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Research Paper

BASIC DESIGN AND TECHNOLOGY (PRE TECHNICAL SKILLS) COURSE STRUCTURE AND DESIGN SUITABILITY IN DEVELOPING JUNIOR HHIGH SCHOOL TWO STUDENTS TO FIT APPROPRIATELY INTO SENIOR HIGH SCHOOL PROGRAMS FOR GOOD ACADEMIC PERFORMANCE IN GHANA

Director publisher

ABSTRACT **Course structure and design is very important when it comes to preparation of standardized documents to be used by Ghana Education Service for teaching and learning. It is therefore empirical to prepare the same document for Basic Design and Technology (BDT - pre technical skills option) subject for Junior High School 2 and establish its suitability in training students to fit into senior high schools (SHS) programs in Ghana. Scheme of work is a necessity to be prepared by every teacher for every semester's work where chronological arrangements of topics to be covered based on the syllabus are documented. Once this is done, teaching and learning is done in that order in achieving semester's goals and objectives. Lesson plan should be planned, structured and written for usage in teaching and learning together with teaching and learning materials (TLMs). After referring to the BDT (pre technical skills) syllabus in preparing scheme of work and lesson plans for teaching and learning using TLMs, standardized test items should be well constructed to assess students understanding of teaching topics. This will serve as the perfect mechanism to assess students' performance for upgrade or promotion to the next level in education. Findings from this research indicates that, current pre technical skills syllabus is adequate but not totally as students prepared in this subject are not fitting perfectly into senior high school programs. Stu dents enrolled in programs such as science and technical find difficulty in subject likes mathematics, physics and technical drawings. Reasons being that, they face problems in basic technical drawings and skills hence the need for readjustment, modification, and alteration of the basic design and technology (pre technical skills) syllabus used by Junior High School 2 students in Ghana.**

KEYWORDS :Syllabus, Scheme of work, Lesson, Teaching and learning materials,

INTRODUCTION

1.1 Introduction on teaching syllabus

Teaching and impartation of knowledge to students involves both art and skill. This art and skill can be learnt and applied and by that, the need for laid down rules and procedures to be followed. There is the need for a well-structured document which will contain all the topics to be treated during a program meant for students. This is the reason for the syllabus. A syllabus for any course constitutes a contract between the teacher and the student formulated prior to the beginning of the course and lasting from the first class until the final level. This contract binds the teacher to teach courses and subjects which is within the level of the students, that is, not to teach courses which are below or above the standard of the students. Because there are a lot of Junior High Schools within the country Ghana, there should be a document which standardized the Basic Design and Technology subjects for all schools. In doing that, all teachers teaching this subject will cover the same topics within the three year period to achieve standardized Basic Education Certificate Examination (BECE) for all students who studied the subject. An effective syllabus in basic design and technology thus contains a number of important elements, but the central core is the subject objectives, since it is the attainment of these that determines the extent to which students realize the aims of the subject by the end of the semester (Woolcock, 2006).

A syllabus lets students know what the course is about, why the course is taught, where it is going, and what will be required for them to be successful in the course (Altman & Cashin, 2003). A well-designed syllabus provides a solid beginning of the semester, sets the tone for the course, provides a conceptual framework for the course, serves as a "virtual handshake" between the instructor and students, and becomes a resource that is referred to during the course of the semester. It also shows students that you take teaching seriously (Davis, 1993). The syllabus serves as a guide for referencing topics that are to be covered under basic design and technology throughout the academic year. This is also ensured throughout the whole three year JHS program, after which there is summative evaluation and achievement test. This is achieved when all students are tested in basic design and technology subject during the BECE to assess the understanding, absorption, retention and recall ability of the learners and this is based strictly based on the syllabus for the basic design and technology for Junior High Schools in Ghana.

1.2 Introduction to Scheme of Work

The most important activities to be embarked in a Junior High School semester's calendar for the basic design and technology (pre technical skills) subject is the topics to be covered by students and teachers. These topics are selected from the syllabus and needs to be arranged in such a way that those that provide prerequisite learning are placed before subsequent ones. The teacher therefore does this before the beginning of the semester to get what is called the scheme of work. The designing of the scheme of work entails breaking the topics in the basic design and technology (pre technical skills) syllabus into smaller units and assigning the duration of time to be used to cover the topic and unit. The lesson plan for a day's lesson is selected from the scheme of work and this helps the teacher to easily get weekly topics to cover the basic design and technology (pre technical skills) subject for the semester. Teaching as an art and science is difficult in a way but can be achieved through practice. The law of exercise is seen here when the principles, arts and scientific way of teaching is used by teachers and by that inexperienced teachers are able to perfect the profession (Dartey, 2020). This law is achieved since the scheme of work serves as useful tool and guide to newly trained and inexperienced teachers as it guides them as to the topics to be taught in each week. Preparing the scheme of work gives the teacher a concrete structure upon which all the semester's activities will be centered around. This is because in drawing up the scheme of work, the number of working weeks within the semester are taken into consideration. These includes weeks set aside for teaching, examinations, extra- curriculum activities (sports, breaks) etc. The preparation of the basic design and technology (pre technical skills) scheme of work for the semester is done carefully to ensure that no activity to be embarked within the semester is left out and this should be based on the syllabus and other materials consultations. The scheme or work is designed to clarity and efficiency so that it can serve as records for the school and for future reference. The scheme of work is not the same as the syllabus which is a document for the whole during of the program. The scheme of work is therefore prepared by the teacher at the beginning of every semester of term. Even though the scheme of work is based on the syllabus, it should not be the same for all teachers within the country Ghana in teaching the basic design and technology (pre technical skills) subject. The teaching and learning materials, references and approach of teaching by teachers to spell out the differences. Research and observations has shown that, some teachers just copy the scheme of work prepared by other teachers and needs not be entertained among professionals. The scheme of work seeks to achieve the shortfall of the syllabus which is detailing and elaboration. Its elaborative nature gives it the opportunity to be used by any other teacher to plan lessons and

continue with teaching in the absence of the teacher. The scheme of work is therefore regarded as an important document to lead the formal curriculum to be achieved in a semester. When this document is not prepared in consultation with the syllabus, the teacher will go off board when it comes to topics to be covered in the basic design and technology (pre technical skills) subject. Hence, unable to achieve semester and end of program goals and objectives leading to failure in the BECE.

1.3 **Introduction to Teaching and Learning Materials** Teaching is an activity of imparting knowledge, skills, attitudes and values from a more experienced and knowledgeable person with a view of helping the less experienced and knowledgeable person to learn. This means that the teacher should be a more experienced and knowledgeable person than the learner so that knowledge can be impacted. Teaching involves helping students or others to learn to do things, to think and solve problems and to react in new ways than before. It involves creating situations to facilitate learning and motivate learners to have interest in what is being transmitted to them.

Learning is a relatively permanent change in behavior which is the direct result of past experience (Lawson et al., 1975). Learning is a relatively permanent change in behaviour resulting from conditions of practice (Kling, 1972). Learning refers to some systematic change in behaviour or behavioural disposition that occurs as a consequence of experience in some specific situation (Estes, 1975). In order to reinforce the understanding of a topic for students during teaching, teaching aids are used. When such aids are used during teaching in the classroom or outside the classroom, students or learners are able to better their understanding as they are able to have a hand on experience with the materials used in the teaching. Teachers and facilitators therefore sees and holds such materials in high esteem as it aids their teaching and understanding of their students. When teaching aids are used in learning, it creates a pictorial view in the minds of learners which is reflected upon during learning. Learning is a very difficult task therefore when such aids are employed by learners, it makes the understanding clearer and easy to remember since they have seen such aids or materials. Without teaching aids and resources, teaching would have been difficult for teachers who teach especially children as it will be very difficult for the children to have an idea about what is being taught. With teaching aids, children are able to make a picture of what has being taught in their conscious mind and hence able to remember when asked during the next class or in assessment. Even though teaching aids are for all age groups, it's a necessity that needs to be there when teaching children as it's able to create a clear picture and impact on the minds of these children. Teaching aids used in basic design and technology (pre technical skills) are one of most important aids since they are equipments and instruments used in everyday life by carpenters and masons in the field. Most of the learners ends up as carpenters and masons right after JHS. Hence the need for knowing and understanding their uses.

In educational institutions, the development of teaching and learning materials is regarded as one of the major aspects that would promote students learning and help in the achievement of academic goals and objectives. In teaching, teachers does a lot of talking, writing and making actions (gestures) that transmit information, ideas, acts and attitudes to learners. To make learning meaningful, teaching must be supported by these resources which come in different forms and are available in the classroom to aid learning. The teaching and learning materials provides a wide range of experiences to the learners when they are used in an adequate manner and then used to motivate towards acquisition of education.

1.4 Introduction to lesson plan

Teaching is an art and science of which science is defined as the continuous process of investigating and experimenting through which people gain knowledge. To be able to do good teaching in the classroom, vigorous reading is required of the teacher to obtain better understanding of the subject matter before teaching his/her students. It is therefore a requirement of every teacher to prepare before going to class to teacher. Hence, a teacher prepares what is called a lesson plan through the syllabus and the scheme of work for the semester. Preparing a lesson plan gives the teacher the opportunity to read on the topics to be treated in the next class and get a document which can be scanned at glance to drive the lesson to a successful end. Without a lesson plan, or reference point to channel the lesson, the teacher is likely to be wondering around which might lead him away from the topic at hand. A teacher should never think he/she knows what to teach but rather, make ample time by reading on the topic and preparing the lesson plan for the next day lesson. By doing this, the teacher will gain mastery over the subject matter and the topic to be taught leading to better teaching and impartation of knowledge to the students or learners. A lesson plan must be prepared in advance and not in a heist to avoid mistakes and an unresearched lesson plan.

The process of preparing a good teaching and learning interaction with students or learners over a period of time has three important aspects. It involves designing syllabus; the preparation of scheme of work; and the drawing of lesson plan which is the final product before entering the class to teach the students. To achieve good teaching and learning results, the success depends on preparation of a good lesson plan and an expertise from the teacher in executing the teaching in the classroom. Because teaching is scientific and an art in nature,

the teacher needs to combine this two things with any available teaching and learning materials to make it a reality. It is therefore important for the teacher to make available all teaching and learning materials needed for the lesson and write them in the lesson plan. The teacher should be able to explain, operate and use any material used as a teaching and learning material or reference in the lesson plan.

Lesson planning is at the heart of being an effective teacher. It is a creative process that allows us to synthesize our understanding of basic technology and design in teaching pedagogy with our knowledge of our learner's ability in mind, the curriculum, and the teaching context. It is a time when we envision the learning we want to occur and analyze how all the pieces of the learning experience should fit together to make that vision a reality in the classroom.

A lesson plan is a teacher's detailed description of the course of instruction or 'learning trajectory' for a lesson. A daily lesson plan is developed by a teacher to guide class learning and make it effective for understanding and absorption by learners. Details may vary depending on the preference of the teacher, subject being covered, and the needs of the students with all aiming at meeting the objective of the lesson. There may be requirements mandated by the school system regarding the plan as there is a format for the education system in Ghana. A lesson plan is the teacher's guide for running the particular lesson, and it includes the goal(what the students are supposed to learn), how the goal will be reached(the method, procedure) and a way of measuring how well the goal was reached (test, homework, project works etc.).

1.5 Introduction to test item construction

The basic design and technology scheme of work for JHS 2 is done for two semesters and at the end of each semester, a test is taken by the students to assess the understanding level and performance of students. This is to enforce understanding, absorption of subject content, and application in the environment where applicable. Students therefore take test comprising of objective type test, essay type test, practicals and a performance indicator used to assess the

performance of each students. A lesson in basic design and technology well taught and understood by students or learners is assessed through test of which the performance at the end indicates the level of understanding. Many teacher-made tests often suffer from inadequate and improper planning. Many teachers often jump into the classroom to announce to the class that they are having a test or construct the test haphazardly. Construction of test items for standardized tests of achievement, ability and aptitude is a task of enormous importance – and one fraught with difficulty. The task is important because test items are the foundations of written test of mental attributes, and the ideas they express must be articulated precisely and succinctly. Being able to draw valid and reliable inferences from a test's score rests in great measure upon attention to the construction of test items. If a tests scores are to yield valid inferences about an examinee's mental attributes, its items must reflect specific psychological construct or domain of content. Without a strong association between a test item and a psychological construct or domain of content, the test item lacks meaning and purpose, like a mere free floating thought on a page with no rhythm or reason for being there at all.

As a competent teacher, you should be able to develop instructional objectives that are behavioural, precise, and realistic and at an appropriate level of generality that will serve as a useful guide to teaching and evaluation. It is upon this basis that a good standard test is constructed to assess the understanding of the lesson taught. Therefore when you write your behavioural objectives, action verbs like define, compare, contrast, draw, explain, describe, classify, summarize, apply, solve, express, state, list and give are used. There is the avoidance of vague and global statements involving the use of verbs such as appreciate, understand, feel, grasp, think so that at the end of the lesson such actions are done by the learners or students. When such action verbs are used in stating the objective for the lesson, learners are able to demonstrate the level of learning and understanding of the topics treated through test taking. Tests items brings out genuine understanding of contents, subject matter and the application ability of the learners or students. Assessment of student learning provides evidence so that educational decisions concerning the future of the students and educational system can be made. We may use the evidence to help us evaluate (or judge the merit of) a teaching programme or we may use the evidence to make statements about student competence or to make decisions about the next aspect of teaching for particular students.

The choice of what to evaluate, the strategies of assessment, and the modes of reporting depend upon the intentions of the curriculum, the importance of different parts of the curriculum, and the audiences needing the information that assessment provides. For example, national audiences for this information may include both those who will be making decisions and those who wish or need to know what appropriate decisions have been taken. To achieve better performance and learning ability depends on good test items construction variability and standard testing all aspects of learner's intelligence. Test item construction for assessment depends on experience and intelligence on the tester in other to obtain test that will measure understanding and ability of the learner to apply learnt materials.

2 REVIEW OF RELATED WORKS

2.1 Definition of Syllabus

A syllabus is an outline and summary of topics to be covered in an education or training course or a program (Tevor et al.,2020). The Basic Design and Technology (pre technical skills) syllabus gives all the topics to be covered within the three year period for all teachers teaching the subject and all Junior High school (JHS) students studying the subject. This is for preparation towards the students BECE examination. Any teacher who is unable to teach by the outline will land their students in trouble during the BECE examination. Hence, syllabus can be seen as a standardized document prepared by standardized body for instruction and preparation of students for a standardized examination in order to earn basic education certificate. The basic design and technology (pre technicalskills) syllabus constitutes an agreement between the instructor and the students as to the course content, requirements, course policies including grading, and course calendar.

A number of other definitions have been proposed for the term syllabus by different scholars. Hutchinson and Waters (1987, p.80) define syllabus at its simplest level "as a statement of what is to be learnt"(Shabana, 2017). Widdowson (1990, p. 127) interprets a syllabus as "the specification of a teaching Programme or pedagogic agenda which defines a particular subject for a particular group of learners . . . a syllabus specification, then, is concerned with both the selection and the ordering of what is to be taught"(Shabana, 2017). . In Wilkins' (1981) words, syllabuses are "specifications of the content of language teaching which have been submitted to some degree of structuring or ordering with the aim of making teaching and learning a more effective process (Shabana,2017). According to Breen (1984) a syllabus can also be seen as"a plan of what is to be achieved through our teaching and our students' learning"(Shabana, 2017). Breen (1989:47) defines syllabus as "…a plan of what is to be achieved through our teaching and our students' learning". This shows that a syllabus is a plan of work drawn up for the purpose of teaching and learning a course (Shabana, 2017).

The syllabus is, thus, both a professional document and a personal document, one that reflects the instructor's feelings, attitudes, and beliefs about the subject matter in basic design and technology (pre technical skills) teaching, learning, and students, as well as setting out the "nuts and bolts" of the subject. When so constructed, the syllabus can serve as a guide to the instructor as much as a guide to the class (Parkes & Harris, 2002).

A syllabus is often thought of as "that apparently benign document instructors assemble and distribute to students at the start of the semester." Whether it is intended or not, the quality of the syllabus is a fairly reliable indicator of the quality of teaching and learning that will take place in a basic design and technology subject (Woolcock, 2003).

2.2 Definition of Scheme of Work

A scheme of work is a plan which is prepared in advance to ensure that the topics of the syllabus which pupils will be learning for a specified period provided for a certain period of time, say a semester are taught within that period (Tevor et al., 2020). A scheme of work is a plan for all formal curriculum activities in a semester. A teacher's scheme of work is a plan of action which will enable him or her to organize his or her teaching activities ahead of time. It is a summarized forecast of work which the teacher deems fit and appropriate for the basic design and technology (pre technical skills) subject to be covered within a given period and found in the syllabus. A scheme of work defines the structure and content of an academic course. It splits an often – multi – year curriculum into deliverable units of work, each of a far shorter weeks duration (eg. One, two, three weeks). Each unit of work is then analyzed out into teachable individual topics of even shorter duration (one, two, three hours) (Petty, 2009).

2.3 Definition of teaching aids

A teaching aid is anything used by a teacher to help teach a lesson or make it more interesting by emphasizing understanding for the students. Teaching aids can come in almost any form. Some of the most common forms are pictures, videos, charts, flashcards and objects like three – dimensional models or educational toys.

Teaching aid are items or apparatus which are used to reinforce the understanding of a topic for students when teaching (Tevor et. al., 2020). Most of the teachings in our classrooms are theoretical or abstract. So teachings becomes understandable and meaningful when teaching aids are used to emphasize the understanding of the students. Thus, teaching aids have been defined by some scholars as 'materials and devices used to supplement the written or spoken words during the impartation of knowledge, attitudes and ideas to students. Teaching aids are therefore used to emphasize or make clearer principles, ideas, laws, concepts or skills during teaching to make understanding concrete. This creates a clear picture during learning, remembrance and recall during examinations. Teaching aids have been in the system and used by teachers over the years. Advancement in technology and teaching techniques has resulted in the modernization of some of these teaching aids and materials to make teaching and learning meaningful. In using teaching aids and materials, it's helpful to consider the age of the students and the subject being taught. The teacher must also consider specific students and understanding ability as absorption rate during teaching will not be the same. Teaching and learning aids used in JHS 2 basic design and technology (pre technical skills) often pose harm when using

therefore the need to be cautious when using. Before using the teaching aid, the teacher is required to ask him/herself some questions. Do the students need more active involvement? Do they prefer more serious teaching aids? Are they struggling with the Basic design and technology subject? Is it going to result in an injury when using? Once this is done, then the teacher will sample and select the most appropriate and efficient way of using the aid to enforce teaching in the classroom.

Teaching and learning materials are any collection of materials including animate and inanimate objects, human and non- human resources that a teacher may use in teaching and learning situations to help achieve desired learning objectives.

Beth Lewis (2019) defines teaching and learning materials as a broad term that refers to a spectrum of educational materials that teachers use in the classroom to support specific learning objectives as set out in lesson plan. These can be games, videos, flashcards, project supplies and more.

Radhika Kapur (2019) defines teaching and learning materials as tools used by teachers and instructors within schools to facilitate learning and understanding of concepts among students. These are educational materials that are used within the classroom environment to support the learning objectives as set out within the lesson plan. Thus real purpose of the teaching and learning materials is to help students to learn as they give more meaning to learning making learning real rather than abstract. They tend to make learning more effective.

Teachers use teaching aids consciously because they know that they have positive effects on learning outcomes, they claim that learning aids improve methodology. Whenever teachers use some of the learning aids during teaching, it stimulates the minds of the students to become more attentive. With teaching and learning aids, students participate better in class activities and makes them understand better. Making use of educational teaching aids boost student's success in the classroom and are able to do better because of the understanding of concepts and principles. These aids reinforce what a teacher says and ensures that the main points in the lesson are understood abstractly and practically. Educational teaching aids signal students to the important information. They also allow them to experience something that is abstract and difficult to understand in real life. They engage students other senses in the learning process and allow for different learning styles.

The social learning theory explains teaching as a learning process which includes exchange of ideas, skills, knowledge and vital information between the teacher and the learner (Ogbulogo et. al., 2014). And to make teaching effective, teaching aids are employed to exemplify things to the learner.

2.4 Definition of a lesson plan

Lesson plan is a plan of action of a teacher, which includes the working philosophy of teacher, his /her knowledge, information about & understanding of the topic to be treated, his /her students, her/his comprehension of the objective of education, her knowledge of the material to be used and her ability to utilize effective method.

Lesson plan is a teaching tool, that helps the teachers in deciding what to teach, that helps the teachers in deciding what to teach, why to teach, when to teach and how to teach in classroom while teaching for the good understanding of the students. Every teacher is required to prepare a lesson plan because this is considered as guide for the day's lessons and when not prepared before the lesson, it causes the teacher to be wondering around the topic to be treated. Lesson planning is important because it gives the teacher a concrete direction of what she/he wants to take up for the day. Research has shown that student learning is correlated to teacher planning. One major explanation is that when plan is ready, teachers can focus on its implementation. When teachers do not have to think so much about what they need to do next, they are able to focus on other parts of the lesson.

Lesson plan can again be seen as the core and heart material for effective teaching where the teacher's mental and emotional visualization of the classroom experience as his plan is to occur. It is a plan prepared by a teacher to teach the lesson in an organized manner for better understanding and assimilation. A lesson plan is a guide which helps execute a mission that is to be accomplished in the classroom with the children. A lesson plan can also be defined as a creative process which provides a frame work for purposeful learning.

2.5 Test items definition

A test in basic design and technology is a set of formal instrument constructed after careful analysis and consideration of the basic design and technology subject content to gather information absorption of subject content taught in class and the ability to make use of learnt practicals in solving problems in the environment. It is the teacher's responsibility to make use of the basic design and technology for Junior High School 2 pupil's book and other materials in preparing the test. This is to ensure that the test reflects the subject content taught in class during the semester in assessing students work output and teachers work input during the semester. Test items in basic design and technology should be variable in nature so that they will test the low level, average and high performers in class. Therefore test items should not be too easy and neither too difficult but rather, possess a mixture of both in order to test the thinking ability of the learner. The main purpose of classroom assessment is to obtain a fair and representative indication of student's achievement. Since the results of classroom assessment through test are used to grade students and make important decisions about them, it is necessary that the assessment provide valid and reliable information about student's achievement (Oduro – Okyireh et. al., 2018).

3 REASON FOR SYLLABUS, SCHEME OF WORK, LESSON PLAN AND TEST ITEMS

3.1 Importance of Syllabus

1. **a. It serves as a guide to both teachers and students as to what topics is to be covered**: Teachers needs a guide by which they will tailor their daily lessons. The basic design and technology (pre technical skills) syllabus therefore serves this purpose as teachers are able to get

topics which they use to prepare for their lessons before teaching. Students are also able to use the topics from the basic design and technology (pre technical skills) syllabus to be covered by their teachers the next day for review and preparation. This makes lessons to be taught easily by teachers and enhance learning and understanding by the students (Tevor et al., 2020).

1. **b. It enables the same course studied at different**

institutions to be assessed to a standard: There are a number of Junior High Schools (JHS's) in Ghana and they are all studying the basic design and technology (pre technical skills) subject. The syllabus for this subject constitutes a number of topics to be covered within a stipulated time. After this period there is a standard exams called the Basic Education Certificate Examination (BECE) which is to be written by all students. With this standard syllabus used by all teachers, a common platform is created upon which all these students will be assessed (Tevor et al., 2020). The Ghana Education Service (GES) is responsible for all school education within the country. Therefore is in charge of all educational institutions in Ghana. All these institutions teach basic design and technology at the Junior High School levels with students expected to attend classes, learn, practice, understand and pass their end of semester examinations and BECE. The basic design and technology (pre technical skills) is therefore designed in such a way that it is standardized so that at the end of the day, the same performance result is obtained in all the institutions at the end of the day

(Tevor et al., 2020).

1. **If facilitates the preparation of the lesson order and**

scheme of work: The teacher for the basic design and technology class needs to plan his or her lessons and this is based on topics selected from the syllabus. This gives the teacher the opportunity to research on the topic, read, plan the lesson order and scheme of work for the semester. With this, the teacher needs not to refer to any book for topics to be treated in the course of the semester or during the preparation of lesson notes. (Tevor et al., 2020).

1. **d. A syllabus serves as a contract between teachers and**

students: Any legal entity entails a contract which exist between two or more people either formally or informal. The basic design and technology (pre technical skills) syllabus serves this purpose in the Junior High Schools in Ghana. The syllabus therefore actually serves as the contract between the students and the teachers which contains ideas that are used for the assessment of the students' performance.

1. **e. It helps the instructor prepare and organize the subject**: When you fail to plan, then you plan to f The success of the students in basic design and technology (pre technical skills) during BECE depends on good preparation of these students by the teachers. The teachers therefore makes use of the syllabus to prepare adequately before lessons leading to greater performance and output during the BECE.
2. **f. The syllabus describes the basic design and technology (pre technical skills goals, subject structure**: The syllabus for this subject describe the course goals; explains the course structure and assignment, examination questions topics, review sessions and other activities which is required for students to learn.
3. **g. Gives students opportunity to explore subject topics for the whole duration of the course**: It gives students rooms to do extensive practice on topics of various problems, homework and subject oriented assignments.

3.2 Factors to be considered in preparing a syllabus

A syllabus needs various varieties i.e. focusing on all skills and systems language areas, functions, task, materials, inputs and outputs. A syllabus should be flexible, informative and informing. A syllabus is of great importance to the teacher and the students hence the need to take certain factors into consideration when preparing the syllabus. The standardized body in charge of Basic Design and Technology (pre technical skills) syllabus preparation therefore considers a number of factors and these includes the following;The needs, wants, interest of the basic design and technology (pre technical skills) students.

1. The learning style of the students.
2. b. The physical constraints of the environment the

teacher will be teaching in.

1. c. The nature of the course, the knowledge to be gained and impacts on society.
2. d. The demand of the government and society, e

whether the need for technological inclined society or business oriented society or addressing social issues.

1. The order of the syllabus elements.
2. f. What is expected of the students to produce, the

sub skills needed for personal development and national growth.

3.3 Factors to be considered when planning a scheme of work

1. **Understanding of the syllabus**: Even though the teacher is never involved in the preparation of the syllabus, he or she is expected to thoroughly understand the syllabus and interpret it accordingly. The teacher needs to be abreast with all topics in the syllabus in order to use it in preparing the scheme of work to teach the students. The teacher should act like a police man who is able to interpret the law and use it accordingly for the benefit of the citizens.

1. b. **The number of weeks for effective teaching:** The teacher planning the scheme of work for the basic design and technology (pre technical skills) subject needs to know the number of weeks to be used for effective teaching within the semester. By that, he or she will know the contact times with student's i.e week's set aside for teaching, mid –semester examinations and end of semester examinations. Extra curriculum activities should also be factored in during the preparation of the scheme work.

1. c. **The exact number of topics to be covered:** In preparing the scheme of work for the basic design and technology (pre technical skills) subject for the semester, the teacher needs to choose an exact number of topics which will fit into the number of weeks for the semester. In doing that, he is able to work within a stipulated time within the semester where his chosen topics are neither less nor more than the required topics for the semester. This is usually done in consultation with other extra – curriculum activites which forms part of the semester work.
2. d. **The age group of student using the basic design and technology (pre technical skills) syllabus**: The basic design and technology (pre technical skills) is a subject for Junior High School 2 students (JHS 2) and should be treated as such. This means that, the subject content should be within the reach of the students and never above their standard of knowledg They shouldn't find the subject content too difficult to understand and shouldn't also be too easy for

them. The scheme of work should be structured in such a way that, its contents for the semester will be within the absorption, understanding and interpretation level of the JHS 2 students.

1. **The climatic condition within the year:** Since basic design and technology (pre technical skills) is a subject for Junior High Schools in Ghana, the season within which the subject is taught should be considered critically. So that, you don't send students to the bush for instance to cut woods for a project on a day which is likely to rain. This may result in a disaster.
2. f. **Teaching and learning Materials for teaching and demonstration**: The quality of the tools, teaching aids and other input materials, items and equipments available for teaching the basic design and technology subject should be carefully selected for effective teaching and understanding in class. The handling of such tools and equipments by students should be well monitored by the teacher during practicals exercises and works as they can pose danger when not carefully handled.
3. g. **The time available for teaching the basic design and technology (pre technical skills) subject**: Duration for teaching a subject has been designed on a time table and every teacher is expected to go by th It is therefore of utmost importance to know the time available for the basic design and technology (pre technical skills) subject in a day and in a week. Whether is single period or double period? With this in mind, the scheme of work can be planned as such to meet the time demands.

1. h. **The class size**: The number of students in a class needs to be taken into consideration when planning the basic design and technology (pre technical skills) scheme of work. The teacher will then know how to strategise, control the class and teach effectively for the understanding of the students. Again, since basic design and technology (pre technical skills) is more of a practical subject at the Junior High School 2 level, the class size tells him/her whether to divide a class into sections during practicals for effective teaching, monitoring and contro
2. **The physical structures, physiological and emotional well-being of students**: The social environment, the physical structures, intellectual and emotional strength of the students should be taken into consideration when planning the scheme of work. The nature and beauty of the school compound, the school buildings, the intellectual ability of the student, their emotional well – being are very important and should be to a greater percentage on a scale

of 100% for greater participation in class during basic design and technology (pre technical skills) classes. This will enhance effective teaching, understand and absorption of the subject content. Some students shun classes and do not have the interest of going to school because of the nature and the environment of the school.

3.3 Characteristics of a good teaching aids a. Accessibility of the teaching aid

The most important factor of any educational teaching aids

effectiveness is its accessibility to teachers and students. Educational aids must be made available to all students within a classroom. The teaching aid must be made available and if possible situated within the classroom room for effective reference when needed and during learning. Some teachers just bring the teaching aid to the classroom to enhance teaching and learning during classes hours and once that is achieved, they discard it. This approach should not be entertained but rather, placed or hanged in the classroom to be used by students when needed. They can then be discarded when new aids are brought in and the old ones becoming a nuisance in the classroom. Teaching aids should be easily obtained by the teacher from the environment to aid teaching. They shouldn't be difficult to find to aid teaching in the classroom.

1. **b. The teaching aid must be visible**

For educational teaching aids to be effective, they must be clearly visible to all students. Boards provide convenient visual platforms from which students observe and copy information. Dry or erase boards when markers are used on them. Electronics boards or whiteboards can link directly to a teacher's computer to display information that can be altered directly or remotely. Other teaching aids used to emphasize teaching such as flashcards must be visible and clear so that students who are even at the back of the class can clearly see and participate during lessons. Student should not struggle by straining the eyes to read or see during demonstrations where a teaching aid is being used. Advancement in technology has birthed the projector which can be used for large class during teaching and demonstrations for clearer view and understanding.

1. **The teaching aid should be able to demonstrate practicality**

Educational teaching aids must be able to show practicality. This means that, the educational teaching aid are most effective when they introduce students to knowledge and skills that prepare them for the real world. Most of the things done at lecture halls or classrooms are theoretical and abstract. This is different when at the workplace or at the job market. For instance, learning how to use MS PowerPoint to prepare slides for defense using computer and projector should prepare you for the work market where you can prepare a job presentation to secure a contract for your company. Teaching aids for JHS 2 should be well taught on how to use by the facilitators so that students can make use of them practically to do work as masons and carpenters after completion.

1. **d. The teaching aid must be interactive**

Educational teaching aids must encourage students in the class to participate with all seriousness. The aid must be such that, learners finds it interesting to see and hence willing to speak out boldly about the aid without fear. They should therefore be willing to share ideas and participate in the lesson. If an aid scares students off and unwilling to participate in the class or share ideas during the lesson,

then the aid isn't a good teaching aid. The greater the degree of interactivity, the greater the impact and benefit is to the learners or students.

1. **e. The teaching aid must be usable by the learners**

A large degree of any educational aid's effectiveness lies in the ability of the learners to make use of it. Both students and teachers must be familiar with the teaching aid's operation and its intended purpose before it can be used effectively. For example, an art teacher who wishes to use a slide projector should be aware that such a device require periodic maintenance and is ideally placed some distance from the screen. Teaching aids such as trowel, chisel, saw, hammer pickaxe, shovel should be easily used by JHS 2 students in the absence of teachers to do simple task on campus when the need arises after been taught.

1. **f. The friendly nature of the teaching aid**

Every educational teaching aid must be user friendly. It is always advisable for the teacher or facilitator to bring an aid which will not scare or put fear in the students. If not, this will cause students especially children to run away or prevent them in participating in the lesson. Teaching aids must therefore be materials that will happily tune the minds and hearts of the students to like the lesson and be willing to have it over and over again. Teaching aids in basic design and technology to be used by the teacher should be in such a way that, learners can easily play and learn with it very easily. Because some of these teaching aids like chisel, saw, hammer etc used in this subject are dangerous, their usage by students or learners should be under the supervision of the teacher. This ensures that all safety precautions and protocols are observed while working at the workshops.

1. **g. Teaching aids must be probing**

Teaching aids must be investigative and searching in nature in

order to make learners or students think to bring out ideas about the lesson been taught. This creates within the student's ability to think through nature and bring meanings to happenings around them. This is the only way to create a society of thinkers who can think, create and manufacture products for the use of all. The use of teaching aids during the basic design and technology (pre technical skills) subject should birth an initiative mindset in the JHS 2 students. So that they think on how to make use of the aids after school for designing and construction of artistic things in life.

1. **h. They must be simple**

Some teaching aids are complex and complicated to be used during a lesson. For instance, a lesson on animals will not require a teacher going to the forest to bring a whole elephant in order to explain to the learners. This will be too scary to

children. But rather, a video presentation or drawing can be used to make the class lovely and interesting.

1. **i. They should be accurate in every aspect**

Educational teaching aids portrays truth and seriousness on the part of the teacher when they are accurate in all aspect. They should be able to indicate current situations and happenings in the society and what the lesson intends to achieve. If an aid is being used to show past events, it should be able to indicate that clearly and if present events too, it should be able to point it out without hesitation and errors.

1. **j. Teaching aids must be cheap**

Teaching aids must not be expensive to buy or difficult to find when needed for a lesson. It should be easily obtained from the environment at a cheap cost. Students should even be given the opportunity to find the teaching aid needed for a lesson and brought to class. This gives them the opportunity to know the source and learn certain things alongside before bringing it to class for a lesson. This will make them participate in the class with all seriousness and creates the opportunity to bring truants back to school because of the lesson to be treated.

1. **They should be meaningful and purposeful**

Good teaching aids must make meaning and explain the lesson better for good understanding and acquisition of knowledge by learners. If this is not achieved, then the purpose of acquiring the teaching and learning materials (TLM) to make the lesson lovely and meaningful will not be achieved. The teaching aid for the lesson should meet the objectives of the lesson and the reason for bringing that teaching aid to class. Teaching aids must serve the purpose for which they were brought to class for learning.

3.4Types of teaching – learning aids

Teaching and learning materials are of various types and thus are classified and categorized in several ways.

Teaching and learning materials can broadly be classified into three (3) categories

1. Audio teaching and learning materials: these teaching and learning materials primarily stimulate the hearing sense of learners. These includes;
2. a) Human voice
3. b) Telephonic conversation c) Audio discs/tapes
4. d) Radio broadcast
5. e) Gramophone records
6. Visual teaching and learning material: they involve the

sense of vision. They stimulate the visual impulse. These include;

1. a) Textbooks, supplementary books
2. b) Reference books, encyclopedia c) Magazines, newspapers
3. d) Documents and clippings
4. e) Duplicated written materials

3.5 Importance of a lesson plan

- Through lesson planning the subject is organized properly which gives a sense of direction and instruction in the classroom.
- It keeps the teacher free from the faults of thoughtless teaching as it prevents the teacher for wondering around and beating about the bush.
- It makes the proper atmosphere for learning process.

Students become appreciative and interested when the teacher is on

point and interesting with his/her teaching.

- The teacher also gets a clear idea about when they should start evaluation and when they should proceed to the next lesson as everything has been prepared before the lesson.
- Lesson plans helps in organized teaching and saves time. This means that, the teacher never enters the classroom unprepared and unorganized and start asking students for their textbooks and note books to know what to teach.
- Lesson plans allow the teacher to apply appropriate strategy. Through planning before lesson, the teacher

is able to consult all books dealing with the topics to be treated for greater percentage arming intellectually

and make available all needed teaching aids for the lesson for effective teaching.

- Teacher will be more prepared and confident while teaching the lesson since he/she is armed and prepared from all angles for the lesson.
- Lesson plan prevents the over reliance on syllabus, text books as a direct material for teaching as some books and the syllabus are written in such a way that they serve as guide to teachers. Lesson plan preparation is based on the scheme of work and the syllabus but do not give extra detailed information such as the sub – topics to be treated, all the teaching aids needed for a lesson etc.
- It enables the teacher to evaluate and select the best and approach and teaching procedure to be used in teaching after planning the lesson plan in order to facilitate teaming of students effectively.
- It serves as record of the work done by a teacher for the school and for references.
- It gives a sense of direction as to the methodology and techniques to be adopted for effective teaching and understanding by the students.
- The basic design and technology lesson plan material serves as monitoring tool for supervisors and head of schools to access the work of teachers during supervision.
- The basic design and technology lesson plan serves as a reference material where a new teacher or even the head of school can use to teach students JHS2 in the absence of the teacher.

3.6 Factors to be considered when planning a lesson plan

- The teaching procedure, methodology and techniques employed by the teacher to administer the basic design and technology lesson for the learners.
- The type, quantity and quality of teaching and learning materials available in the environment to be used by the teacher in running an effective basic design and technology lesson for the students.
- The objective for the lesson. In knowing the objective to be met in a basic design and technology class for JHS2, the teacher selects the teaching method and appropriate teaching aids to achieve it.
- The nature of the topic for the basic design and technology class should also be taken into consideration. If the selected topic is difficult for understanding, a pre – introductory topic can be introduced to pave way for the difficult topic.
- The teacher for the basic design and technology class needs to consider the anticipated problems. This can be for the students or for the teacher. This could involve the complexity of the vocabulary to be used for teaching, the size of the class, the age of the group, the activity, getting students to the participle or classroom management.
- The intellectual abilities and absorption rate of the students. It tells the teacher to either prepare a more detailed lesson plan or not. It also gives the teacher a fair idea either to teach slowly or move at a faster pace.
- The procedure, phase, and timing of the basic design and technology teacher indicating what activities the teacher will use within the lesson and in which sequence to achieve set objectives.
- The interaction for every activity at every stage of the instruction should be stated. Whether it will be a teacher to student interaction or student to student interaction or if students should work on their own based on the task or activity.
- The basic design and technology teacher should consider the class level and number of students to be taught. This can help to plan the exercises and activities based on the ability and number of students. Especially when choosing a suitable activity that all students can participate equally in.

3.7 Characteristics of good lesson planning

Learning to plan is just like any other skill. It takes time and practice. Taking time to plan lessons might seem like a time consuming process. But when an effective teacher creates a detailed lesson plans as a beginner teacher, one is able to develop routines that can become more automatic over time. A good lesson has plan has some characteristics and these includes;

a). Lesson planning should be in a written form, on a palmtop, laptop or computer for easy references.

b). In lesson planning, the general and important objectives should be clearly defined.

c). The lesson plan should relate to suitable teaching method and its use.

d). A continuity component reviews and reflects on content from the previous lesson.

e). Subject, time, class, average age of the students should be mentioned in the lesson plan.

1. f) Important examples should be included in lesson planning. g) Inspirational or motivational methods should be

experimented in lesson planning.

1. h) In lesson planning, the time for each topic should appropriately be pre-determin
2. i) In lesson planning, the techniques and supportive materials of education like charts and maps should be clearly stat

4 RESEARCH RESULTS AND DISCUSSIONS

4.1 Sample space and level of Education

Even though the development of a nation depends on natural

resources, human resources play a major role. The level of expertise and education level of the human resources has a role in such development. This is because it's the human beings who have to manage such resources for the development of the country to occur. Education therefore is very important. Such education begins at the kindergarten level or primary, through JSS, SSS and continues to the

university. Once this is achieved, experts of varied experience from different fields will be obtained to nature and manage the national resources for the good will of all. This research work therefore sorts to investigate the course design and structure of BDT at the JHS and see its suitability in nature students in JHS to fit appropriately into SHS programs. In doing, this questionnaires are prepared to a sample space of 60, answered and analyzed as indicated in **Table 1**. Upon analyzing sample data, it was found out that 21 were females representing 35% whiles 39 were males given a percentage of 65. This figures gives a clear indication that, education in Ghana still have the males leading the education chart when it comes to schooling. The gender equality and education of the girl child still lacks and hence the need to do more when it comes to education of the female child. This is also depicted in Fig. 1. The government of Ghana needs to do more when it comes to girl child education and bridging the gap between female to male ratio in education especially in the sciences and technical subjects. These are some of the reasons accounting for the higher percentage of male to female ratio of the 60 teachers sample for this research work.

The level of education of respondents was also analyzed as the questionnaires was answered by teachers teaching in the Junior High Schools (JSS). From the questionnaire analyzed, it was obtained that 2 teachers representing 3.3% were SSSCE/WASSCE graduates and teaching in the JSS. The number of teachers with diploma certificate was obtained to be 22 representing 36.7% whiles a number of 33 teachers holds degrees in different fields representing 55%. Questionnaire analysis revealed that, 3 teachers holds master's degree representing 5% of the total 60 teachers sampled. Looking at the number which answered the questionnaire, one can vividly say that about 36 teachers out of 60 representing 60% holds a first degree as compared to previous years when majority of JHS teachers are diploma graduates. With this notion, it is empirical to say that teaching standard is of a higher standard judging the level of education of these teachers. This is depicted in Table 2 and Fig. 2 below.

4.2 Syllabus usage in the school

A syllabus which is an outline and summary of topics to be

covered in an education or training course or a program is an important document when it comes to the implementation of education programs and policies in Ghana. The Basic Design and Technology syllabus is a book or document which has all the topics arranged in an upward difficulty manner comprising all topics to be covered from JHS 1 to JHS 3. This research work which on course structure and design looks at the syllabus which is in a way the first point of call for subject identification and topics arrangement for teaching. The course structure is well designed but lacks certain basics which when segregated as in the times of JSS technical skills and technical drawings, will give the students better understanding of the technical subjects. This is detailed in the recommendation section of this paper.

Preparation of scheme of work depends on topics in the syllabus. From data analyzed, it was observed that 55 respondents representing 91.7% of teachers refers to the syllabus when preparing the scheme of work. The number who do not depend on the syllabus for preparing scheme of work amounts to 5 representing 8.3%. These are teachers who depend solely on single textbooks without making any referencese to other teaching materials throughout the semester as seen in **Fig. 3**.

Fig 3: Use of syllabus in preparing scheme of work

4.3 Scheme of Work in the school

Each semester comes with the treatment of new topics based on the syllabus. There is therefore the need for every teacher to prepare scheme of work. The main function of scheme of work is to help teachers plan and have a specific sequence for their lessons in advance for the semester. It helps teachers to plan for future teaching. It again reminds teachers on covered topics of previous semesters whiles helping teacher to teacher content within a given period of time. From **Table 4,** it can clearly be seen that, 58 respondents representing 96.7% prepares scheme of work for each semester. Whiles only 2 teachers representing 3.3% do not prepare the scheme of work based on topics in the basic design and technology (BDT) syllabus as shown in **Fig. 4**.

Research work also tried identifying materials used by teachers in preparing the semester's scheme of work. After analyzing the questionnaire, it was established that 2 teachers representing 3.3% makes use of only the syllabus in preparing the scheme of work. Making use of syllabus and textbooks, 9 teachers representing 15% was the outcome whiles teachers using syllabus, textbooks, online and other materials constitutes a number of 49 representing 81.7% as depicted in Fig. 5. Teachers making use of syllabus, textbooks and online materials are able to get a lot information for teaching, illustrations and building the intelligence level of their students to progress academically in the BDT subject.

4.4 Lesson plan in the school

Classroom instruction of the JHS 2 students requires teacher's seriousness and preparation before lesson. It requires the use of scheme of work, teaching and learning materials and referencing books to prepare the lesson plan. Once the teacher does this, it prepared him/her adequately for the next day's classroom lesson. Every teacher needs a lesson plan hence the need for its preparation before lessons for effective teaching. This is a responsibility for every teacher teaching BDT in JHS 2. The 60 sampled teachers where asked as to whether they prepare lesson plan and adequately prepare before lessons. 55 respondents representing 91.7% affirmed positive in preparing lesson plan before lessons. The remaining 5 said they don't prepare lesson plans before lessons. This was at a percentage of 8.3% as shown in **Fig 7**.

Lesson plan preparation frequency was also established as teacher's views and opinions were sorted on when they do prepare their lesson plans before lessons. After sampling 60 respondents from the study area (**Table 7**), 41 teachers representing 68.3% indicated that, preparation of lesson plan was done at the beginning of each week throughout the semester. 8 respondents representing 15% said their lesson plan is prepared at the end of the week, say Friday throughout

the semester. 6 teachers out of 60 sampled teachers stated that they prepare the lesson plan during the week. There are some also who take the preparation of the lesson plan the same as scheme of work. 4 teachers representing 6.7% stated emphatically that, they prepare their lesson plans once in a semester in aid of teaching of learning as in **Fig. 7**. Lesson plan preparation should be done week by week as indicated by Ghana's education body and teachers needs to prepare in that direction. It should be prepared weekly and in that regard, it will help the teacher to learn and prepare adequately before the next day's lesson to students. Referencing to syllabus, textbooks, online stuffs and other referencing materials gives the teacher opportunity to get current teaching information and materials for the students learning and absorption into mind. This keeps teacher and students abreast with time and current happenings in the country and worldwide.

4.5 Teaching and learning materials for better understanding

Teaching and learning become interesting and meaningful

when teaching and learning materials are made available to aid the teaching and learning process. Teaching aids are materials use to enhance teaching and learning. They make learning easy to understand as learners are able to get a pictorial view and practical understanding of what is been taught or delivered by the teacher. From the 60 teachers sampled, given questionnaires and interviewed, 18 teachers representing 30% said teaching are good for teaching and learning. The number of teachers who answered that teaching and learning aids are very good and that they make learning and understanding to be real and meaningful constitutes 19 teachers representing 31.7%. Some school of thought thinks teaching and learning aids are excellent materials that enhances teaching and learning in the classroom especially when teaching BDT. Most of the activities under Basic Design and Technology for JHS 2 is practical. Learning it practically helps students to understand tools, uses and application and how they can use them to get work done at the shop. With practical learning of BDT with explanations of the teaching and learning materials, some students complete school and ends up working with such tools without any further training to earn a living. This school of thought therefore thinks that teaching and learning materials are excellent for teaching and learning in the classroom and at the workshops. The number of teachers who falls within this context is 22 respondents representing 36.7%. One person thinks making use of teaching and learning materials doesn't make lessons effective. He thinks some TLMs bulky, expensive and difficult to find from the environment. They require special learning and training on the part of the teacher before they can be used to demonstrate in class. He indicated that, modernization has brought about some TLMs which needs expects to use them in teaching and learning demonstrations hence finding it very difficult to use to teach. The importance of the teaching and learning materials (TLMs) is depicted in Fig. 8.

The frequency of use of teaching and learning materials by teachers in the classroom was also researched to find out the teachers who are theoretical, practical or both based. It was found out that 22 respondents corresponding to 36.7% make use of teaching and learning materials in each lesson throughout the week. These are instructors who are seen as been both theoretical and practical. Thus, they believe teaching with TLMs helps the learner understanding it better as they are able to see and make use of the TLM during the lesson. 5 teachers representing 8.3% make use of the teaching and learning materials once in a week. This group of teachers believes in the use of TLMs in teaching and learning but not to be used in each lesson. A group of teachers makes use of TLMs when the topic for the lesson deems it fit to be used for the learning process. This group makes a number of 32 representing 53.3% of the total 60 sampled teachers for the research work

4.6 Test assessment and importance

Test assessment is an integral part of instruction as it determines whether or not the goals of education are being met. Assessment affects decision about grades, placement, and advancement to the next level, instructional needs, and curriculum and in some cases school management. It is a key component of learning because it helps students to know their level, standard, performance and learn better. It helps students to see their capabilities and abilities in class when it comes to academics. Assessment helps us to pinpoint those areas where students lacks and requires reinforcement. Testing students in BDT helps the students become strong test takers as they prepare for BECE. It is therefore important to test students at the end of each of the semester on all topics treated on BDT.

In this regard, the research work looked at test assessment and its importance especially on the part of learners. Sampling 60 teachers in the study area, 54 respondents representing 90% state that it is very necessary to assess students based on standardized test at the end of every semester. 6 respondents representing 10%, said it's not important to test students as depicted in Fig. 9.

Preferred mode of assessment of students in BDT was also assessed. 22 teachers out of the sampled number said students prefer multiple choice type test. This is because students especially the female students don't like the drawing aspect of the pre technical skills. They just easy choosing examinations which they can again easily copy from colleagues and friends during examinations. Some teachers also find it difficult in marking hence preferring multiple type test at the end of the semester for students offering pre technical skills. 11 respondents at a percentage of 18.3% stated that some students prefer essay type test for the BDT (pre technical skills) subject. Majority of students who like the pre technical skills falls within this group as depicted in **Table 10**. Pre technical skills is a subject which should be essay type test preferred as the drawing aspect sharpens and prepares students for technical drawing and science programs in the Senior High Schools. Students are able to learn basic principles in drawings which becomes useful in subjects like mathematics (construction), physics (light), and technical drawing topics in the Senior High Schools. Field research and investigations proved that most students offering pre technical skills, mathematics and physics lakes basics in pre technical skills from the Junior high school. This makes it difficult for teaching and learning in the classroom. It delays covering topics as students expect teachers to run them through such basics before applications.

are extraordinary when it comes to academic work in the Junior

High schools.

5 RECOMMENDATIONS AND CONCLUSION

5.1.1 Recommendations

- Pre technical skills should be made compulsory for students who wish to study science and technical courses at the SHS schools. Most students offering science and technical courses at the SHS do home economics at the JHS schools rendering them incapacitated when it comes to practicals in physics and technical drawing and this needs to be looked at.
- There is the need for the technical skills to made as a subject on its own and be studied at junior high level as it trains the students for furtherance at the SHS in offering subjects like physics, mathematics and technical drawings. Some visited JHS offered only home economics which is not good for the students. Field investigations and observations revealed the inability of students in basic technical skills drawing concepts like drawing angles, measuring angles etc is problematic for teachers at the SHS's and as such, basic concepts needs to taught all over again making it difficult to complete the syllabus.
- There is the need for the training of more pre technical skills teachers for the JHS's as most visited schools who are offering the subject do not have teachers in that field. This is likely to affect students at the BECE.
- The basic design and technology subject needs to be restructured as it serves as one of the fundamentals for program selection into the senior high schools in Ghana. If not, then headmasters and headmistresses should provide a guide to students in offering the BDT based on their choice of programs to be offered at the senior high schools level. For instance, a choice of home economics option is a basis for home economics at the SHS and a pretechnical skills option is a best choice for science and technical at the SHS and not vice versa.

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- Fusing of the technical drawing into technical skills to form pre technical skills should be looked at again as it doesn't give students the opportunity to explore major topics which are of utmost importance and beneficial for choice of programs and furtherance at the senior high schools in Ghana.
- There is the need for guidance and counselling when it comes to programs selection and choice into SHS as real time field investigations suggest some students unfit and not knowing what they are about or looking for in offering some courses.
- The PTA in JHS schools should be up, collaborating and working in their choice of programs for their wards. They should be willing to support financially as some courses are expensive in offering at the SHS's more than others. The monetary commitment in offering a science or Home Economics program will not be same as General Arts or Business program. Hence, the need to be willing to commit to the academic success and wellbeing of their wards.

CONCLUSION

The teaching of technical skills and technical drawings was among the main subjects offered in the Junior High Schools by students in Ghana. Students in those days loved these subjects because it served as a preparation for Senior High Schools programs in serveral ways. Subjects such as mathematics, physics, technical drawings etc. required students who are good in technical skills to persue such programs. For instance,a well learnt technical drawing and technical skills at JHS is a100% mark for a student answering construction question in core mathematics during SSSCE. But this is not the case as mathematics teachers faces difficulty in teaching students constructions to understand. Therefore the need for standardization of topics, concepts and aspects in the drawing subjects at the JHS level. The standardized well-structured syllabus for technical skills is the standardized documents well drafted for the training of the students.

The current Junior High Schools are facing the consequence of the fusing of the two technical subjects (technical drawing and technical skills) to get pre technical skills for the progress of the students. But in reality after field research and investigation, results are not forth coming. A well-defined syllabus is a completed document for the advancement of this course. This research work has been able to establish that a syllabus is needed in the standardization of courses among the region to produce quality Junior High Schools grandaunts for the Senior High Schools in Ghana. Through this research work, it's established that, there is the need for the preparation of scheme of work by teachers before the semester starts. Once the scheme of work is prepared, it awakes the teacher to be on his/her toes for the teaching work. Because the main objective of this project is to design a course structure which will be available for the training of quality Junior High School students, there is the need for the studying of the subject

before entry into different SHS's in Ghana. The investigations also established that students performance in schools should continue to be assessed using any of the testing tools in order to abstain the accurate information about the students. The research established that most students especially the girls prefer the objective type test during pre-technical skills assessment. This is because of their inability and difficulty in drawing. After the investigation, it's well established that, there is the need for restructuring of the course content as can be identified in the recommendations.

Plan

Abstract

Introduction

- Introduction on teaching syllabus
- Introduction to Scheme of Work
- Introduction to Teaching and Learning Materials
- Introduction to lesson plan
- Introduction to test item construction

REVIEW OF RELATED WORKS

- Definition of Syllabus
- Definition of Scheme of Work
- Definition of teaching aids
- Definition of a lesson plan
- Test items definition

REASON FOR SYLLABUS, SCHEME OF WORK, LESSON PLAN AND TEST ITEMS

- Importance of Syllabus
- Factors to be considered in preparing a syllabus
- Factors to be considered when planning a scheme of work
- Characteristics of a good teaching aids
- Types of teaching – learning aids
- Importance of a lesson plan
- Factors to be considered when planning a lesson plan
- Characteristics of good lesson planning

RESEARCH RESULTS AND DISCUSSIONS

- Sample space and level of Education
- Syllabus usage in the school
- Scheme of Work in the school
- Lesson plan in the school
- Teaching and learning materials for better
- Test assessment and importance
- RECOMMENDATIONS AND CONCLUSION
- Recommendation

Conclusions

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