TEACHER'S
RESOURCE PACK

CAREER TECHNOLOGY **BASIC 7**

NATIONAL COUNCIL FOR
CURRICULUM & ASSESSMENT
OF MINISTRY OF EDUCATION

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PART A

1.0 INTRODUCTION

1.1 Background Statement

Career Technology (CT), is one of the Common Core Programmes (CCP) learning areas, which encompasses Home Economics and Pre-Technical Skills with the aim of making the learning areas (subject) more achievement focused and attractive to learners. The Contents have been developed progressively along the grade levels. The Career Technology Curriculum is Standard-Based with the following key components: Strands, Sub-strands, Content Standards, Learning Indicators and Exemplars. These components enhance clear understanding of the curriculum and make teaching, learning and assessment easier.

To provide quality Career Technology education and training, teachers are to facilitate learning in the classrooms, workshops/sites, laboratories, and communities to consolidate effective career skills acquisition. Career Technology will provide the needed background for hands-on and minds-on training for learners to be motivated to choose the programme for further studies and the world of work.

1.2 How to use the Teacher's Pack

This Teacher's Resource Pack will help teachers understand the use of the Career Technology Curriculum and how to facilitate it. Teachers are also required to conduct regular assessments to serve as a way of finding out about learners' understanding of the Strands; Sub-strands; Content Standards, Indicators and Exemplars. These key words/concepts must be well understood and addressed by the facilitator in the facilitation of their lessons.

As a teacher, you are required to identify the Sub-strands and the Indicators and treat the key words and vocabularies with learners.

Teachers are to note that the activities in the Teacher's Resource Pack are suggested ones (inexhaustible) and are therefore, required to employ the appropriate techniques and methodologies depending upon resources available in the environment to deliver the Content Standards and the Indicators.

Teachers are further requested to use this Teacher's Resource Pack with reference to the Career Technology Curriculum and the Learners Resource Pack. After each lesson, teachers are required to conduct assessment to serve as a way of finding out about learners' understanding so that remediation work could be done. However, teachers must note that the assessment strategies such as class exercises, homework, practical work and project work are suggested ones and, therefore, require that teachers use their own innovativeness to conduct assessments.

1.3 Rationale for Using the Teacher Resource Pack

Career Technology forms an integral part of our everyday life. This is because it is a universal truth that development is hinged on Science and Technology. Technology is the backbone of industrial, social, economic, political, and physical development of a country. It is a never-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 the production of goods and services. Technology has significantly changed our lives and it is vital to Ghana's future development.

To provide quality Career Technology education, teachers must facilitate learning in the classrooms, workshops, worksites, laboratories, and communities. This will provide the foundations for discovering and understanding the scientific and technological world around us and for laying the grounds for Career Technology and other technology- related studies at higher levels of education. Learners should be encouraged to understand how Career Technology can be used to explain what is occurring, predict how things will behave and analyse causes and origin

of things as well as how things are created in our environment.

The Career Technology curriculum has considered the desired outcomes of education for learners at the basic level and is concerned with the development of positive attitudes. It is therefore, important for all citizens to be scientifically and technologically literate for sustainable development. Career Technology therefore, ought to be taught using the 'hands-on' approach which learners will find as fun and in order to adopt the subject as a culture. The Teachers Resource Pack is therefore, to serve as a guide to the teacher for effective and efficient lesson delivery and assessment.

1.4 Teaching Philosophy

We believe that an effective Career Technology education needed for sustainable development should be inquiry-based. Thus, Career Technology education must provide learners with the opportunities to expand, change, enhance and modify the ways in which they view the scientific, technological, industrial and the socio-economic world. Lesson delivery should be pivoted on learner-centred approach which seeks to engage learners to explore with emphasis on psychomotor skills and attitudes acquiring processes in a rich and rigorous inquiry, and activity-driven environment.

Pedagogical approaches of social constructivism, differentiation, scaffolding, inclusion, amongst others are equally used as **teaching philosophy** so as to cater for differences in ability and aspirations of learners.

Note: Refer to the preamble of Career Technology Curriculum for detailed explanations of Learning-Centred Pedagogies.

1.5 Learning Philosophy

Learning the Career Technology Curriculum is an active contextualised process of constructing knowledge, skills, and attitude based on learners' experiences. Learners are information constructors who operate as researchers, and participating in doing activities which enable them attain competencies. Teachers serve as facilitators by providing the enabling environment that promotes the construction of learners' own knowledge, skills and attitudes based on their previous experiences. This makes learning more relevant to learners, helping them develop as critical thinkers, problem solvers and skills-oriented.

1.6 Aims of Teaching/Learning Career Technology

The Career Technology programme is aimed at preparing learners to compete in changing labour markets where technology plays an increasingly important role. Career Technology will provide learners with high-quality learning opportunities and the required skills to enter the labour market. It will provide the necessary knowledge and skills for employment in order to foster inclusive and equitable quality education and lifelong learning opportunities for all as enshrined in the United Nations Sustainable Development Goal Four (SDG4), thus: ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

In summary, the Career Technology Curriculum is designed to help learners to:

1. Develop creativity, innovation and critical thinking for investigating and understanding their environment.
2. Develop skills and attitudes necessary for scientific and technological inquiry.
3. Communicate effective technological, engineering, industrial and scientific ideas.
4. Use technological, engineering, industrial, scientific and entrepreneurial concepts in explaining their own lives and the world around them.
5. Live a healthy and quality life.
6. Develop humane and responsible attitudes towards the use of resources in their environment.
7. Design and make artefacts to solve problems in their environment.
8. Develop skills for using science, technology and entrepreneurship ideas to enhance learning.
9. Use available resources (materials and tools) in their environment to enhance sustainable development.

1.7 The Structure and Organisation of the Career Technology Curriculum (Scope and Sequence)

The Career Technology Curriculum offers both academic and career-oriented contents with greater emphasis on acquisition of core competencies, higher profile dimensions with practical skills.

1.7.1 Strands: The Subject has Six (6) Strands which cut across all levels a

1. Health and Safety,
2. Materials for Production,
3. Tools, Equipment and Processes
4. Technology
5. Designing and Making of Artefacts/Products
6. Entrepreneurial Skills

1.7.2 Sub-strands: There are Nineteen (19) Sub-strands as indicated in the Table below:

Str	Sub-strand	B7	B8	B9	B10
1. Health and Safety	1.1 Personal Hygiene and Food Hygiene 1.2 Personal, Workshop and Food Laboratory Safety 1.3 Environmental Health				
2. Materials for Production	2.1 Compliant Materials 2.2 Resistant Materials 2.3 Smart and Modern Materials 2.4 Food Commodities (animal and plant sources)				
3. Tools, Equipment and Processes	3.1 Measuring and Marking Out 3.2 Cutting/Shaping 3.3 Joining and Assembling 3.4 Kitchen Essentials 3.5 Finishing				
4. Technology	4.1 Simple Structures and Mechanisms, Electronic and Electronic Systems				
5. Designing and Making of Artefacts/Products	5.1 Communicating Designs 5.2 Designing 5.3 Planning for Making Artefacts/Products 5.4 Making Artefacts from Compliant, Resistant Materials and Food Ingredients				
6. Entrepreneurial Skills	6.1 Career Pathways and Career Opportunities 6.2 Establishing and Managing a Small Business Enterprise				

1.7.3 Annotation:

The Curriculum has been structured into a four-column table as Strands, Sub-strands, Content Standards, Indicators and Exemplars. A unique annotation is used for numbering the learning indicators in the curriculum for the purpose of easy referencing. The annotation is indicated in the Table below: Example: B7 .1.1.1.1

ANNOTATION	MEANING / REPRESENTATION
B7	Year or Class
1	Strand Number
1	Sub-Strand Number
1	Content Standard Number
1	Indicator Number

1.7.4 Further explanations of key words/ vocabularies:

- **Strands** are the broad areas/sections of the Career Technology 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, skills and/or attitudes 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 standards to be covered in a year.

- **Exemplar** is a support and guidance which clearly explains the expected outcomes of an indicator and suggests what teaching and learning activities could take, to support the facilitator/teacher in the delivery of the curriculum.

2.0. PLANNING, TEACHING AND ASSESSMENT

2.1 Learning-Centered Pedagogies:

2.1.1 Activity-based learning

Teachers should devise activities that require full involvement of learners, especially in groups. They should engage learners with a variety of activities involving identification of problems, materials, tools and equipment, freehand sketching of tools, equipment, ideas both in 2-dimensional and 3-dimensional with good annotated notes, development of selected solution, drawing final solution, making detailed drawings, making mock-ups/artefacts, testing and evaluating made artefacts for modifications.

2.1.2 Inquiry-based learning

Teachers are required to develop investigation tools and assist learners to explore/gather and record data using appropriate methods to solve problems in the community. With this, teachers should encourage learners to identify and solve problems that will benefit the community. Teachers should therefore, encourage learners to make use of resources beyond the classroom/school by visiting the local industries for information/assistance.

2.1.3 Group Work (Collaborative learning)

Collaborative learning highlights the contributions of individual group members, and leads to dialogue and consensus building on topics without a clear right and wrong answer. E.g. placing learners into groups to discuss the best ways of keeping themselves clean.

2.1.4 Project-Based Learning

This is a teaching method in which learners gain knowledge and skills by working for an extended period of time. For example, making a folio of an artefact using the designing and making process. This includes investigating a problem, analysing the problem, generating solutions, developing the selected solution and making the mock-up/artefact, testing and evaluating for modifications.

2.2 Instructional Expectations

The teacher is expected to:

- Lead learners to identify problems in the home, school and the community that affect the individual, family, community and the country at large.
- Guide learners to discuss the effects of these problems on their education, health and sanitation, cultural beliefs and practices, job creation and employment, etc.
- Lead learners to investigate the causes of these problems through interviews, visits, observations and literature review.
- Guide learners to plan, select materials, tools, equipment and techniques to design, make, test, evaluate and modify the artefacts.

2.3 SAMPLE YEARLY SCHEME OF LEARNING (SOL)

TERM 1	TERM 2	TERM 3
B7.1.1.1: Personal hygiene and food hygiene	B7.2.3.1 Smart and modern materials	B7.3.4.1: Kitchen essentials
B7.1.2.1: Personal, workshop and food laboratory safety	B7.2.4.1: Food commodities (animal and plant sources)	B7.3.5.1: Finishes and finishing
B7.1.3.1: Environmental health	B7.3.1.1: Measuring and marking out	B7.4.1.1: Simple structures and mechanisms, electric and electronic systems
B7.2.1.1: Compliant materials	B7.3.2.1: Cutting/shaping	B7.5.1.1: Communicating designs
B7.1.3.1: Resistant materials	B7.3.3.1: Joining and assembling	B7.5.2.1: Designing

2.4 SAMPLE TERMLY SCHEME OF LEARNING (SOL) –TERM 1

Week	Sub-Strand	Content Standards	Indicators	Resources
1	Personal Hygiene and Food Hygiene	B7.1.1.1 Demonstrate knowledge of basic concept of staying healthy	B7.1.1.1.1: Explain the need to stay healthy B7.1.1.1.2: Explain what is meant by food hygiene B7.1.1.1.3: Describe ways of maintaining personal hygiene	Body cleaning materials (deodorant, lime, ash, plantain stalk, soap, water, toothbrush, toothpaste), cooked food, spoilt food, chart, pictures, videos, ICT, tools, and internet facilities.
2	Compliant Materials	B7.2.1.1 Demonstrate knowledge of basic concept of compliant materials	B7.2.1.1.1: Describe compliant materials B7.2.1.1.2: Distinguish between types of compliant materials B7.2.1.1.3: Explain how compliant materials are obtained	Paper, cardboard, chart, pictures, videos, internet facilities, ICT tools.
3	Measuring and Marking out tools and equipment for production	B.7.3.1.1 Demonstrate understanding of measuring and marking out tools and equipment for production.	B7.3.1.1.1: Identify measuring and marking out tools and equipment for production and classify them. B7.3.1.1.2: Demonstrate how to care for and maintain measuring and marking out tools used for production	Clean water, cooking oil, silvo, steel wool, wood ash, sea sand, lime, charcoal powder, pawpaw leaves, egg shell , clean cloth

2.5 Sample Lesson Plan

Date: 27/03/2020	**Period:** 2	**Subject:** Career Technology
Time: 7.30am	**Strand 1:** Health and Safety	
Class: B7 **Class Size**: 36	**Sub-Strand 1:** Personal Hygiene and Food Hygiene	
Content Standard B7.1.1.1 Demonstrate knowledge of basic concept of the need to stay healthy and safe		**Indicator:** B7.1.1.1.1**:** Explain the need to stay healthy and safe
Performance Indicator: Learners can explain why we need to keep healthy and safe		**Core Competencies**: **CC 8.1**: Speak clearly and explain ideas. **CC 8.2:** Explain ideas in a clear order with relevant details. **CP5.1**: Ability to combine information and ideas from several sources to reach a conclusion. **CC9.1:** Demonstrate behaviour and skills of working towards group goals. **PL6.2**: Division of tasks into solvable units and assign group members task units.
Key Words: Health, Food hygiene, Personal hygiene.		
Phase/Duration	**Activities**	**Learning Resources**
Phase 1: Starter (preparing the brain for learning) 5 minutes	Learners brainstorm on health and safety issues in the community. E.g. What are the current health issues in the community? (5 minutes)	Cleaning materials (soap, ash, toothbrush, toothpaste, chewing sticks) chart, video, ICT tools.

Phase 2: Main (new learning including assessment) 40 minutes	Ask leaners to share personal experiences on how they keep themselves healthy and safe. Put learners into smaller groups to discuss and present the following: what to do to stay healthy and safe the importance of taking good care of one's body. consequences of not taking good care of one's body. **Note**: Guide learners to develop Ground Rules for Talk' to guide their group discussions to promotes deep learning. Demonstrate ways of maintaining personal hygiene, using body cleaning materials. E.g. care of the finger nails, hair, nose, ear, mouth and teeth, proper way of washing hands.	
Phase 3: Plenary/ Reflections (Learner and teacher) 5 minutes	Learners reflect on the consequences of not observing personal hygiene. Learners discuss how human negligence causes epidemics and affect others. Learners discuss the role they should play as individuals to promote good health, especially of the environment.	
Assessment: (Class exercises, homework, practical, project work)	Learners to answer the following questions: Why do we have to maintain good health and be safe? What are the different ways one can keep oneself healthy? What are the consequences for not keeping healthy?	

2.6 Sample Assessment Tasks

In setting assessment tasks, teachers are expected to be as innovative as possible, focusing on a wide variety of tasks. This could be in the form of project work, group work, homework, etc. This marks a shift from the routine of setting low-order questions that hinder the promotion of higher thinking and development of hands-on skills among learners.

PART B

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE

Content standard	Indicator	Assessment for learning	Assessment as learning	Assessment of learning
B7.1.1.1 Demonstrate knowledge of basic concept of the need to stay healthy	**B7.1.1.1.1:** Explain the need to stay healthy and safe	Assessment for Learning (AfL) is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to be (the desired goal), and how best to get them there. *E.g.* Introduce lesson by asking learners to give reasons for keeping healthy.	Assessment as Learning (AaL) is about the ongoing self-assessment by students in order to monitor their own learning. E.g. Ask learners to look for information from different sources including online, on how to stay healthy.	Assessment of learning (AoL) provides a picture of the achieved standards of the teacher and performance of students at the terminal stage of the learning process. E.g. Learners to explain the different ways of keeping healthy.
	B7.1.1.1.2: Explain what is meant by food hygiene	In the course of the lesson: Describe food that has gone bad or spoilt. Explain what is meant by food hygiene	Before the lesson: find out from the home what causes foods to go bad or spoil. Look for information from different sources including online, on proper ways of handling food.	End of Term Exam: Explain what food hygiene means and what causes food spoilage.
	B7.1.1.1.3: Describe ways of maintaining personal hygiene	In the course of the lesson: Explore personal reasons for maintaining personal hygiene	Before the lesson: Let learners find out from family members and friends the different ways of maintaining personal hygiene.	End of term Exam: Describe the different ways of maintaining personal hygiene. Demonstrate the proper ways of washing hands and brushing teeth.

STRAND 1: HEALTH AND SAFETY

SUB-STRAND 1: PERSONAL HYGIENE AND FOOD HYGIENE
Content Standard: B7.1.1.1: Demonstrate knowledge of the need to stay healthy
Indicators: B7.1.1.1.1: Explain the need to stay healthy B7.1.1.1.2: Explain what is meant by food hygiene B7.1.1.1.3: Describe ways of maintaining personal hygiene
Key Words / Vocabulary: Contract Disease, Food Hygiene, Personal Hygiene.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource Page ref.	Progression
Let learners share experiences on how to keep themselves clean and food safe. Put learners into groups and ask each group to produce a list of things to do to stay healthy and safe and share this with the class. Agree on one combined list with the class and ask learners to record this list in their exercise books. Using charts and pictures, lead learners to discuss the importance of taking good care of one's body. Using pictures, ask each group to discuss the consequences of not taking good care of one's body. Guide learners to demonstrate ways of maintaining personal hygiene using the body-cleaning materials. Put learners in groups and ask each group to discuss what is meant by food hygiene. Lead learners to discuss reasons for keeping food safe using the cooked food and spoilt food. Lead learners to discuss the consequences for taking unwholesome (spoilt) food. Help learners to demonstrate ways of handling food hygienically. Conclude the lesson by summarising the key points in the lesson.	Body-cleaning materials (Deodorant, lime, ash, plantain stalk, wood ash, soap, water, toothbrush, toothpaste) cooked food and spoilt food, charts, pictures, videos, ICT tools and internet facilities Refer to the Career Technology Curriculum for further referencing	Pages 3 to 5	Sharing experiences of keeping oneself clean and food safe. Working together in groups to promote health and safety. Discussions of importance of taking good care of the body and keeping food safe. Discussions of the consequences for not taking good care of the body and not keeping food hygienically Demonstration of ways of maintaining good health and keeping food hygienically. Brainstorming to come out with the meaning of food hygiene. Discussions of reasons for keeping food hygienically. Discussions of consequences for taking spoilt food. Demonstration the hygienic ways of handling food. Skills of taking summary notes of key points in the lesson.

Homework / Project Work / Community Engagement Suggestions
Learners to research and present on materials and strategies (ways) that can be used to improve personal hygiene and discuss in groups. Learners to research into food hygiene practices and present in class for discussion. **Note:** Use different ways or means of presentations, e.g. some could use Power point, posters, pictures, illustrations Learners to produce an illustrated booklet (photo album) or poster to use as materials for teaching and learning personal and food hygiene. Present work for appraisal. **Note:** Learners to search for more information on how to stay healthy and safe; proper ways of handling food.

Cross-Curriculum Links / Cross-Cutting Issues
N/A
Potential misconceptions/learner learning difficulties
Teachers to help learners disabuse their own minds and those of other people that the kitchen is meant for girls only. Lack of ICT tools and internet facilities for researching for information will be a challenge. **Note:** Learners may have access to the internet on mobile phones, or to information in the school or local library.
STRAND 1: HEALTH AND SAFETY
SUB-STRAND 2: PERSONAL, WORKSHOP AND FOOD LABORATORY SAFETY
Content standard: B7.1.2.1: Demonstrate knowledge of preventing accidents in the workshop and food laboratory
Indicator(s): B7.1.2.1.1: Explain what is meant by accidents. B7.1.2.1.2: Enumerate the need to keep safe in the workshop and in the food laboratory. B7.1.2.1.3: Demonstrate basic skills in applying first aid to self and others.
Key words / vocabulary: bruises, explosions, first aid, injuries, methylated spirit, ventilation.

Suggested Activities for Learning and Assessment.	Equipment/Resources	Learner Resource Page Ref.	Progression
Let learners share experiences on the types of accidents and injuries that occur in the workshops/ sites/food laboratories. Put learners in groups to discuss the causes of accidents that can occur in the workshop/food laboratory. Lead learners to show a video/chart on personal safety measures in the workshop/food laboratory. Help learners to demonstrate how to keep tools and equipment safe to prevent accidents in the workshops /food laboratories. e.g. proper storage of food, materials, tools and equipment. Demonstrate ways of minimising accidents/injuries in the workshop and food laboratory. Group learners to discuss what is meant by first aid. Help learners to display the content of a first aid box A resource person to lead learners to demonstrate how to administer first aid to persons affected by cuts, burns, scalds, falls.	Realia of items for first aid, charts, pictures, resource person, video.	Pages 6 and 7	**1.** Sharing of experiences on types of accidents and injuries which occur in the workshop/site/food laboratory. **2.** Discussions of causes of accidents in the workshop/site/food laboratory **3.** Using videos/chart to show personal safety measures. **4.** Demonstration of correct ways of keeping tools and equipment safe to prevent accidents/ injuries in the workshop/ site/food laboratory. **5.** Demonstration of correct ways of minimising accidents/injuries in the workshop/site/food laboratory. **6.** Discussion of meaning of first aid **7.** Identification of content of the first aid box. **8.** Demonstration of basic skills in the application of first aid to self and others.
Homework / Project Work / Community Engagement Suggestions			
Make a chart of tradition/modern materials for treating various accidents in the workshop Questions to interview parents and people in the community on accidents and safety at work place and how to administer first aid. Questions should be given to students as homework based on the topic. E.g. 1. What are the causes of accidents in the workplace? 2. What is the safest measure to prevent accidents? 3. State four items in the first aid box.			

Cross-Curriculum Links / Cross-Cutting Issues
Identify links between concepts, content or learning related to other disciplines. Reference opportunities for the activities to contribute to achieving cross-cutting aims of the Common Core Curriculum Knowledge of accident and safety measures are in science Knowledge of accidents, safety measures and administering of first aid are in Physical Education.
Potential Misconceptions / Student Learning Difficulties
Teacher to help learners disabuse their own minds and those of other people that Technical Skills is for only males/boys whilst Home Economics is for females/girls. Lack of ICT tools and internet facilities to research for information will be a challenge in some schools/communities. **Note:** Learners may have access to the internet on mobile phones, or to information in the school or local library.
STRAND 1: HEALTH AND SAFETY
SUB-STRAND 3: ENVIRONMENTAL HEALTH
Content Standard: B7.1.3.1: Demonstrate knowledge of basic concept of environmental health
Indicators: B7.1.3.1.1: Enumerate the constituents of environmental health B7.1.3.1.2: Enumerate the preventive measures of environmental health
Key Words / Vocabulary: Cleaner fuels. disease control, environmental health, preventive measures, safe water.

Suggested activities for learning and assessment.	Equipment / Resources	Learner Resource page ref	Progression
Explain the basic concept of environmental health Discuss the given constituents of environmental health and rank them in order of importance. E.g. Disease control, clean water, sanitation and hygiene. **Note:** The conclusion should be that they are all equally important. Discuss the constituents of environmental health using ICT tools and other sources and report in class, in groups. Lead learners to demonstrate preventive measures of environmental health.	Chart, pictures, videos, realia of clean and dirty water	Pages 8 and 9	**1.** Explanation of basic concept of environmental health. **2.** Discussions of ranking of given constituents of environmental health according to their importance. **3.** Finding out about the constituents of environmental health using ICT tools. **4.** Demonstration of preventive measures of environmental health.
Homework / Project work			
Find out from various sources how environmental health issues can be prevented; e.g. promotion of safe water, better hygiene measures and cleaner fuels. Present findings in groups. Research the benefits of planting more trees in the local community. Identify potential sites for planting more trees in the local community and suggest suitable tree species for the sites. Use ICT tools and other sources to search for the constituents of environmental health and report in class, e.g. air, water and soil pollutions, chemical exposures.			
Cross-Curriculum Links/Cross-Cutting Issues			
Social Studies: B7.1.1.1.1 talks about ways of dealing with sanitation challenges in the environment.			
Potential Misconceptions / Student Learning Difficulties			
Teacher helps learners to dispute the fact that burning fuels has nothing to do with our health, E.g. research has shown that burning traditional fuels has a negative impact on our health and that alternative fuels that do not present these health issues are available. Drinking from the rivers and streams is hygienic and safe. Grandparents have been cutting trees for years but they lived longer than us.			

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 1: COMPLIANT MATERIALS

Content Standard:
Demonstrate knowledge of basic concept of compliant materials.

Indicators:
B7.2.1.1.1: Describe compliant materials.
B7.2.1.1.2: Distinguish between types of compliant materials.
B7.2.1.1.3: Briefly explain how compliant materials are obtained.

Key Words / Vocabulary:
Card, Compliant, Fabric, Materials, Paper, Textiles.

Suggested activities for learning and assessment.	Equipment/Resources	Learner Resource Page ref.	Progression
1. Using realia/charts/pictures guide learners to identify and describe compliant materials such as paper/card, fabric/textiles. **2.** Put learners into groups to sort out compliant materials from a variety of available materials. and classify them according to the following: paper card fabric/textile **3.** Make a chart on compliant materials based on their common characteristics and present in class for appraisal. **Note:** Use different ways or means of presentation. E.g. Power Point, chart, pictures, illustrations. **4.** Discuss how the various compliant materials are obtained. **Note:** Treat each source of compliant material separately.	Realia/charts/ pictures of compliant, manila cards, markers, poster colours, ICT tools and internet facilities Refer to the Career Technology Curriculum.	Pages 10 and 11	**1.** Identification and description of compliant materials. **2.** Identification and classification of compliant materials in their various categories. **3.** Demonstration of skills for making chart for discussing characteristics of compliant materials. **4.** Discussions of how compliant materials are obtained.

Homework / Project Work / Community Engagement Suggestions

Search for information on how paper/card is made, in groups.
Find information on how fabric/textile is made and submit for discussion.
Note: Search for information from different sources including online, on the various compliant materials.

Cross-Curriculum Links / Cross-Cutting Issues

Science: B7.1.1.1 – Recognise materials as important resources for providing human needs.
Computing: B7.3.4.1.1 talks about demonstrating the use of the word browser (search engine)
Inclusivity (gender, equality and social inclusion)

Potential Misconceptions / Student Learning Difficulties

Disabuse the minds of learners that girls cannot offer Technical Skills programmes.
Lack of ICT tools and internet facilities.
Note: Learners may have access to the internet on mobile phones, or to information in a school or local library.

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 2: RESISTANT MATERIALS

Content Standard:
Demonstrate knowledge of basic concept of compliant materials

Indicators:
B7.2.2.1.1: Describe resistant materials
B7.2.2.1.2: Distinguish between the types of resistant materials
B7.2.2.1.3: Explain how each of the resistant materials is obtained

Key Words / Vocabulary:
acetate films, alloys, ferrous, non-ferrous, thermoplastics, thermosetting.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref	Progression
1. Review the lesson on resistant materials **2.** Ask learners to identify the different materials used for the school building and present in the form of a two-column table under the headings 'Material' and 'Use'. **3.** Display the realia or pictures or show video of resistant materials and ask learners to describe them. E.g. resistant materials refer to a group of materials that have certain common characteristics such as plastic, wood, metal, ceramics, glass. **4.** Guide learners to sort out resistant materials into various categories. E.g. plastics – thermoplastics and thermosetting plastics wood – hardwoods and softwoods metals – ferrous, non-ferrous, alloys and smart **5.** Learners to make a chart to show the differences among the various types of resistant materials under their categories. **6.** Lead the class to 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	Realia, pictures, charts, videos, of wood, plastic, metal, ceramics, glass materials, samples of hard and soft wood, types of metals- ferrous, non-ferrous, alloys and smart, products from plastics, metals, ceramics, wood	Pages 11 to 13	**1.** Reviewing learners' previous knowledge of resistant materials. **2.** Identification and uses of resistant materials in a tabular form. **3.** Description of displayed resistant materials displayed. **4.** Sorting out resistant materials into various categories. **5.** Skills in the preparation of chart to show the various types of resistant materials. **6.** Discussions of two main sources from which plastics are obtained.

7. Ask learners to look for information from different sources including online, on the two types of plastics and give examples: Thermoplastics: - polythene, PVC, nylon Thermosetting plastics; - urea formaldehyde, polyester resin, epoxy resin **8.** Make a table/chart and match products to the types of plastics they are made from. E.g.: product plastic type switches of nylon bristles of tooth brush pvc cable insulators bakelite			**7.** Finding out more about types of plastic. **8.** Designing and making of table/chart to show types of plastics and the products made from.

Suggested Activities for Learning and Assessment	Equipment/ Resources	Learner Resource page ref	Progression
9. 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. **10. Guide learners to 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. **11. Compare 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 **12. Briefly describe 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. **13. Display samples of products from metals and let learners 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) **14.** Ask learners to think of how they can improve the various products.	Carts, building materials	Pages 11 to 13	**9.** Explanation of how wood is obtained. **10.** Differentiating between solid timber and man-made boards **11.** Comparison of products made from solid timber and that of man-made boards in terms of weight and strengths. **12.** Description of how metals are obtained. **13.** Identification and selection of specific metals from a variety of products made from different types of metal. **14.** Making modifications of made products

15. Guide learners to design and make simple mock-ups/ artefacts. **16. Display samples of materials for learners to identify those used for building and classify them.** E.g.: natural: - sand, stones, clay artificial: - cement, lime **17. Discuss the sources of the natural building materials** E.g.: sand is obtained from pits, river banks, stone is obtained from quarries. **Note:** Discuss each material (building materials, metals, wood, plastics) separately.			15.Following the design process to design and make mock-ups/artefacts. 16. Identification and classification of building materials from a variety of resistant materials. 17. Discussions on sources of aggregates (sand and stone).

Homework / Project Work / Community Engagement Suggestions
Learners to scout around the local community and make a collection of the various resistant materials and bring to class. Learners read more from different sources on resistant materials. Learner to make/ create products or artefacts from the different resistant materials.
Cross-Curriculum Links / Cross-Cutting Issues
Computing: B7.3.4.1.1 talks about demonstrating the use of the word browser (search engine) Inclusivity (gender, equality and social inclusion)
Potential Misconceptions / Student Learning Difficulties
Cultural beliefs of what girls and boys should or can do/ cannot do.

STRAND 2: MATERIALS FOR PRODUCTION

SUB-STRAND 3: SMART AND MODERN MATERIALS

Content Standard:
B7.2.3.1: Demonstrate understanding of the properties of smart and modern materials

Indicator:
B7.2.3.1.1: Explore the general properties of smart and modern materials.

Key Words / Vocabulary:
Graphene oxide, kevlar, Shape Memory Alloys (SMA), thermochromic pigments.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
Ask learners to mention and describe the type of materials found in the environment. With the aid of realia/chart or pictures guide learners to identify and describe smart and modern materials E.g, Smart Materials are materials that sense conditions in their environment and respond to those conditions.	Realia/ chart/pictures/ videos of smart and modern materials, ICT tools, internet facilities, manila card, markers Refer to the Career Technology Curriculum	Pages 14 to 15	Description of materials found in the environment. 2. Identification, explanation and description of smart and modern materials

Modern Materials are materials developed through the invention of new or improved processes to have improved properties. E.g. graphene oxide, kevlar, Shape Memory Alloys (SMA) thermochromic pigments. Explain the main factors that affect the properties of smart and modern materials E.g. light, temperature (hot/cold/warmth), moisture. Describe the effects of light on products made from smart and modern materials E.g. light causes photomechanical materials to change shape when exposed to it photochromic materials change colour in response to light			3. Explanation of factors that affect the properties of smart and modern materials. 4. Description of effects of light on products made from smart and modern materials. 5. Explanation of effects of temperature on products made from smart and modern materials.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
Explain the effects of temperature on products made from smart and modern materials E.g. thermochromic materials change in colour depending on the temperature Discuss how moisture affects products made from smart and modern material E.g. graphene oxide-based materials bend when exposed to moisture. Guide learners to perform simple experiments to test the properties of smart and modern materials.			6. Discussions of how moisture affects products made from smart and modern materials. 7. Performance of simple experiments for testing the properties of smart and modern materials.

Homework / Project Work / Community Engagement Suggestions

1. Research and find more about:
   a) The different types of smart and modern materials
   b) How smart and modern material are made

1. Make a collection of smart and modern materials from your environment.

2. Find out the products that are made from smart and modern materials.

Cross-Curriculum Links / Cross-Cutting Issues

- Computing: B7.3.4.1.1 talks about demonstrating the use of the word browser (search engine)
- Inclusivity (gender, equality and social inclusion)

Potential Misconceptions / Student Learning Difficulties

- Cultural perception that Pre-Technical Skills is for only boys.
- Accessibility and availability of ICT tools and internet.

Note: Learners may have access to the internet on mobile phones, or to information in a school or local library.

STRAND 2: MATERIALS FOR PRODUCTION

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

Content Standard:
B7.2.4.1: Demonstrate knowledge of basic food commodities

Indicator:
B7.2.4.1.1: Discuss food commodities

Key Words / Vocabulary:
Edible substance, food commodities, liquid, maintain life, solid.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
1. Using realia/chart/pictures explain what is meant by 'food' and food commodities.	Realia/charts/pictures of food commodities, manila cards, markers, poster colours, ICT	16 to 17	**1.** Explanation of food and food commodities.
2. Guide learners to distinguish between 'food' and food commodities.			**2.** Understanding the difference between food and food commodities.
3. Using the three-food group chart, classify food commodities under plant and animal sources.	Refer to the Career Technology Curriculum for more information on food and food commodities.		**3.** Classification of food commodities under two main sources (plant and animals).
4. Discuss reasons for eating food.			**4.** Discussion of reasons for eating food.

Homework / Project Work / Community Engagement Suggestions

1. Make a chart on the various food commodities and present in class
2. Search from different sources for more information on food commodities and present in class for discussion

Cross-Curriculum Links / Cross-Cutting Issues

- Science: B7.3.1.1.1 –Explains the concept of food and need for humans to eat.

Potential Misconceptions / Student Learning Difficulties

- Disabuse the minds of learners that boys cannot offer Home Economics.
- Lack of ICT tools and internet facilities.

Note: Learners may have access to the internet on mobile phones, or to information in a school or local library.

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 1: MEASURING AND MARKING OUT
Content standard: Demonstrate understanding of identification and classification of measuring and marking out tools and equipment
Indicators: B7.3.1.1.1: Identify measuring and marking out tools and equipment for production, and classify them B7.3.1.1.2: Demonstrate how to care for and maintain measuring and marking out tools used for production
Key Words / Vocabulary: Centre punch, dot punch, marking out, measuring, mortise gauge, weighing scale, surveyor's tape.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref	Progression
1. Identify measuring and marking out tools and equipment and classify them under the following areas: Food Laboratory (kitchen) Sewing Workshop/Laboratory Building Site Wood Workshop Metal/Plastic Workshop	Pictures/ Drawings of measuring and marking out tools Real tools – measuring cups, spoons, weighing scales, 'olonka', kitchen knives Tape measure, straight edge, tailor's chalk surveyor's tape, builder's square, head pan, chalk, pointed rod rules, pencil, try-square, marking knife, marking gauge, mortise gauge Steel rule, scriber, dividers, dot punch, centre punch. Visits to workshops/ restaurants/ food processing joints Charts/ pictures illustrating the use of the tools in selected tasks/situations	Pages 17 and 18	**1.** Identification and classification of measuring and marking out tools under the various trade areas.
2. Discuss the importance of measuring and marking out articles before production.			**2.** Discussion of importance of measuring and marking out articles before making.
3. Demonstrate how each tool and equipment is used in: • Food Laboratory (kitchen) • Sewing Workshop/Laboratory • Building Site • Wood Workshop • Metal/Plastic Workshop			**3.** Demonstration of skills in the use of measuring and marking out tools in the various trade areas.
4. Demonstrate how to care for and maintain the tools and equipment used for production.			**4.** Demonstration of how to care for and maintain the tools and equipment.
5. Learners to sketch and label parts of measuring and marking out tools, and display sketches for appraisal	Drawings/pictures of measuring and marking out tools well labelled	Pages 17 and 18	5. Application of skills in sketching and labelling tools and equipment.

Homework / Project Work / Community Engagement Suggestions

Project Work:
Instruction: Make a list of all the measuring and marking out tools you used last week from Monday to Friday.
Use the table below to record your results:

DAY TOOL (S) USED

Monday

Tuesday

Wednesday

Thursday

Friday

Which tool do you use often?
How do you ensure that the tool is always in a good condition?

Cross-Curriculum Links / Cross-Cutting Issues

Mathematics: B7.3.1.1.1–4 treats measurements.

Potential Misconceptions / Student Learning Difficulties

Learning difficulty: Student may confuse measuring tool with marking out tool in an area.
Suggestion: - Explain with demonstration/illustration that measuring tools leave no mark in using them but marking out tools leave a mark.

Strand 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 2: CUTTING/SHAPING

Content standard:
B7.3.2.1: Demonstrate understanding of cutting/shaping tools and equipment for production.

Indicators:
B7.3.2.1.1: Identify cutting and shaping tools and equipment used for production.
B7.3.2.1.2: Use appropriate skills in cutting, chopping, slicing, dicing and shaping when making products.
B7.3.2.1.3: Demonstrate how to care for and maintain cutting and shaping tools used for production.

Key Words/Vocabulary:
Coping saw, mould, pinking shears, seam ripper, spoke shave.

Suggested Activities for Learning and Assessment	Equipment / Resources	Learner Resource page ref	Progression
1. Identify the displayed cutting/ shaping tools used in: Food laboratory Sewing workshop Woodwork workshop building site Metal/plastics workshop	Pictures/drawings of cutting/ shaping tools. real cutting and shaping tools - kitchen knives and cutters, biscuit cutters, cake tins, moulds, scissors, pinking shears, seam ripper, rip saw, crosscut saw, firmer chisels, mortise chisel, spoke shave, rasp file bolster, brick hammer, mould box coping saw, junior hacksaw, files, drills, cold chisels	18 to 20	**1.** Identification of cutting and shaping tools in the various trade areas.

2. Demonstrate the appropriate techniques used in cutting, chopping, slicing and dicing in food production. **Note**: Some learners will need to repeat the exercises to perfect the techniques, whilst others will quickly be able to apply the techniques to other food products.	Sample materials real tools charts displaying hints on using the tools. Refer to the Career Technology Curriculum		**2.** Demonstration of appropriate techniques for cutting, chopping, slicing and dicing food.
3. Demonstrate the appropriate techniques used in cutting and shaping in wood and metal			**3.** Demonstration of appropriate techniques for cutting and shaping wood and metal/plastic.
4. Demonstrate how to clean cutting and shaping tools and equipment according to the material used in making them.	Cleaning agents		**4.** Demonstration of how to clean cutting and shaping tools and equipment.

Homework / Project work / Community Engagement Suggestions

In pairs, or small groups, select five tradesmen and women/food vendors and interview them on the tools they use for cutting and shaping in their field of work.

Sample interview questions

What is the name of your occupation?
Does it involve any cutting and shaping?
How long have you been using the tool(s)?
What measures do take to ensure that the tool(s) last long?

Note: The teacher should carry out a risk assessment and give learners appropriate health and personal safety guidance.
Draw a table to show a summary of your findings. Write your own conclusion of how the tools are maintained.

Cross-Curriculum Links / Cross-Cutting Issues

Creative Arts and Design: B7.2.1.1.1 – Identify tools, materials and equipment and determine their nature and uses in still life drawing and shading, pattern making and modelling.

Potential Misconceptions / Student Learning Difficulties

Learners may feel it is only male-related trade/job.

Suggestions:

Put learners in mixed gender groups to perform the task.
Take a field trip with learners on the project at school. Then ask learners to do same at home with their friends/siblings.

Strand 3: TOOLS, EQUIPMENT AND PROCESSES
SUB-STRAND 3: JOINING AND ASSEMBLING
Content standard: B7.3.3.1: Demonstrate understanding of joining and assembling materials, tools and equipment used for production
Indicators: B7.3.3.1.1: Identify joining and assembling materials, tools and equipment used for making artefacts/products B7.3.3.1.2: Use appropriate skills for joining and assembling artefacts using the materials, tools and equipment B7.3.3.1.3: Demonstrate how to care for and maintain joining and assembling tools used for production
Key Words / Vocabulary: Adhesives, assembling, float, flux, folding bar, joining, mallet, solder, soldering iron/bit.

Suggested Activities for Learning and Assessment	Equipment / Resources	Learner Resource page ref	Progression
1. Identify joining and assembling materials, tools and equipment used for: a. Sewing and crocheting b. Woodwork c. Metalwork d. Plastic e. Building **2.** Research further on joining and assembling materials, tools and equipment, using ICT tools and other sources, and present in class, in groups	Crochet hook/pin, sewing needle, sewing thread, adhesives (glue), clamps, nails, screws, bolt and nut, rivets, screw driver, soldering iron/bit, solder, mallet, folding bar, mortar, trowel, float	Pages 20 and 21	**1.** Explanations of the terms joining and assembling and identification of tools used for joining. **2.** Acquisition of research and presentation skills
3. Make a picture album of joining and assembling tools and equipment, and display in class for appraisal. [Search from the internet or textbooks for more information]	Pictures/drawings of the tools		**3.** Skills in designing and making of an album to show joining and assembling tools and equipment.
4. Demonstrate the appropriate techniques for using joining and assembling materials, tools and equipment for a given task. E.g. i. Assembling components of a wooden chair, table, drawer ii. Joining components of sheet metal artefacts/products such as funnel, bread pan, coal pot iii. Joining parts of garment to get a dress, shirt, shorts.	Pictures/drawings showing the tasks being performed Charts showing the operational sequence involved in performing the tasks. Refer to the Career Technology Curriculum		**4.** Demonstration of appropriate techniques for using joining and assembling materials, tools and equipment.
Homework/Project Work/Community Engagement Suggestions			

Make a visit to trades men and women in your community. Engage them in a conversation on how they join/assemble their products.
Select two different joining/assembling materials, tools and equipment from each of the following areas based on your visit

- Sewing Laboratory
- Wood Workshop
- Metal Workshop
- Building Site

Indicate how to care for and maintain the tools identified in question two.

Present your answer in a table/chart, and read it out to the class.

Cross-Curriculum Links / Cross-Cutting Issues

Creative Arts and Design: B7.2.1.1.1 – Identify tools, materials and equipment and determine their nature and uses in still life drawing and shading, pattern making and modelling.

Potential Misconceptions / Student Learning Difficulties

Potential misconception: Boys thinking sewing/crocheting is for only girls, and girls having the misconception that Technical Skills courses (wood work, metal work, block work) are meant for boys only.
Suggestion: Dispel that notion by discussing careers which were formerly female dominated, where males are now patronising such as in the catering and hospitality industry, and vice-versa.

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 4: KITCHEN ESSENTIALS

Content standard:
B7.3.4.1: Demonstrate knowledge and understanding of basic concept of Kitchen Essentials

Indicators:
B7.3.4.1.1: Explain what is meant by basic Kitchen Essentials
B7.3.4.1.2: Demonstrate skills in the appropriate classification of Kitchen Essentials

Key Words/Vocabulary:
Equipment, kitchen essentials, mechanical.

Suggested Activities for Learning and Assessment	Tools / Equipment /Resources	Learner Resource page ref	Progression
1. Explain what is meant by basic kitchen essentials **2.** In groups, identify and classify kitchen essentials according to sizes. E.g. Small – spoons, can opener Large – refrigerator, cooker, broiler, cupboard Mechanical – blender, food mixer **3.** Present work for class discussions	Realia or pictures of small, large and mechanical equipment found in the kitchen. Refer to the Career Technology Curriculum	**Pages 21 to 24**	**1.** Explanation of kitchen essentials. **2.** Identification and classification of kitchen essentials into small, large and mechanical. **3.** Skills of presentation in class.

Homework / Project Work / Community Engagement Suggestions

- Leaners find out from their homes/ communities and other sources, other kitchen essentials
- Leaners make a chart or album on the classification of the kitchen essentials

Cross-Curriculum Links / Cross-Cutting Issues

N/A

Potential Misconceptions / Student Learning Difficulties

- Cultural beliefs about males touching cooking utensils.
- Students inability to access internet facilities.

Note: Learners may have access to the internet on mobile phones, or to information in a school or local library.

STRAND 3: TOOLS, EQUIPMENT AND PROCESSES

SUB-STRAND 5: FINISHES AND FINISHING

Content standard:
B7.3.5.1: Demonstrate knowledge of finishing and finishes

Indicators:
B7.3.5.1.1: Identify finishing and finishes applied to products/artefacts
B7.3.5.1.2: Demonstrate knowledge in basic processes for finishing raw edges of articles in sewing.

Key Words/Vocabulary:
Abrasives, binding, crocheting, facing, finishing, finishes, fringing, hemming, lacing, priming coat, piping, pinking, second coat, shell edging, tasseling, under coat.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref	Progression
1. Explain what is meant by finishes and finishing. **2.** Identify types of finishes and their related thinners. **3.** Select a finish for a given product. E.g. A mild steel fence post would be painted to prevent it from rusting. **4.** Demonstrate how to apply finishes on artefacts.	Samples of finished products in the various areas of production. Pictures/drawings showing some finished products. Charts outlining sequential order of finishing a product.	Pages 24 to 25	**1.** Explanations of terms 'finishing' and 'finishes'. **2.** Identification of types of finishes and their thinning agents. **3.** Skills required for selecting finishes for a given product. **4.** Application of finishes on artefacts.
5. Explain what is meant by edge finishes. **6.** Identify types of edge finishes. **7.** Discuss reasons why edges of articles are finished. **8.** Identify edges of articles that require finishing.	Real finishing materials and tools Samples of finished work.		**5.** Explanation of edge finishes **6.** Identification of edge finishes **7.** Giving reasons for finishing artefacts. **8.** Identification of edges of articles that require finishing.

Homework / Project Work / Community Engagement Suggestions

Make a flow chart showing the process of finishing an artefact in any one of the following areas: woodwork, metalwork, building. Support your chart with pictures/drawings

Make a picture/drawing album of four different edge finishes of an article/garment, describing each
Note: Search for further information on the internet /textbooks.

Cross-Curriculum Links / Cross-Cutting Issues

Creative Arts and Design - B7.2.1.1.2: Apply the techniques of still life drawing and shading to make own visual artworks.

Potential Misconceptions / Student Learning Difficulties

Misconception: The misconception that specific careers are for only boys or girls.
Remedy: In this global world, no one career is assigned to only one sex.

STRAND 4: TECHNOLOGY

SUB-STRAND 1: SIMPLE STRUCTURES AND MECHANISMS, ELECTRIC AND ELECTRONIC SYSTEMS
CONTENT STANDARD: B7.4.1.1: Demonstrate understanding of structures in frame construction
Indicators: B7.4.1.1.1: Outline the uses of structures in frame construction B7.4.1.1.2: Examine the need to understand the causes of structural failure in construction B7.4.1.1.3: Design and make simple structures
Key Words/Vocabulary: Frame construction, frame structure, man-made structure, natural structure, shell structure, structural failure.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
1. Introduce the lesson by asking learners to mention some artefacts they use in the school and home. **2.** Using charts/real objects, discuss what is meant by structures and structural failure in construction. **3.** Using real objects, assist learners to identify types of structures and classify them into natural and man-made. **4.** Using real objects and charts, assist learners to classify/group structures into frame and shell. **5.** Group learners to discuss the uses of structures in construction. **6.** Using charts, help learners to identify structural failures **7.** Group learners to discuss the causes, effects and remedies of structural failures. **8.** Using charts/real objects assist learners to make sketches of simple frame and shell structures. **9.** Guide, learners to plan, design and make mock-ups of simple frame and shell structures. **10.** Help learners to plan and mount/ display mock-ups, appraise their own works and make modifications. **11.** Conclude the lesson by asking learners to explain the reasons for appraising finished products.	Realia of both frame and shell structures, charts, pictures, videos, ICT tools and internet facilities Refer to B7 Career Technology Curriculum for further information.	Pages 25 to 28	**1.** Review of learners' knowledge of artefacts used in the schools and home. **2.** Brainstorming to come out with the meaning of structures and structural failures in construction. **3.** Identification and classification of structures into natural and man-made. **4.** Classification of structures into frame and shell. **5.** Discussion of uses of structures in construction **6.** Identification of some structures that have failed in the school and home/ community. **7.** Discussion of causes, effects and remedies of structural failures **8.** Skills of making sketches of simple frame and shell structures. **9.** Planning, designing and making of mock-ups of simple frame and shell structures following the design process. **10.** Following the proper procedures for mounting mock-ups/artefacts for appraisal. **11.** Explanation of reasons for appraising finished products.

Homework / Project Work / Community Engagement Suggestions
• Visit the community and find out where structural failures have occurred, make sketches with descriptive/foot notes and discuss in class. • Prepare photo albums to use as materials for teaching/learning types of structures and structural failures and display them for appraisal.
Cross-Curriculum Links / Cross-Cutting Issues
• Computing: B7.3.4.1.1 Demonstrate the use of the word browser (search engine). • Creative Arts and Design - B7.2.1.1.2: Apply the techniques of still life drawing and shading to make own visual artworks. • Involvement of both boys and girls in structural design and designing and making of mock-ups to cater for gender inclusivity.
Potential Misconceptions / Learner Learning Difficulties
• Difficulty in acquiring compliant materials and basic tools for making mock-ups of simple structures. • Inadequate ICT tools (computers) and internet facilities to conduct research or find more information on structures. **Note:** Learners may have access to the internet on mobile phones, or to information in the school or local library.

STRAND 5: DESIGNING AND MAKING OF ARTEFACTS/PRODUCTS

SUB-STRAND 1: COMMUNICATING DESIGNS
CONTENT STANDARD: Demonstrate knowledge and skills of identification of drawing materials, instruments, lines and their applications, and freehand sketching
Indicators: B7.5.1.1.1: Identify drawing materials, instruments and equipment used for graphic communication B7.5.1.1.2: Identify the types of lines used in graphic communication B7.5.1.1.3: Make sketches of lines, curves, objects, and write the letters in upper case and lower case B7.5.1.1.4: Make freehand sketches of objects
Key Words/Vocabulary: Communicating designs, lower case letters, manipulate, title block, upper case letters.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
1. Introduce the lesson by asking learners to mention names of some materials, instruments and equipment used for graphic communication/drawing	Drawing materials, instruments, equipment. Refer to the Career Technology Curriculum.	Pages 29 to 31	**1.** Reviewing learners' relevant previous knowledge on materials, instruments and equipment used for drawing.
2. Show drawing materials, instruments and equipment for learners to identify them.			**2.** Identification of drawing materials, instruments and equipment.
3. Put learners into groups to discuss the names and uses of the drawing materials, instruments and equipment identified.			**3.** Discussion of names and uses of drawing materials, instruments and equipment.
4. Demonstrate the appropriate use of drawing materials, instruments and equipment, e.g. a pair of compasses.			**4.** Correct manipulation of drawing instruments and equipment.
5. Demonstrate how to care for and maintain the drawing materials, instruments and equipment			**5.** Proper way of caring for and maintaining the drawing materials, instruments and equipment.
6. Using charts and illustrations, assist learners to identify types of lines and discuss their features and uses, in groups.			**6.** Identification and discussion of types of lines, their features and uses.

Suggested Activities for Learning and Assessment	Equipment/Resources	Learner Resource page ref.	Progression
7. Guide learners to draw horizontal lines, vertical lines, inclined lines, arcs, circles, continuous thin and thick lines, short dashes, broken lines and zig-zag in freehand. **8.** Assist learners to draw simple objects and show the applications of the various lines on the drawn objects. **9.** Assist learners to write lower- and upper-case letters and discuss their uses **10.** Assist learners to draw a title block and indicate the general information required on the it. **11.** Using charts and models, illustrate the techniques of sketching two dimensional (2-D) and three-dimensional (3-D) figures/objects in freehand. **12.** Guide learners to prepare an album of sketched 2-D and 3-D objects and present for appraisal. **13.** Conclude the lesson by asking learners to explain the reasons why we care for and maintain the drawing materials, instruments and equipment.		Pages 29 to 31	**7.** Drawing of the various lines with freehand. **8.** Drawing of simple objects to show how the lines are applied in drawing. **9.** Skills involved in writing lower- and upper-case letters. **10.** Drawing of title block showing the general information required. **11.** Sketching/drawing of 2-D and 3-D objects in freehand. **12.** Skills involved in the making of an album, planning and displaying sketched 2-D and 3-D objects for appraisal. **13.** Explanation of reasons for caring for and maintaining drawing materials, instruments and equipment.

Homework / Project work / Community Engagement Suggestions

Prepare a chart to show types of lines and their uses.
Prepare a title block and indicate the name of learner, school, class, subject, drawing number, and date on it.
Sketch simple objects in 2-D and 3-D to make photo albums and display in class for appraisal.

Cross-Curriculum Links / Cross-Cutting Issues

Creative Arts and Design - B7.2.1.1.2: Apply the techniques of still life drawing and shading to make own visual artworks.
Involvement of both boys and girls in graphic communication to promote gender equity and inclusivity at all levels.

Potential Misconceptions / Student Learning Difficulties

The misconception that Technical Drawing is meant for only boys.
Difficulty of learners in acquiring drawing materials, instruments and equipment.
Difficulty of learners in transferring their visual/imaginative thinking into freehand sketching of objects.

STRAND 5: DESIGNING AND MAKING OF ARTEFACTS/PRODUCTS
SUB-STRAND 2: DESIGNING
CONTENT STANDARD: Demonstrate understanding of Designing
Indicators: B7.5.2.1.1: Work with a given Design brief B7.5.2.1.2: Generate Ideas B7.5.2.1.3: Make artefacts using compliant materials B7.5.2.1.4: Test and Evaluate the manufactured artefact
Key Words/Vocabulary: Designing, design brief, descriptive notes, final idea, test and evaluate.

Suggested Activities for Learning and Assessment	Equipment/ Resources	Learner Resource page ref.	Progression
1. Introduce the lesson by asking learners to mention some of the problems they see/find in their school and home. **2.** Put learners into groups to discuss ways of identifying problems in their school and home. **3.** Guide learners to move out of class to identify some problems in the school environment. **4.** Put learners into groups and assist them to discuss/analyse the problems identified in their school environment and state specifications for their designs. **5.** Assist learners to generate three possible ideas with annotated/descriptive notes for solving the identified problems. Note: Encourage learners to use freehand sketches **6.** Help learners to verify and select the best design out of the possible solutions generated and draw the final idea in pictorial view. **7.** Guide learners to prepare simple working drawings showing the front elevation, plan and end elevation with major dimensions. **8.** Assist learners to plan and select suitable compliant and resistant materials, tools and equipment for making the mock-ups/ artefacts. **9.** Guide learners to follow the appropriate operational sequence to make mock-ups/ artefacts. **10.** Guide learners to prepare evaluation tools/checklist and group them to test and evaluate their mock-ups/artefacts against their specifications, taking into consideration the function, shape, strengths, finish and aesthetics/beauty.	Charts, pictures, pencils, crayons, 'A4 sheets, ICT tools and internet facilities Consult the Career Technology Curriculum for further referencing	Pages 32 and 33	**1.** Reviewing learners' relevant previous knowledge by asking them to mention problems they see and encounter in their school and home. **2.** Discussion of ways of identifying problems in the environment **3.** Observation of problems in the school/home. **4.** Analysis of problems identified in their school/home and stating specifications of design. **5.** Generation of possible ideas/ solutions in freehand with annotated/descriptive notes. **6.** Selection of best design among the possible solutions and drawing final solution in pictorial. **7.** Preparation of simple working drawings with major dimensions required for making the artefacts. **8.** Planning and selection of suitable materials for making mock-ups/ artefacts. **9.** Making of mock-ups following the appropriate operational sequence. **10.** Making judgement of made mock-ups/artefacts using evaluation checklist for modifications.

11. Present evaluation report on judgment ratings of Excellent, very good, Good, Satisfactory/Fair and could be better **12.** Make modifications based on weaknesses of the design. **13.** Conclude the lesson by asking learners to explain the procedures involved in evaluating their made artefacts			**11.** Skills in presenting evaluation reports using appropriate scale/ratings. **12.** Making modifications on made design/artefacts. **13.** Explanation of procedures involved in evaluating artefacts.

Homework /Project Work /Community Engagement Suggestions

Identify problems in the school/home/community.
Briefly, describe the problems identified above and indicate the challenges the problems are posing to the community.
Sketch at least two (2) possible solutions in freehand with annotated notes for solving the problem.
Select and draw the final solution in pictorial view.
Prepare folios with the above information and display in class for appraisal.
Make mock-ups with compliant materials

Cross-Curriculum Links/Cross-Cutting Issues

Computing: B7.3.4.1.1 Demonstrate the use of the word browser (search engine).
Creative Arts and Design - B7.2.1.1.2: Apply the techniques of still life drawing and shading to make own visual artworks.
Involvement of both boys and girls in designing and making artefacts to cater for gender and inclusive issues.

Potential Misconceptions / Student Learning Difficulties

The misconception that designing and making of artefacts is meant for boys only.
Difficulty of some learners to make working drawings with dimensions for making artefact/mock-ups.
Inadequate ICT tools and internet facilities for finding information about designing and making artefacts

STRAND 5: DESIGNING AND MAKING OF ARTEFACTS/PRODUCTS

SUB-STRAND 3: PLANNING FOR MAKING ARTEFACTS/PRODUCTS

CONTENT STANDARD:
B7.5.3.1Demonstrate understanding of planning for making artefacts/products

Indicators:
B8.5.3.1.1: Outline the factors to consider when planning meals
B8.5.3.1.2: Plan for making artefacts/products in sewing and crocheting

Key Words / Vocabulary:
Planning meal, nutritional needs, over sewing, overcasting.

Suggested Activities for Learning and Assessment	Equipment/ Resources	Learner Resource page ref	Progression
1. Learners to discuss the different types of meals served in a day. E.g. breakfast, lunch, snack, elevenses, brunch and supper. **2.** Guide learners to discuss the factors to consider when planning meals. E.g.: nutritional needs of family members food available family budget **3.** Identify basic materials and tools for sewing, in groups. E.g. sewing tool (needle), sewing material (threads) and crocheting tool **(**hook/pin made from metal, plastic, bone and wood) crocheting material (threads and yarns)	Realia charts pictures samplers ICT tools internet	Pages 34 to 37	**1.** Discussion of different types of meals served in a day. **2.** Discussion of factors to consider when planning a meal. **3.** Identificaation of basic materials and tools used for sewing.

4. Demonstrate basic stitches for sewing E.g. tacking (long and short), machine stitches, running stitches, back stitches, basting, tailor's tacking, tailor's tacks. **5.** Classify basic stitches into groups. E.g. Temporary stitches and permanent stitches. Identify basic crocheting stitches E.g. chain, slip stitches, double crochet, trebles. **6.** Demonstrate the basic crocheting stitching			**4.** Demonstration of basic stitches for sewing **5.** Classification of stitches into temporary and permanent stitches. **6.** Identification of crocheting stitches. **7.** Demonstration of basic crocheting stitching.

Homework / Project Work / Community Engagement Suggestions

Plan a meal for the three main meals in a day
List the items required for making crocheting stitches
State the procedure for making a stitch sampler

Cross-Curriculum Links / Cross-Cutting Issues

Computing: B7.3.4.1.1 talks about demonstrating the use of the word browser (search engine).

Potential Misconceptions / Student Learning Difficulties

Teachers to help learners disabuse their minds that cooking and sewing are for only girls.
Lack of ICT tools and internet facilities for researching for information will be a challenge.
Note: Learners may have access to the internet on mobile phones, or to information in a school or local library.

STRAND 5: DESIGNING AND MAKING OF ARTEFACTS/PRODUCTS

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

Content Standard: B7.5.4.1: Demonstrate skills of making artefacts/products

Indicators:
B7.5.4.1.1: Demonstrate skills in preparing food using moist and dry methods of cooking
B7.5.4.1.2**:** Demonstrate skills of making artefacts/products in sewing and crocheting and classify them

Key Words / Vocabulary:
Back stitches, chain stitches, double crochet, dry method, moist methods, overcasting, running stitches, specimen, sewing stitches, slip stitches, tacking stitches.

Suggested Activities for Learning and Assessment	Equipment/ Resources	Learner Resource page ref	Progression
1. Learners in groups discuss reasons for cooking food **2.** Lead learners to Identify and classify the different methods of cooking under moist method and dry method. E.g. moist method - boiling, poaching, stewing dry method - baking, grilling. **3.** Guide learners to identify foods that can be boiled and demonstrate the three types of boiling. 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.	Realia, charts, pictures, ICT tools, internet facilities	Pages **38 to 40**	**1.** Discussion of reasons for cooking food **2.** Identification and classification of methods of cooking foods **3.** Identification and demonstration of three methods of boiling foods

Suggested Activities for Learning and Assessment	Equipment/ Resources	Learner Resource page ref	Progression
4. Put learners into groups to discuss the advantages and disadvantages of boiling foods. **5.** Help learners to demonstrate the principles/ guidelines of boiling food. **6.** Learners prepare a dish using boiling method and display for appraisal.			**4.** Discussion of advantages and disadvantages of boiling food. **5.** Demonstration of principles and guidelines for boiling foods **6.** Preparation of dish using boiling method and displaying of dish for appraisal.
7. Lead learners to discuss what is meant by stewing. **8.** From a displayed chart, learners identify foods that can be stewed. **9.** Demonstrate the principles/ guidelines for stewing E.g. a tight-fitting lid is important to retain steam. **10. Discuss the advantages and disadvantages of stewing foods** **11. Prepare a dish using the stewing method and display for appraisal.** **12. Discuss in groups specimens or samples of basic sewing stitches.** **13. Lead learners to demonstrate how to make a specimen of basic sewing stitches.** **14. Lead learners to display specimen for appraisal.**	Realia, charts, pictures, ICT tools, internet facilities		**7.** Discussion of meaning of stewing. **8.** Identification of stewed food among a variety of cooked foods from a chart. **9.** Demonstration of principles/ guidelines for stewing. **10. Discussion of advantages and disadvantages of stewing foods.** **11. Preparation of dish using stewing method and displaying for appraisal.** **12. Discussion of specimen or samples of basic sewing stitches.** **13. Demonstration of how to make a specimen of basic sewing stitches.** **14. Displaying specimen for appraisal**
Homework / Project Work / Community Engagement Suggestions			
Make specimen or samples of basic sewing stitches and crocheting stitches individually. E.g. tacking (long and short), running stitches, back stitches chain stitches, overcasting. Present specimens for appraisal. Use internet and ICT Tools to research for more information on the above assignment. Visit a caterer in the community to interview them on boiling and stewing methods of cooking and present for appraisal. Visit a seamstress or a tailor in the community to interview them on sewing and making of crocheting stitches and present for appraisal.			
Cross-curriculum links / Cross-cutting issues			
Computing: B7.3.4.1.1 talks about demonstrating the use of the word browser (search engine).			
Potential Misconceptions / Student Learning Difficulties			
Cooking is for girls not boys. Gender inclusion.			

STRAND 6: ENTREPRENEURIAL SKILLS

SUB-STRAND 1: Career Pathways and Career Opportunities
Content Standard: B7.6.1.1: Demonstrate awareness of own learning styles, interests, biases, beliefs and reasons for pursuing Career Technology
Indicator: B7. 6.1.1.1: Evaluate own learning styles, interests and reasons for pursuing Career Technology
Key Words / Vocabulary: Career pathways, career opportunities, learning styles, interest, pursuing a career, stereotyping

Suggested Activities for Learning And Assessment	Equipment / Resources	Learner Resource page ref	Progression
1. Think, pair, share with whole class own learning styles, interests and reasons for pursuing Career Technology.	Video/pictures/ slides, internet, Resource person (role model)	Pages **40 to 43**	**1.** Reflection of learners own learning styles, interests in relation to career choices
2. Examine own biases and beliefs as male or female about some vocations in career technology How would this affect your future? **For example,** women are not to offer construction and engineering courses such as building construction, mechanical engineering, carpentry etc. How will this self-evaluation help your future career?			**2.** Examination of learners' own biases and beliefs about some vocations in career technology/reflecting on own learning styles, interests in relation to career choices. Examining own biases and beliefs about some vocations in career technology.
3. Show video or pictures or slides on women doing male dominated jobs and men doing female dominated jobs.			**3.** Skills required in showing videos or pictures or slides on women doing male dominated jobs and men doing female dominated jobs.
4. Lead a class discussion on the video.			**4.** Leading discussions on the video.
5. Invite a role model of a woman engineer or a male chef to talk to learners			**5.** Use of resource persons or role models to give talks on topic.
6. Discuss how stereotyping can affect learners' future careers. E.g. stereotypes about some jobs being for only males or females may affect learners getting careers of their choice. It will limit their aspiration of doing certain jobs.			**6.** Discussion of how stereotyping can affect learners' future careers.

Homework / Project Work / Community Engagement Suggestions

Find out from the community and other sources the following:
the various jobs being done by both females and males
jobs done solely by males and those solely by females
explain why some jobs are done by only males and others by only females.

Cross-Curriculum Links / Cross-Cutting Issues

Gender equality and social inclusion.

Potential Misconceptions / Student Learning Difficulties

Non-availability of internet facilities (**Note:** Learners may have access to the internet on mobile phones, or to information in a school or local library.)
Some cultural influences- some jobs are meant for only men and some for only women

STRAND 6: ENTREPRENEURIAL SKILLS

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

Content standard:
B7.6.2.1 Demonstrate understanding of establishing and managing a small business enterprise

Indicators:
B7.6.2.1.1: Explain what is meant by 'entrepreneurship' and 'entrepreneur'
B7.6.2.1.2: Describe the characteristics of a successful entrepreneur
B7.6.2.1.3: Explain the advantages and disadvantages of being an entrepreneur
B7.6.2.1.4: Explain what is meant by Career Technology Entrepreneurship
B7.6.2.1.5: Identify an entrepreneurial opportunity in the locality

Key Words / Vocabulary:
Entrepreneurship, entrepreneur, sole owner business, limited liability, partnership, cooperatives, career technology entrepreneurship, entrepreneurial opportunity

Suggested Activities for Learning and Assessment	Tools/Equipment / Resources	Learner Resource page ref	Progression
1. Look at pictures of various entrepreneurs and discuss what entrepreneurship means. **2.** Discuss the forms of business, E.g. sole proprietorship, limited liability, partnership, and cooperatives, in groups. **3.** Explain the characteristics of an entrepreneur. E.g. an entrepreneur is a person who sets up a business or businesses taking on financial risks in the hope of making profit. Characteristics of an entrepreneur are creative, passionate, motivated, optimistic, future oriented, persuasive, flexible, resourceful. **4.** 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. **5.** 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. **6.** Look at a picture of a Career Technology entrepreneur and explain what is meant by Career Technology entrepreneurship. **7.** Explore your locality, observe, and interact with entrepreneurs, taking into consideration the safety and welfare of learners. **8.** 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. **9.** Write down the names of some popular enterprises seen in your locality.	Flip charts, brochures, handouts, posters, diagrams, graphs, overhead projectors (OHP), radio/cassette player, television and videos, pictures, real objects (business enterprises), homes of identified entrepreneurs in the locality, www.youtube.com, phones	Pages 43 to 46	**1.** Identification of various types of businesses and trades **2.** Discussion of forms of business **3.** Explanation of characteristics of an entrepreneur. **4.** Discussions of characteristics that lead to successful entrepreneurship. **5.** Discussions of advantages and disadvantages of being an entrepreneur **6.** Explanation of Career Technology entrepreneurship **7.** Exploration of locality to observe and interact with entrepreneurs. **8.** Researching for entrepreneurial opportunities in the locality. **9.** Compilation of list of some enterprises seen in the locality.

10. Visit a few enterprises in your potential trade area and find out the following: How the business was started The challenges the business is facing Remedies to the challenges **11.** Write down the findings for presentation in class.			**10.** Proper procedure for embarking on visit to enterprises in the potential trade areas to find out how businesses started, challenges and remedies. **11.** Skills of making summaries of findings, preparing and making presentations in class.

Homework / Project Work / Community Engagement Suggestions

Explore your locality, observe, and interact with entrepreneurs.

Get ideas about entrepreneurial opportunities (mechanical engineering, welding, fitting, hairdressing, car washing, catering, masonry, carpentry, tiling, wood-working) in the locality.

Write down the names of a few of the popular enterprises sighted in your locality.

Visit a few enterprises in your potential trade area and find out
how the business was started, and
the challenges the business is facing.
Suggest solutions to the challenges.
Write down your findings for presentation in class, and for your probable future use as an entrepreneur.

Cross-Curriculum Links / Cross-cutting Issues

N/A

Potential Misconceptions / Student Learning Difficulties

Cultural beliefs - some jobs are for only men and some jobs are for only women

GROUND RULES FOR TALK

How do we talk in our classroom?

We make sure that we discuss things together as a group.

We listen carefully and actively to each other.

That means:

- We ask everyone to take a turn explaining their thinking first.
- We think about what other questions we need to ask to understand what they are explaining.
- We ask politely as someone is explaining their thinking.
- We ask for reasons why. We use 'what' and 'why' questions.
- We make sure that we are prepared to change our mind.
- We think carefully about what they have said before we speak or question.
- We work as a group to reach agreement. We respect other people's ideas. We don't just use our own.
- We make sure that everyone in the group is asked and supported to talk.
- We all take responsibility for the explanation.
- We expect challenges and enjoy explaining mathematically why we might agree or disagree.
- We think about all the different ways before a decision is made about the group's strategy or solution.

Ground Rules for Exploratory Talk:

1. Everyone in the group is encouraged to contribute.
2. Contributions are treated with respect.
3. Reasons are asked for and everyone is prepared to accept challenges.
4. Alternatives are discussed before a decision is taken.
5. All relevant information is shared.
6. The group seeks to reach agreement.

A 'child friendly' version of ground rules for Exploratory Talk

Our rules for exploratory talk:

1. We will talk together to think about what to do.
2. We will share what we know with each other.
3. We will ask everyone to say what they think.
4. Everyone will listen carefully to others and consider what we hear.
5. We will give reasons for what we say.
6. We will pay attention and try to think of good ideas.
7. We will decide what to do only when everyone has said all they want.
8. We will try to agree about what we think.

APPENDICES

Appendix A: GUIDELINES FOR THE FORMATION OF PROFESSIONAL LEARNING COMMUNITIES (PLCs)

The National Council for Curriculum and Assessment (NaCCA), as part of the strategies for an effective implementation of the Common Core Programme Curriculum for Basic 7 (JHS1) – Basic 10 (SHS1) has come out with guidelines for the formation of Professional Learning Communities (PLCs).

FORMATION OF PROFESSIONAL LEARNING COMMUNITIES (PLCs)

The focus of education in recent times has been on *transformation.* Currently, most countries are shifting from block scheduling to tele-collaborative projects, from discovery learning to authentic assessment, etc. In realising these transformation agenda, new ideas for efficient education delivery and best performance attainment levels come and fade away or metamorphose into other models. One of these is the concept of Professional Learning Communities (PLCs). This has taken the central stage in most advanced countries in their quest for making education delivery robust and responsive in meeting their developmental needs. Ghana is no exception.

An article published by *Glossary of Education Reform* describes the professional learning community (PLC), as a group of educators that meets regularly, shares expertise, and works collaboratively to improve teaching skills and the academic performance of learners." According to Hord (1997b), "professional learning community is seen as a powerful staff-development approach and a potent strategy for school change and improvement." A PLC is a learning approach where teachers are activated as learning resources.

Generally, PLCs are considered as collegial groups of administrators and school staff who are united and committed to learners' learning. They function as an effective strategy for building school capacity around core issues of teaching and learning (Darling-Hammond, 1995). They serve as a mechanism to transform school culture. In other words, PLCs connect teachers with information, strategies, and best practices.

How is PLC formed?

- The head-teacher through consultation with his/her teachers and the major stakeholders (PTA, SMC, school improvement support officer (SISO), the education directorate, etc.) puts a committee in place.
- The committee is headed by a ***curriculum lead*** who must be a staff of the school.

What are the terms of reference of the committee?

The PLC in consultation with the entire membership and other stakeholders:

- agrees on the PLC session (or meeting) schedules for the term;
- identifies for PLC sessions, individual challenges in effective lesson delivery and innovative practices in teaching;
- creates common platform for members to share ideas, skills, knowledge and experiences;
- Identifies and invites facilitators for each session;
- Ensures that the focus of the school is changed from teaching to learning;
- Sets SMART goals for best practices in the school to meet expected performance outcomes and targets;

- collates data on all issues that relate to teaching and learning in the school for informed decisions;
- keeps records of attendance of members during PLC meetings;
- considers ways of changing the school's climate positively;
- plans and shares best practice lessons and integrated cross-curricular projects to all staff;
- creates a database on learner achievement scores that guides decisions for interventions;
- reviews and reflects on school data to plan instruction across the school curricular;
- considers extra-curricular experiences for learners.

What are some Characteristics of an Effective PLC?

- Shares values and norms.
- Creates time for collaborative work.
- Focuses collectively on learner's learning.
- Encourages collaborative work by creating common work spaces using proximity.
- Ensures leadership support for all PLC activities – school heads must be supportive.
- Respects and trusts one another.

What are the Guidelines for PLC's Activities?

- PLCs should be conducted once every week.
- The session should be for a minimum of one hour and should be set as the last hour of the day.
- The head of school will take the lead role.
- Roles should be assigned to encourage participation.
- The activities must focus on the Common Core Programme (CCP) Subjects-Curricula.
- The agenda for the next meeting should be developed at the end of each meeting for participants to prepare adequately for effective participation.

The minutes for each meeting should be made available after each session and sent to the regional PLC platform for headquarters' validation. The platform will be made up of the following officers from the Metropolitan, Municipal, District and Regional level:

- Training Officers
- Supervision and Monitoring (S&M) Officers
- Basic School Coordinators
- Heads of School
- School Improvement Support Officers (SISOs)
- Curriculum Leads

NB: PLC sessions should be conducted from the second week of the term through to revision week.

Who are the Key Actors in the PLC?

- District Education Oversight Committee (DEOC)
- MMD Director of Education
- MMD Head of Monitoring and Supervision,
- School Improvement Support Officer (SISO)
- Head of School
- Curriculum Lead
- JHS and SHS subject teachers

MMD Education Oversight Committee

- Validates the PLC programmes
- Develops guidelines for the effective implementation of all PLC programmes in the MMD
- Provides a supervisory role for the MMD Education Office in the performance of duties relating to PLC programmes and activities.

MMD Director of Education

- Approves the calendar for the integration of PLC activities into MMD plan
- Provides overall leadership and supervision of all PLC activities in the MMD and assigns targeted roles and responsibilities to subordinates.

MMD Supervision and Monitoring Officer

- Develops, in collaboration with DDE and School Improvement Support Officers

(SISOs), a plan for monitoring Fidelity of Implementation (FOI) initiative and the overall evaluation of the success of the PLC initiative.

- Reviews (with support from SISOs) monitoring, evaluation & fidelity of implementation data for each term and implement needed changes. In consultation with the DDE, select/recruit curriculum leads for the PLC for each school.

School Improvement Support Officer (SISO)

- Participates in the selection/recruitment of curriculum leads for the schools.
- Collects, collates, and submits to the MMDEO M&E and FOI data (nature of data and regularity of collection and reporting to be determined by GES in consultation with NaCCA).
- Identifies the training needs of the heads of schools and subject-teachers in partnership with the MMD Training Officer.
- Trains the heads of schools and curriculum leads and refers matters relating to attitudes and behaviours that are detrimental or advantageous to the intervention to the MMD Head of Monitoring and Supervision for moderation, share/promote the experiences of the various interventions among schools under his supervision.

Head of School

- Attends initial training on PLC programme
- Ensures the support of the School-based Management Committee (SMC), Parents-Teacher Association (PTA) and other stakeholders for the PLC programmes.
- Ensures the active participation of all teachers during PLC Sessions, as well as the implementation of innovative lesson-delivery strategies and best practices discussed at PLC meetings.
- Identifies and puts in place measures to acknowledge teachers who make an effort to implement best practices discussed at PLC meetings.
- Puts in place measures to monitor and report on learners' progress concerning performance indicators and established national performance standards.
- Adopts the FOI of learning for accountability.

JHS and SHS Subject Teachers

- Participate actively in all PLC Sessions (activities and programmes).
- Follow the revised CCP Curriculum, prepare scheme of learning and lesson plans/notes according to specification and keep track of challenges or difficulties encountered.
- Try out new teaching activities, strategies and practices discussed during PLC Sessions.
- Share challenges and successes with teaching colleagues in future PLC meetings.

Role of Curriculum Leads

- Develop agenda, schedule and lead PLC meetings.
- Facilitate meetings, prepare reports and keep PLC records, minutes, attendance sheets, etc.
- Collate challenges of teachers in consultation with the head of school, arrange for resource persons.
- Work closely with colleagues in building formidable leadership teams and learning school.
- Sustain the change process required to operate as a PLC.

How Do We Conduct an Effective PLC Session?

Pre-Discussion

- Register and introduce participants and key facilitators if any.
- Nominate a PLC secretary to take note of discussion points.
- Identify and discuss challenging themes, i.e. themes evolving from the CCP Curriculum training and implementation.
- Identify and invite an expert or colleague with in-depth knowledge of the theme identified to facilitate a PLC session or lead the discussions.

- Assign specific themes to different teachers (members of the PLC) to research and lead future PLC sessions.
- Encourage mutual discussions and contributions by all members.

Discussion stage (action)

- The lead facilitator takes participants through the content and demonstration lessons (where applicable) associated with the theme.
- Facilitation should be participatory, engaging and interactive.

Post-Discussion Stage

- At this stage participants evaluate the content and demonstration lesson learnt and assess the extent of improvement through reflection and debriefing.
- The agenda for the next meeting should be developed (or agreed upon) at the end of each meeting for participants and the PLC lead to prepare adequately for effective participation.
- Participants are expected to improve on their daily teaching skills through leading questions.
- Participants are encouraged to use group platforms strictly dedicated to PLC for professional learning and providing colleagues with useful professional materials.

Who Monitors the Activities of PLC?

- The Ghana Education Service (GES)
  - Headteacher
  - Circuit Supervisor
  - MMD Monitoring Officers
  - Regional Monitoring Officer
- National Inspectorate Board (NIB)
- National Teaching Council (NTC)
- National Council for Curriculum and Assessment (NaCCA)

http://www.allthingsplc.info/
http://www.sedl.org/pubs/change34/2.html
http://www.inspiringteachers.com

CONTINUOUS PROFESSIONAL DEVELOPMENT DAY (CPDD) FOR JHS BEGINNING 2020/21 ACADEMIC YEAR

Teachers in the Public JHS shall observe a Continuous Professional Development Day beginning 2020/21 Academic Year.

The observation of the CPDD shall help the teachers (facilitators) develop and/or adopt new strategies for teaching which will help them overcome identified challenges in their day to day activities as teachers (facilitators). Continuous Professional Development is in two folds:

1. **Professional Learning Communities (PLCs)**

   PLC, as explained earlier, is a group of educators and other stakeholders who meet regularly to share expert knowledge, skills and experiences for the improvement in the performance of learners, through effective lesson delivery and assessment. PLCs serve as an innovative mechanism for transforming the learning culture and social environment of the school. It connects and equips teachers from not only the same school, but from other schools within or outside the geographical location with information, learning and teaching strategies and best practices.

   About 50 minutes (one period of co-curricular activities) has been assigned to PLC activities every week on the school's timetable. It can be organised at the cluster or circuit level as well as subject-based. On PLC days, learners will close and go home while teachers meet at PLC sessions to learn and share ideas, concepts, skills, knowledge, and experiences to upgrade and improve themselves.

2. **Continuous Professional Development Days (CPDDs)**

   This will be organised once every quarter – 4 times a year. On these days, learners will be given a holiday to stay at home. Teachers will have a full training day to update their content knowledge, sharpen their lesson delivery and pedagogical skills, as well as share experiences and best practices – leadership for learning, conducive social environment, sustainable learning concepts, etc.

Appendix B: DESIGNING SCHOOL-BASED TIMETABLES

A **school timetable** is a table for regulating and coordinating activities of the learners, teacher and school. Timetables are cyclical. These activities recur every week or every fortnight (in cases of shift schools).

The timetable for the Common Core Programme (CCP) Curriculum to be rolled out in the 2020/21 academic year has the following characteristics.

1. Proposed Contact Hours (Time on Task)

Number of periods per day:	8 periods
Number of periods per week:	40 periods (8 periods × 5days)
Duration per period:	50 minutes

2. Length of School Day

Time on Task:	400 minutes (50 minutes x 8 periods)
Break Time	60 minutes (two breaks at 30 minutes each)
Extra-curricular activities	50 minutes per day
Total length of school day	510 minutes (8.5 hours)

3. Proposed options for Length of School Day

S/No	Lessons Start	Lessons Close	Extra-Curricula
1	7.00am	2.40pm	2.40pm – 3.30pm
2	7.30am	3.10pm	3.10pm – 4.00pm
3	8.00am	3.40pm	3.40pm – 4.30pm

4. Proposed Co-Curricular Activities

- Life and Psychosocial Skills:
  - *Sports and Games*
  - *Tourism, Arts and Culture Club*
  - *STEM Club*
  - *Creative Writers/Debaters Club*
  - *Human Rights Club*
  - *Friends of the Earth Club*
  - *NGO Activities: Talks and Sensitisation etc.*
- Research, Science, Agriculture (Gardening) and Community Project
- Entrepreneurship Development, Guidance and Counselling.
- Library, Sustainable Learning and Study Skills
- Professional Learning Community (PLC), CPD and School/Cluster-based INSET

5. Period Allocations for Subjects

Subject	**No. of Periods**
Mathematics	4
English	4
Ghanaian Languages	3
French/Arabic	3
Science	4
Computing	3
Social Studies	3
Religious and Moral Education	3
Career Technology	4
Creative Arts and Design	4
Physical Education	3
Worship and Library Studies	2
TOTAL	**40**

Timetable Template

	30m	1 50m	2 50m	**B1** 30m	3 50m	4 50m	5 50m	6 50m	**B2** 30m	7 50m	8 50m	Co-Curricular
M	**A S S E M B L Y & R E G**			**B R E A K**					**B R E A K**			
T												
W												
T												
F												

- **Things to consider when populating the Timetable**

  In populating the template to develop a school-based community friendly timetable, the officer should consider the following:

  - Local dynamics – average walking distance from home to school.
  - Socio-cultural and economic activities etc. within the community.
  - If possible, the periods for Mathematics and the languages should be completed before lunch.
  - Activity-based lessons such as Computing, Career Technology, and Creative Arts and Design can be organised after lunch.
  - PLC should be allocated one of the 5 slots for co-curricular activities.

For further inquiries contact
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Appendix C: Assessment in the CCP Curriculum

The ultimate goal of Assessment is to improve Learner's learning

[This document was prepared by the Assessment Unit of NaCCA led by Antwi Aning]

Introduction: What is Assessment?

Assessment is the process of collecting information or evidence of learning and achievements and using it to improve teaching and learning. It is about getting to know our learners and the quality of their learning. It is an ongoing process for gathering evidence of learning and using it to enhance learners' learning.

Why assess learners in our classrooms?

Assessment is the bridge between teaching and learning and the central process in effective instruction.

Generally, we assess to find out:

- what learners know
- what learners can do, and how well they can do it
- improve learners' learning
- gather evidence of learning
- inform instruction
- yield information about areas of weakness and problems of teaching and learning
- show the strength and weaknesses of learners

- identify individual differences and achievement gaps among learners
- assist teachers in the process of remediation.
- determine whether expected outcomes have been met

The CCP curriculum will be assessed both formatively and summatively but the outcome of both assessments will be used to move learning forward.

Formative Assessment

Formative Assessment is a concept which covers various approaches for using assessment to improve learners' learning. Two of such approaches are assessment **for** learning and assessment **as** learning**.** Formative assessment deals with finding out on day-to-day basis, information about learners' progress and difficulties so that immediate measures can be taken.

Any instructional activity that allows teachers to uncover the way learners think about what is being taught and which can be used to promote improvements in learners' learning can serve a formative purpose. Formative Assessment supports learning during the learning process.

Characteristics of Effective Formative Assessment

- Clarifying, understanding, and sharing learning goals and criteria for success with learners.
- Creating effective classroom discussions, questions, activities, and tasks that offer the right type of evidence of how learners are progressing to the agreed learning goals.
- Providing feedback that moves learners forward.
- Activating learners as learning resources for one another.
- Activating learners as owners of their own learning.
- Using varied instructional methods to meet diverse learner's needs.
- Using varied approaches to assessing learner's understanding.

(Thompson & William, 2007)

Summative Assessment

It is an assessment which is generally taken by learners at the end of a unit, a term or semester, end of year or a course to demonstrate the "**sum**" of what they have or have not learned.

- Usually, it is called Assessment of Learning
- It compares learners' knowledge or skills against standards or benchmarks.
- It evaluates mastery of learning and offers information on what learners know and do not know.
- It provides educators with the metrics to know what's working and what's not.
- Usually, it is high stakes, for example when used for promotion, admission, certification, selection, accountability, etc.
- Can also be used formatively if it provides feedback to inform teaching and learning.
- Does not provide teachers with vital information to use in crafting remedial instruction.
- Plays a pivotal role in education by troubleshooting weaknesses in the system despite its shortcomings.
- Provides educators with valuable information to determine the effectiveness of instruction for a particular unit of study, to make high-stakes decisions and to evaluate the effectiveness of schoolwide interventions.
- Works to improve overall instruction.
    - by providing feedback on progress measured against benchmarks,
    - by helping teachers to improve, and
    - as an accountability instrument for continuous improvement of systems (Hart et al., 2015).

Formative Assessment Approaches

1. Assessment for learning (AfL)

Assessment for Learning (AfL) is an approach, integrated into teaching and learning, which creates feedback for learners to improve learning. i.e. occurs when assessment and learning are integrated.

AfL is not a means of evaluating schools, teachers or learners, rather it is a feedback mechanism.

It provides learners with rich, meaningful and timely feedback on their learning and progress throughout a programme of study. Assessment for Learning is an ongoing part of teaching & learning in which both teachers and learners share the responsibility for learning. It can take many forms, and may be either formal or informal (Yorke 2003). With AfL, teachers can understand better how their learners are learning and use this to plan what they will do next with a class or individual learners. AfL helps the learner to see what they are aiming for and understand what they need to do to achieve those aims. AfL therefore focuses on the teacher and the learners' understanding.

Why is AfL important?

Assessment for learning is a key pedagogical tool for:

- establishing where the learners are in their learning
- establishing where they are going
- working out how to get them there

(William, 2009)

2. Assessment as learning (AaL)

In this approach, learners are their own assessors. They monitor their own learning, ask questions and use a range of strategies to decide what they know and can do, and how to use assessment for new learning. AaL helps learners to take more responsibility for their own learning and monitoring future directions. Learners are able to learn about themselves as learners and become aware of how they learn. They reflect on their work on a regular basis, usually through self and peer assessment and decide what their next learning will be.

The teacher's role in assessment *as* learning is to:

- model and teach the skills of self-assessment
- guide learners in setting their own goals, and monitoring their progress towards them
- provide examples and models of good practice and quality work that reflect curriculum outcomes
- work with learners to develop clear criteria of good practice

Feedback in Assessment

Feedback is an important component of the formative assessment process. Formative assessment gives information to teachers and learners about how learners are doing relative to learning goals. Giving good feedback is one of the skills teachers need to master as part of good formative assessment. *(Ref: Susan M. Brookhart)*

For feedback to be effective for learners, they need the following:

- an understanding of the desired learning goal;
- evidence about their present position in relation to that goal;
- guidance on the way to close the gap between the two.

Effective feedback should:

- focus on what is being learned (learning outcomes) and how learners should go about it (success criteria)
- occur as the learners are doing the learning, i.e. be given at a time when the response will help the learner improve their learning
- provide information on how and why the learner has or has not met the criteria
- be phrased so the learner can understand how he/she should respond and;
- provide strategies or act as guidance showing how the learner can improve; and
- encourage a dialogue (where appropriate), so the learner can probe for clarification on next steps needed to progress their learning.

Success Criteria

It is important in the learning cycle that the learners and teacher are all aware of what will show that learning has taken place.

Why Are Success Criteria Important?

- Improve understanding
- Empower learners
- Encourage independent learning
- Enable accurate feedback

- Enhance quality assessment which is totally dependent on the use of success criteria

What Are Success Criteria?

'… success criteria summarise the key steps or ingredients the learner needs in order to fulfil the learning goal – the main things to do, include or focus on.' (Shirley Clarke)

Effective Success Criteria

- are **linked** to the learning intention;
- are specific to an activity;
- are measurable;
- are **discussed and agreed** with learners prior to undertaking the activity;
- provide a **scaffold** and focus for learners while engaged in the activity; and
- are used as the basis for **feedback** and peer-/self-assessment

Sample success criteria

B 2.1.2.3.1 Describe a solid-solid mixture and explain how to separate the components	Low	Medium	High
	I can correctly identify and give an example of a solid- solid mixture	I can form and describe a solid-solid mixture	I can separate a solid-solid mixture into its components

Assessment for Learning Strategies

The following are samples of activities that you can try in your classroom. These can be adapted to be applied to all subjects and stages of education.

Shared Learning Goals

Promote learner's autonomy over their learning progression by sharing with them the learning goals, and most importantly the success criteria.

Learners write or ask questions

For example –

- About what they would like to know on a new topic;
- To ask the teacher or other learners in order to assess their learning;
- To demonstrate their learning/misconceptions/areas they would like to further explore.

Lesson Target Setting

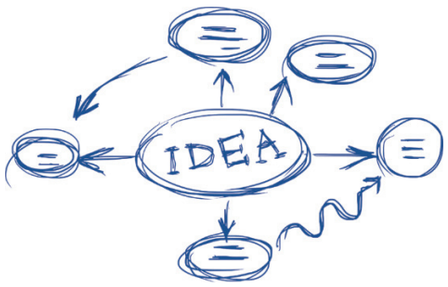
- Make the lesson more purposeful for learners by setting targets at the beginning about what you and the class are going to do;
- These can be referred to through the lesson and/or revisited in the plenary;
- Learners could then show how they have met targets in the plenary and/or set targets for next lesson.

Making Learning Goals Clear

- Put lesson goals on the board at the beginning of the lesson;
- Talk to learners about why they are studying what they are studying;
- Contextualise short-term goals in long-term goals and make real life application clear (e.g. understanding the nature of things in the environment – living and non-living will contribute to our wider understanding of the world around us) and;
- Check with learners whether they understand the goals of the lesson.

Brainstorming

- Brainstorming is a technique used to determine what a learner may already know about a particular topic. Learners often feel free to participate because there is no criticism or judgment.
- Follow this with a clear description of what concepts to be covered in the lesson (to consolidate and clarify understandings)



Devising Questions

Devise questions that –

- Challenge common mistaken beliefs about a topic (misconceptions)

- Create conflict that requires discussion
- Explore ambiguity and encourage discussion and clarification

Wait time

- Wait time allows learners time to think and therefore to produce answers. Also, not everyone in the class thinks at the same speed or in the same way – waiting allows learners to build their thoughts and explore what has been asked.
- 2 types of wait time –
  - Teacher speaks and then waits before taking learners' responses.
  - Learner response ends and then teacher waits before responding. This gives the learner space to elaborate or continue – or for another learner to respond.

Observations

Teacher observations can be made in the course of delivery, during times of questioning and feedback and when learners are engaged in activities, either alone or with peers or groups. Look out for the look of confusion, nod or spark of understanding etc. We observe to be responsive and adjust to keep the learning going or notice when it is time to stop or recap a concept.

Tell your neighbour

- Learners 'tell their neighbour' as a means of articulating their thoughts.
- Ask a question, give thinking time and then ask learners to tell their neighbour their thoughts.
- This can either prepare whole class for 'hands down' questioning (where teacher asks randomly selected learner to contribute) or can precede a whole class discussion.

Think–Pair–Share

Give learners the opportunity to articulate their thinking before answering:

- Allow 30 seconds – 1-minute silent thinking before any answers
- Ask learners to write some thoughts down before answering
- Ask learners to brainstorm in pairs first for 2-3 minutes
- Then, get learners ready to talk about their own ideas or their group's ideas in a whole class discussion

Think–Pair–Square

- Think-Pair-Square is the same as Think-Pair-Share except that learners share their answers with another pair instead of the whole class.

Debates

- Debates enable the teacher to informally evaluate learners' oral work by assessing their oral presentation skills in terms of their ability to understand concepts and present them to others in an orderly fashion.

Post-It /Slate/ Mini-whiteboard/ Rough-workbook

Use post-it notes (or the other materials above) to evaluate learning. Groups, pairs or individuals can answer:

- Did I meet the success criteria?
- What should be done to improve next time?

Or:

- What have I learnt?
- What have I found easy?
- What have I found difficult?
- What do I want to know now?

K – W – L

- At the beginning of a topic let learners create a grid with three columns –

What They Know	What They Want To Know	What They Have Learnt

- They begin by brainstorming and filling in the first two columns and then return to the third at the end of the unit (or refer throughout).

- Variation – extra column 'How Will I Learn?'

Response Partners

- Paired or partnership oral marking. Learners invite a partner or a group to discuss or comment on their work. For it to be effective, learners should be aware of the learning goals and success criteria. They should also appreciate the role of a response partner – to offer positive and constructive feedback around the learning goals.
- Learners could be given prompt questions to ask the person who has done the work.

Exemplar Work

- When setting learners a piece of work, show them examples that make it clear what it is they are being asked to do – and what they need to do in order to meet the assessment criteria.
- Learners could mark exemplar work using the assessment criteria. This will help model what is being asked for and how it relates to the process of assessment.

2 Stars and a Wish

For peer assessment, ask learners to give two stars and a wish.

- Two stars = 2 things that are good about the piece of work.
- A wish = something they can improve to make it even better.

Traffic Lights

Use traffic lights as a visual means of showing understanding. Coloured card or paper could be used.

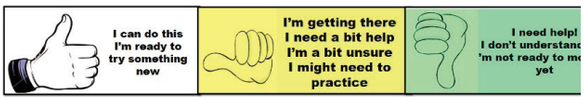
- Variation – Using smiley faces

Where coloured card is unavailable, simple face emojis can be used to communicate learners' understanding.

☺😐☹

Hand Signals

- Hand signals range from learners raising their hands to respond to a question posed by the teacher to a group to "thumbs up/down" signal to determine learners "acknowledged" understanding of a concept or process.



When using traffic lights or hand signal techniques, it is important to ask a few follow up questions to check learners' actual level of understanding. Learners who are confident can also be used to support or explain to others who are not as confident yet.

Show and Tell

- During teaching, you can use mini-whiteboards/slates/rough-work book so that every learner can write or draw their answer and show it to you (or their peers) immediately. Follow up with questioning to check for genuine understanding or to build upon answers especially in subjects like [insert subject] where there is often one answer.

Active Learners

Key to AfL is learners being active, engaged participants in their learning. Think of ways in which content can be manipulated for these ends, rather than the other way round. If the content seems boring make the approach fun or interesting.

Learners write Questions

For example –

- About what they would like to know on a new topic

- To ask the teacher or other learners in order to assess their learning
- To demonstrate their learning/misconceptions/areas they would like to further explore

The classroom could have a question box where learners drop questions at the end of a lesson.

Or, a plenary could involve learners writing questions that the class then work on together, or forms the basis of the next lesson.

Learners ask Questions

Create opportunities for learners to ask questions. This could be of their peers, of the teache[illegible] means to develop discussion.

A 'question box' for written questions different means of communication for le

Allow time for learners to ask questio pieces of work. This helps open up assess eliminate ambiguity

Comment-only Marking

Comment-only marking provides learners with a focus for progression instead of a reward or punishment for their ego (as a grade does).

Comments could be made in books, in a table at the front of their books, in a learning diary or journal. The latter are helpful for teacher and learner to track the progression of comments and see improvement.

Comments should make it clear how the learner can improve.

Plan activities and work with feedback in mind – let the design assist the process.

Mid-unit Assessment

Having an assessment at the end of a unit may not provide time for you to go over areas learners have struggled with, or in which there are general misconceptions.

Timing assessment during a unit allows time to review, reflect and revisit. It also gives the teacher an opportunity to focus explicitly on areas of weak understanding supported by evidence.

Might

When questioning, insert the word 'might' to give learners greater opportunity to think and explore possible answers.

e.g.

What is meaning of democracy?

What might the meaning of democracy be?

The first infers a single answer known by the teacher whereas the second is inherently more open.

What might the Great Depression look like today?

Wait time

Wait time allows learners time to think and therefore to produce answers. Also, not everyone in the class thinks at the same speed or in the same way – waiting allows learners to build their thoughts and explore what has been asked.

2 types of wait time –

i) Teacher speaks and then waits before taking learners' responses.

ii) Learner's response ends and then teacher waits before responding. This gives the learner space to elaborate or continue – or for another learner to respond.

Open vs closed

Closed questions can be useful however they are not great at facilitating the use of abstract thinking skills, encouraging talking or eliciting much understanding. Open questions are more likely to do this and thus improve learning. E.g.

Did you go out last night? - (How can you make this question open?)

What did you do after school yesterday?

Exemplar Work

When setting learners a piece of work, show them examples that make it clear what it is they are being asked to do – and what they need to do in order to meet the assessment criteria.

Learners could mark exemplar work using the assessment criteria. This will help model what is being asked for and how it relates to the process of assessment.

Learner Marking

By taking part in the process of assessment, learners gain a deeper understanding of topics, the process of assessment and what they are doing in their own work. This helps to make them more aware of 'what learning is' and thus see their own learning in this way.

Learners could self- or peer- mark homework or assessments.

This could be done in pairs or individually with a learner-made or 'official' mark-scheme.

Lesson Target Setting

Make the lesson more purposeful for learners by setting targets at the beginning about what you and the class are going to do.

These can be referred to through the lesson and/or revisited in the plenary.

Learners could show how they have met targets in the plenary and/or set targets for next lesson.

2 Stars and a Wish

For peer assessment, ask learners to give two stars and a wish.

Two stars = 2 things that are good about the piece of work

A wish = something they can improve to make it even better

Articulate then Answer

Give learners the opportunity to articulate their thinking before answering –

- 30 seconds silent thinking before any answers
- Brainstorm in pairs first for 2-3 minutes
- Write some thoughts down before answering
- Discuss with your neighbour first

Tell your Neighbour

Learners 'tell their neighbour' as a means of articulating their thoughts.

- Ask a question, give learners time to think and then ask learners to tell their neighbour their thoughts.
- Tell learners what the new topic is and ask them to tell their neighbour everything they know about it.

Idea Thoughts

When you have received an answer to a question, open up the thinking behind it by asking what others think about the idea. E.g. "What do others think about _____'s idea?"

Devising Questions

Devise questions that –

- Challenge common misconceptions
- Create effective classroom activities, questions and tasks that prompt the right type of discussions
- Explore ambiguity and encourage discussion and clarification

Learning Journal

Create a learning journal in which learners can reflect and review their learning. It could include plenary activities, a target setting chart, aims and goals, etc.

Group Feedback

Group feedback to a teacher concerning peer-assessment of work can help make the teacher aware of learning needs in a manageable way.

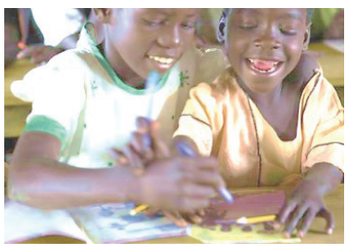
If a group feeds back then it draws more attention and presents information that has already been ordered and sorted (meaning less repetition for the teacher).

Peer Marking

Learners mark each other's' work according to assessment criteria.

Encourages reflection and thought about the learning as well as allowing learners to see model work and reason past misconceptions.

Opportunities to do this throughout individual lessons and schemes of work.



Teach Collaboration

Peer assessment requires learners to act collaboratively. Indeed, AfL is a collaborative enterprise therefore, explicitly teach skills of collaboration.

This process can be assisted by discussing collaboration with learners and making it visible as a part of the classroom.

Traffic-Light Revision

When revising a topic or subject, work through the different areas with learners and ask them to traffic light according to their grasp of each.

Subsequently, learners should be able to target their revision more carefully and engage in it actively, rather than simply reviewing everything they have done or reading passively over their entire notes.

Group Answers

Learners work in small groups to agree on answers – when tests are returned or in other situations.

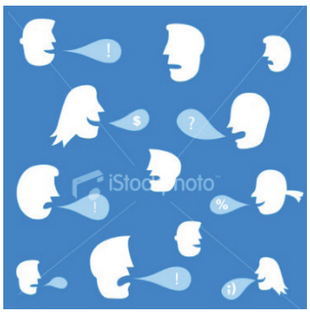
The process of agreeing should include reasoning over the validity of the consensus answer, as well as reasoned negation of misconceptions or wrong answers.

Think-through Talking

Talking allows learners to articulate their thoughts and thus to learn.

Encourage thinking through talking with –

- Discussion activities
- Structured group/pair work
- Modelling by teacher and learners (small group work increases the 'surface area' of talk in the classroom as opposed to whole class discussions)



Communication

Ask learners to communicate thinking through different mediums – not just writing; drawing, drama, maps, sculpture etc.

The medium is the message and therefore circumscribes to some extent how communication can take place. Using alternative mediums allows the teacher to 'see' learners' understanding from different angles.

Appendix D: ABRIDGED GUIDELINES FOR THE FORMATION AND MANAGEMENT OF SCHOOL-BASED CLUBS AND SOCIETIES (SCS) FOR THE IMPLEMENTATION OF THE STANDARDS-BASED AND CCP CURRICULA

Introduction

These guidelines provide tips and ideas for teachers and learners on how to establish and manage **SCSs** at the pre-tertiary level of education in Ghana. They also suggest simple activities that the clubs can carry out. However, this is only a start since the real success of the club in your school will depend on the efforts of the leadership of the clubs being creative, thinking outside the box and coming up with innovative ideas, concepts, projects and activities. The innovations are expected to motivate and elicit in members, the desire go the extra mile while having fun as they learn.

What are School-based Clubs and Societies?

School-based clubs or societies are organised groups approved by the school authorities to offer learners the opportunity to participate in activities they enjoy, learn new skills, explore their talents, meet new colleagues, share experiences and engage in healthy competitions. Learners showcase their talents and acquire functional and lifelong skills. Through SCS activities, learners experience the life that exists outside the classroom and school walls. Majority of learners enjoy club activities because they get the occasion to spend time with their friends and engage in activities they consider as fun and interesting**.** School administrators and teachers also like to see learners participate in co-curricular activities as it helps them know the learners better. The learners demonstrate sterling qualities and skills such as leadership, communicative, organisational, critical thinking, problem solving, creative, innovative, collaborative etc. Every School-based club must have a teacher to supervise the club's activities and report to the school head. Learners are to be given leadership positions such as president, vice-president, secretary and organiser.

Why School-based Clubs and Societies?

The **SCS** seeks to:

- Equip the learner with foundational, functional and lifelong skills.
- Strengthen the acquisition and application of the of the 4Rs and core competencies:
  - critical thinking and problem solving skills;
  - creative and innovative skills;
  - collaborative and communication skills;
  - global citizenship;
  - entrepreneurial skills.
- Introduce the learner to research and project-based learning, enhanced community networking and linking of schools and learners.
- Equip learners with the spirit of volunteerism and community service.

What are the suggested SCS for our Schools?

- Community Service Club
- Digital Literacy Club
- Friends of the Earth Club
- Human Rights Club
- Literary Club (Debaters, Creative Writers and Drama)
- Sports and Games
- STEAM (STEM) Club (Currently, there is what is called STEAM Club. It aims to spark the excitement of young people for Science, Technology, Engineering, Art, Mathematics and More. The challenge is that learners focus more on the Sciences and forget about the interrelatedness between Science and the Arts)
- Tourism, Arts and Culture Club

Other clubs approved by the Ghana Education Service (GES)

How Do We Establish SCS?

1) ***Planning, Consultation and Stakeholder Engagement:***
   - Community engagement is key to the success of your club – this should be kept in mind as well for any community project.
   - Talk to staff members, identify interests, hobbies, talents, and skills of learners, and decide with colleagues which club ideas learners will be comfortable participating in.
   - Align the interest of colleagues to the interests, hobbies, talents, and skills you have all identified. Get them to commit to helping the club to develop.
   - Arrange with the head of school and administration for permission to start a club or identified clubs.
   - Talk to parents and other stakeholders (chief, assembly member, etc.) and seek their support.
   - Speak to other volunteers in the school and community to get like-minded colleagues to help run the club with you.
2) ***Choosing Club Members***
   - Choosing club members should mainly be based on the interests, hobbies, talents, and skills of the learner.
   - Decide on a class, form or grade level as target group with a focus on inclusion.
   - Decide on gender mix; are you targeting more boys or more girls? Why?
   - Targeting a particular class or grade level allows for effective monitoring and evaluation.
   - It is always helpful to have learners from different classes and programmes represented, so they can learn from one another, and provide feedback about what they learn to their other mates.
   - Get enough people interested - at least 1 teacher and at least ten (10) learners.

- Guide club members to elect club officials - president, secretary, organiser, financial secretary, ladies' rep etc.
- Paste names of elected officials on notice board.
- Inform them of their roles and responsibilities through an orientation.

3) ***Branding the Club:***

- Get a name for the Club.
- Brainstorm on club's mission - What do you want to accomplish and how it can be done?
- Draw up action plan – what activities and projects will you carry out to accomplish the club's objectives?
- Make paraphernalia, souvenirs and create a Social Media presence on Facebook, Twitter, or a club web blog where you can host an online club magazine. These make learners feel special and have a sense of belonging.

4) ***Invitation to Club Members***

- Get parents, CSOs, NGOs, other schools and school heads involved.
- Explain to parents and learners what the club stands for and the benefits it will offer the learner.
- Together with some learners who have bought into the idea of the club, design a membership form.
- Publicise club activities - announce upcoming events and updates of club activities on notice boards, during assemblies and through social media, etc.
- Invite 'specially targeted' learners to the club.
- Keep records of the club's activities – minutes, attendance, projects, etc.

5) ***Launch the Club***

- Launch the Club and explain to the members the focus of the club.
- Make the club activities fun and engaging, and perhaps offer some incentives as long as these can be sustained.
- Ensure that the club activities do not become an extension of classroom learning activities.

6) ***Keeping it Simple***

- Don't feel any pressure to run complicated activities.
- Simple projects work well for new clubs.
- Meet an hour once every week as captured on the school's timetable.
- Use the club's activities to discuss effective ways of doing things - 'Dos' and 'Don'ts'
- Regularly review your projects and revise your action plan accordingly.

NB*: Sample club activities can be downloaded from the internet.*

7) ***Selecting Club Patrons***

- Club Patrons are volunteers who voluntarily offer their human and material resources to support the activities of the club.
- Consult and select patrons who are willing to support the activities of the club.
- Patrons should be persons whose interests, skills, and hobbies align with the aims, objectives and goals of the club.

8) ***Celebrating Achievements***

- Celebrate members for actively participating in the activities and programmes of the club.
- Provide certificates and other souvenirs to members who dedicate themselves.
- These awards could be done during school assemblies and other social gatherings to help raise the profile of the club across the school and also to motivate other learners.
- A journal/diary should be designed to help learners reflect on what they do during club activities.

Community Service

Learners get motivated to practise what they learn at school when they are given the opportunity to undertake community service. They become agents of change in their communities and learn to be proactive citizens. During community service learners are guided to identify common challenges and the relationship between community resources and opportunities to an improved way of life. Some activities they can do are:

- Community projects on climate change, tree planting, clean-up exercises etc.
- Community sensitisation and awareness on emerging issues.

Excursions and Field Trips

Excursions and field trips help learners to gain more insight into socio-cultural and economic issues and offer them an opportunity to have a first-hand experience of what they only hear or read about. They learn about current situations and get informed about how they can improve their performance in other learning areas. Learners can visit:

- Historical and heritage sites;
- Industries and production units;
- Government institutions and departments;
- Botanical gardens or wildlife parks; and
- Power plants using alternative energy sources such as solar, wind, geothermal, etc.

Projects

- Robotics
- Creative Arts productions: art and craft works, theatre and musical concerts etc. to sensitise, educate and entertain
- Tree planting
- Renewable energy projects
- Essay competitions
- Climate change
- Research and surveys

For further information contact NaCCA
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Email: naccaghana@gmail.com

Appendix E: FIDELITY OF IMPLEMENTATION OF THE COMMON CORE PROGRAMME (CCP)

KEYS (✓ TICK AS APPLIES): **YES**: Indicates indicator has been attained

NO: Indicates that indicator has not been attained

N**OT YET:** Indicates that the indicator is yet to be initiated

NEEDS SUPPORT: Indicates indicator where a teacher needs assistance from a SISO, Head teacher, a colleague, a resource person, Curriculum lead or any DEO. A teacher can tick any of the above three and this section. Write specific area the teacher needs support in the Remarks Column. ***NB: Not applicable to all indicators***

A. TEACHERS CHECKLIST

S/N	INDICATORS	YES	NO	NOT YET	NEEDS SUPPORT	REMARKS
1.	Prepares and submits lesson notes on time					
2.	Applies differentiation and scaffolding in lesson delivery					
3.	Understands Assessment for Learning, Assessment as Learning and Assessment of Learning strategies					
4.	Frequently uses Assessment for Learning, Assessment as Learning and Assessment of Learning strategies in lessons					
5.	Gives immediate feedback to learners after assessment					
6.	Has teacher learner resource packs available for lesson planning and delivery					
7.	Understands issues of barriers to learning and takes measures to assist learners overcome them					
8.	Partakes in PLC meetings					
9.	Partakes in school clubs and societies					
10.	Assists learners as individuals with differentiated abilities, needs, achievement and learning styles					
11.	Shares learning goals and success criteria with learners before lessons					
12.	Maintains consistent and proactive discipline					
13.	Anticipates classroom challenges					
14.	Remediates where learners have learning difficulties					
15.	Assists learners to reflect and take responsibility of their own learning					
16.	Assists learners set their own goals					
17.	Works with learners to develop clear criteria of good practice					
18.	Supports school administration with assigned tasks and responsibilities effectively					

B. HEADTEACHER

S/N	INDICATORS	YES	NO	NOT YET	NEEDS SUPPORT	REMARKS
1.	Understands the Core Competencies, 4Rs, Knowledge, Skills, Values and Attitudes					
2.	Specific remedial programmes are put in place to help learners with learning needs					
3.	Conducts classroom observation (*Select One*) A. Once a week B. Twice a week C. More than once a week C. Once every two weeks D. Once a month					
4.	Provides feedback on classroom observation for teachers to improve teaching and learning					
5.	Supervises records keeping on PLC meetings					
6.	Takes part in INSETS and PLC sessions in the school this term					
7.	Has Curriculum Lead (CL) in the school					
8.	Takes measures to overcome barriers of learning in the school					
9.	Has functional clubs and societies in the school					
10.	Monitors activities of clubs and societies in the school					
11.	Teacher and Learner Resource Packs and other resources for each subject available					
12.	Teaches alongside administrative duties					
13.	Supports teachers to access additional resources for implementation of the CCP					
14.	Involves the community in the implementation of the CCP					
15.	The community provides support to the school in implementing the SBC					
16.	SISO supports the school in the implementation of the CCP					
17.	Aside the SISO, other District Education Officers come to this school to monitor facilities, teaching quality, or teacher attendance					

C. CURRICULUM LEAD

S/N	INDICATORS	YES	NO	NOT YET	NEEDS SUPPORT	REMARKS
1	Organises PLC meetings in the school *(Select One)* A. Once a week B. Twice a week C. More than once a week C. Once every two weeks D. Once a month					
2	Keeps record of PLC meetings					
3	Partakes in INSET meetings in the school					
4	Develops and initiates capacity building programmes to support efficient implementation of the CCP					
5	Involves resources person to address challenges during PLC meetings					
6	Has resources to assist during PLCs meetings					

Appendix F: COMMON CORE PROGRAMME (CCP) CONCEPT

Introduction

In the first four years of high school education, learners are expected to take a Common Core Programme (CCP) that emphasises a set of high, internationally-benchmarked career and tertiary education readiness 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 Basic 10.

The common core attributes of the learner, which describe the essential out- comes 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 abilities. 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 Figure1. These are:

- learning and teaching approaches – the core competencies, 4Rs and pedagogical approaches;
- learning context – engagement, service and project;
- learning areas – mathematics, science, computing, languages (English, Ghanaian Languages, French and Arabic), career technology, social studies, physical and health education, creative arts and design and religious and moral education.

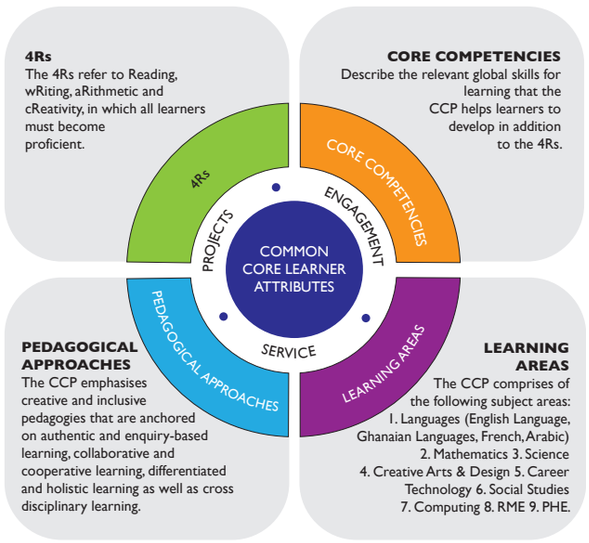

Figure 1: CCP Learner Attribute

These are elaborated subsequently:

Learning and teaching approaches

- **The core competencies***:* 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, and culturally and globally sensitive citizens who are life-long learners with a 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 and projects (in and outside classroom).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 an opportunity for learners to nurture, love and care for, and solve problems in their community.

Learning Areas

The CCP comprises the following learning areas:

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

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 the 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 emphasises a set of high internationally-benchmarked career and tertiary education readiness standards. Learners need to acquire these competencies in Career Technology for post-secondary education, work- place 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.

Appendix G: LEARNING SCENARIOS

Case Study 1

Consider these two lesson scenarios and then discuss and answer the questions below:

Scenario 1

When the teacher enters her Basic 9 (JHS3) class, some of the learners are shouting at each other; some are talking quietly; some are moving around restlessly and others are quietly waiting for the lesson to begin. She claps her hands and the learners take out their books. The teacher asks the learners what they read yesterday. When they tell her, she asks them to go to the next story, 'The Hare and the Hyena'.

One of the learners, who has been chosen to always be the reader in this class, stands up and begins to read this story. While the boy is reading, some learners are still trying to find their book and others are still talking; many of them do not have a book to follow. Only a few learners are paying attention to the text and listening to the boy read. While this is happening, the teacher completes the attendance register and occasionally looks up and shouts "Hey, look at your books and follow. I am going to ask some questions. All of those who do not answer the questions correctly will have extra homework."

When the text has been read aloud by the reader, the teacher asks a few questions about the text. Those who are listening and know the answers raise their hands and the teacher calls on them to give the answers. The teacher tells the learners to read the text again at home for homework, then the lesson ends.

Scenario 2

When the teacher enters her Basic 9 (JHS3) class she spends a few minutes talking to the class, encouraging them to relax, interact, smile and laugh. The learners see she is carrying a book, 'The Hare and the Hyena' and the teacher holds the book up so all the learners can see it. Then, the teacher introduces the book by asking questions about it to gain their interest. She asks questions at different levels for example:

'What colours are on the cover of this book?' 'What is on the cover of this book?'

'Who do you think are the main characters in this book?' 'What is the name of the book?'

'Who is the author?' What do you think the book is about?

She waits a moment after each question to give an opportunity for all the learners to raise their hands before choosing one to give the answer. Sometimes she asks a learner who hasn't raised their hand, if she thinks they will know the answer but are being lazy. The teacher goes on to ask other members of the class to explain what an author does, and then asks the learners to raise their hands if they know what a hare and a hyena are. She asks if any of the learners have seen these animals and what the animals did.

The teacher asks the learners what they think the hare and the hyena will do in the book. She then asks them to work in pairs to discuss what they think the story is about and how the story might begin and end. After a few minutes, the teacher asks one pair to give the results of their discussion. She asks if any other pairs think the same and they raise their hands. She then asks any of the remaining pairs for their thoughts. Finally, the teacher reads the first part of the story. As homework, she asks her learners to bring stories or information about the animals from their family, community members or elder peers for the next day. She tells them they will read and find out the end of the story tomorrow.

Discuss and answer:

1) Which of the two lessons do you think is most effective, and why?
2) How does the teacher gain and maintain all learners' attention, participation and engagement?
3) What does the teacher do to accommodate all ability levels?
4) How does each teacher assess learning?
5) Can you find any missed opportunities in scenario 2 where the teacher could have used assessment for learning techniques?
6) How does the teacher use existing material and human resources in an interesting way?

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