the completion of the artifact. 4.Select the appropriate finish and apply to the artifact 5. Test and evaluate the artifact for modification	**Subject Specific Practices** Arithmetic Manipulative skills **Core Competencies** Analytical skills Inclusivity Decision making

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STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 3: PLANNING FOR MAKING ARTIFACTS/PRODUCTS

Content Standard	Indicators By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.5.3.1 Demonstrate understanding of planning for making	**B10.5.3.1.1: Demonstrate skills in table setting** **Exemplars** 1. Identify table setting tools and equipment. 2. Share experiences in table laying. 3. Think-pair-share on tools and equipment for table laying E.g. Table cloth, serviette, cutlery, crockery (plates and glasses) flowers	**Subject Specific Practices** Operational skills Manipulative skills **Core Competencies** Analytical skills Creativity and innovation
	B10.5.3.1.2: Demonstrate how body measurements are taken for garments **Exemplars** 1. Explain what is meant by body measurements. E.g. Body measurements are the dimensions of the body that guides in garment construction 2. Explain the importance of measurements in sewing E.g. To sew accurately, ensures perfect fit, saves time and energy, prevents waste of fabric.	**Subject Specific Practices** Operational skills Manipulative skills Arithmetic skills **Core Competencies** Analytical skills Communication and collaboration Creativity and innovation

	3. Identify the parts of the body to be measured for sewing a blouse/shirt. E.g. Bust, waist, hip, across back, across chest, around arm and sleeve length. 4. Take body measurements in pairs for garment (blouse/shirt) construction and record. 5. Use measurements to produce an artifact/article and display for appraisal	
	B10.5.3.1.3: Plan to make a construction project **Exemplars** 1. Examine the design folio and building drawing. E.g. Front elevation, front elevation plan and detail drawings of the structure 2.Verify all the dimensions of the working drawings to avoid mistakes when undertaking the project 3. Check on the site for the construction works to identify the health and safety needs that should be addressed. 4. Study the construction site rules and regulations for better understanding of the working environment.	**Subject Specific Practices** Arithmetic Manipulative skills Operational skills **Core Competencies** Analytical skills Inclusivity Decision making

	5.Study conditions of the materials, tools and construction processes involved to get first-hand information to avoid mistakes and accidents on the construction sites **Note:** Seek guidance or tutorials on aspects that are not popular or not conversant with.	

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STRAND 5: DESIGNING AND MAKING OF ARTIFACTS/PRODUCTS

SUB-STRAND 4: MAKING ARTIFACTS FROM COMPLIANT, RESISTANT MATERIALS AND FOOD INGREDIENTS

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and Core Competencies**
B10.5.4.1 **Demonstrate skills of designing, making flat articles using basic embroidery and crocheting stitches and table setting**	**B10.5.4.1.1: Set a table for one person (cover)** **Exemplars** 1.Discuss the importance of table setting E.g. • Table setting makes eating more enjoyable. • A well laid table stimulates appetite and attracts customers 2. Set a table correctly using the appropriate equipment. 3.Appraise the table set	**Subject Specific Practices** Manipulation Operational skills **Core Competencies** Communication Analytical skills
	B10.5.4.1.2: Demonstrate basic skills in cutting out designs without patterns	**Subject Specific Practices** Manipulation

	Exemplars 1. Explain what is meant by free hand cutting technique E.g. It is a technique of using an individual's body measurements to cut garments/articles directly on fabric without patterns. 2. Apply the free hand cutting technique in cutting out a simple blouse/shirt. E.g. • Cut required size of fabric based on the measurements taken. **Note:** Consider chest and hip measurements • Fold fabric into two with right sides facing each other • Measure the length of blouse and continue 3. Sew a blouse or shirt. E.g. Put parts together and sew -shoulders together, sides together 4. Display sewn article for appraisal	Operational skills **Core Competencies** Communication Analytical skills Decision making Creativity and Innovation Personal development
	B10.5.4.1.3: Design and make three-dimensional articles using stitches and seams **Exemplars** 1. Review work on tools, equipment and stitches	**Subject Specific Practices** Manipulation Operational skills

	used in sewing. Refer to B7-B9 2. Examine some crocheted and embroidered articles and discuss their uses. 3. Examine and discuss the displayed seams and 3-D articles, and write down any interesting thing(s) found 4. Design 3-D articles E.g. Purse, pen and pencil cases, money box 5. Make the articles using appropriate materials tools and equipment 6. Decorate them using embroidery stitches. 7. Plan and mount an exhibition for appraisal	**Core Competencies** Analytical skills Decision making Creativity and Innovation Personal development
	B10.5.4.1.4: Make a construction project **Exemplars** 1.Set up the working area and arrange materials	**Subject Specific Practices** Manipulation Operational skills **Core Competencies**

	2. Check all dimensions to ensure that everything is ready. 3.Carry out the operational sequence E.g. Set out, excavate foundation, cast foundation concrete, erect footing courses, fill hardcore and compact hardcore. 4. Construct the concrete floor to the required thickness to obtain the water tank base or platform. 6. Finish the platform with mortar. 7. Cure the platform and complete the structure 8.Test and evaluate work	Analytical skills Decision making Creativity and Innovation Personal development
	B10.5.4.1.5: Demonstrate use of cement as the main material in building **Exemplars** 1. Discuss the ratio mix of building materials for various purposes E.g.: • 1:3 – means 1 part cement to 3 parts sand (mortar mix ratio for walling)	**Subject Specific Practices** Manipulation Operational skills Arithmetic **Core Competencies** Communication

	2. Demonstrate the mixing of cement-mortar for various purposes 3. Discuss types of bonding methods used in walling E.g. Stretcher bond, header bond, English bond	Analytical skills Decision making Personal development

CLASS: B10

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 1: CAREER PATHWAYS AND CAREER OPPORTUNITIES

Content Standard	Indicators By the end of B10, learners will:	Subject Specific Practices and Core Competencies
B10.6.1.1 **Demonstrate knowledge in career-specific skills necessary to progress toward gainful employment, career advancement, and success in post-secondary programmes**	**B10.6.1.1.1: Analyze skills and abilities required in a career option and relate them to own skills and abilities** **Exemplars** **1.** Work in groups of career preferences and analyse skills and abilities required in a career option and relate them to own skills and abilities. **Note:** Reflect on your preparation towards that career option **2.** Prepare a research paper that contains: • details of three specific jobs within the career option • the education and/or training level • qualifications necessary for entry-level/career-sustaining employment • the number of job openings in the career option 3. Design a personal school-to-work plan containing specific steps/activities toward attainment of a career goal. 4.Develop resumes and letters of application 5.Demonstrate effective interviewing techniques that could be used to gain entry into a career option	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Inclusivity Communication Critical thinking and problem solving Teamwork Analytical skill Reporting skills

CLASS: B10

STRAND 6: ENTREPRENEURIAL SKILLS
SUB-STRAND 2: ESTABLISHING AND MANAGING A SMALL BUSINESS ENTERPRISE

Content Standard	**Indicators and Exemplars** **By the end of B10, learners will:**	**Subject Specific Practices and** **Core Competencies**
B10.6.2.1 **Demonstrate understanding of Establishing and Managing a Small Business Enterprise**	**B10.6.2.1.1: Explain a Business Planning Process** **Exemplars** 1.Identify a business planning process E.g. • Develop objectives • Develop task to meet objectives • Determine resources needed to implement plan • Create time lines • Determine tracking and assessment methods 2. Discuss a business planning process 3. Use business planning worksheet document for the intended plan of a successful entrepreneur 4.Discuss the importance of planning a business 5.Study a business plan template and write your observations	**Subject Specific Practices** Research skills Writing skills **Core Competencies** Inclusivity Communication Critical thinking and problem solving Teamwork Analytical skill Reporting skills

	6. Identify key Sections of a Business Plan. 7. Discuss and complete the following sections on the business plan template, in groups • Business Profile and Summary • Financial Plan • Operation Plan 8. Summarize the main learning points and submit for discussion	
	B10.6.2.1.2: Write down business information in major and minor record books **Exemplars** 1. Explain what is meant by business information. E.g. Business information means, all confidential information and records relating to the business 2. Discuss what record keeping and book keeping mean. E.g. • Record keeping- the process of recording transactions and events in an accounting system • Book keeping – the activity of keeping records of the financial affairs of the business 3.Discuss and write down importance of Record Keeping	**Subject Specific Practices** Writing skills Operational skills **Core Competencies** Inclusivity Communication Analytical Decision making

	E.g. Helps to manage accounts, manage interests, taxes and working cost effectively 4.Categorize books used for Record Keeping into Major Books and Minor Books 5.Prepare Major Books E.g. Cash Book, the Job Advances Book, the Credit Purchase Book 6. Prepare Minor Books E.g. Invoice Book, Receipt Book, Wages Book, Stock Book, Inventory Book, Job Book.	
	B10.6.2.1.3: Cost a product or a service **Exemplars** 1.Explain what is meant by cost and costing E.g. • Cost is the expenditure required to produce a product • Costing is an estimate of all the costs involved in a business venture 2.Write down and discuss the two main types of cost E.g. Fixed costs- electricity and water bills Variable costs- raw materials, packaging 3.Write down and discuss factors to consider when costing a product or service E.g. Consider fixed, variable and mark-up 4.Present work for class discussion	**Subject Specific Practices** Writing skills Arithmetic **Core Competencies** Inclusivity Communication Analytical Decision making Presentation skills

	B10.6.2.1.4: Price a product or a service **Exemplars** 1. Explain what is meant by price and pricing. E.g. • Price- amount of money expected, required or given in payment for something • Pricing- a method adopted by a firm to set its selling price 2. Write down and discuss the main types of pricing. E.g. Profit oriented pricing, competitor-based pricing, market penetration pricing 3. Write down and discuss factors to consider when setting prices. E.g. Degree of differentiation, transparency, scarcity, connectivity 4.Present work for class discussion	**Subject Specific Practices** Writing skills **Core Competencies** Inclusivity Communication Analytical Decision making Presentation skills
	B10.6.2.1.5: Undertake marketing of a product or a service **Exemplars** 1. Write down what is meant by marketing. E.g. Marketing is the action of promoting products and services 2. Write down the importance of marketing. E.g. Marketing helps in transfer, exchange and movement of goods and services 3. Discuss and note down the types of markets, and the types of marketing E.g.	

	• Types of markets- online, physical, black, auction • Types of marketing – branding, public relations, broadcasting, point of purchase 4. Explain what is meant by traditional marketing mix E.g. Marketing 4Ps: product, price, promotion, product, and place/ distribution. 5. Discuss the details of traditional marketing mix E.g. • **Promotion**: advertising, sales promotion, including promotional education, public relations, personal selling, product placement, branded entertainment, event marketing, trade shows and exhibitions, social media. • **Product**: end-user's needs and wants, product design, new product innovation, branding, packaging, labeling, product warranties, guarantees, and support, Branding. • **Pricing:** discounts • **Place (or distribution)**: the distribution channels and intermediaries such as wholesalers and retailers, channel by which a product or service is sold.	