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Institute of Virtual and Distance Learning

Module Code : 753 ED 54

Module Name : Teaching Methods of Geography

Programme : B.A. in Secondary Education

UNIT I

Learning objectives:

Having gone through this unit, students should be able to:

Define the word Curriculum.

- Explain different teaching methods.
- Discuss the theories of teaching and learning.

DEFINITION OF CURRICULUM

The word curriculum is derived from the Latin word 'currere' which means "to run", this definition was coined by Pinar (1974) to highlight the running (or lived experience). Indeed, for many students, the school curriculum is a race to be run, a series of obstacles or hurdles (subjects) to be passed. All the activities going on the school or outside of the school is called curriculum. It is basic to the intellectual, physical, moral and emotional development of the child.

Curriculum comprises all the learning which is planned and guided by the school, whether it is carried on in groups or individually inside or outside of the school. It is the totality of experiences that pupils receive through the manifold activities that go in the school, in the classroom, library, laboratory, workshop, playground and in the numerous informal contacts between the teachers and pupils. It is a tool in the hands of the Artist (Teacher), to mould his/her materials (Students), according to his/her ideals (objectives) in his/her studio (College/ School).

A curriculum can be defined as a plan for action or a written document that includes strategies for achieving desired goals or ends. A curriculum usually contains a statement of aims and specific objectives. It indicates some selection and organization of content; it either implies or manifests certain patterns of learning and teaching…finally it includes a programme of evaluation of the outcomes.

The curriculum consists of the ongoing experiences of children under the guidance of the school. It represents a special environment for helping children achieve self-realization through active participation within the school. The planned and guided learning experiences and intended outcomes, formulated through the systematic reconstruction of knowledge and experience, under the auspices of the school, for the learner's continuous and willful growth in personal-social competence.

The curriculum of a school is the totality of the experiences that a school plans for its pupils. It is not restricted to courses; extracurricular activities and auxiliary services such as guidance and health services are also part of the curriculum. On the other hand the curriculum does not include everything the students learn in school. Curriculum is an explicitly and implicitly intentional set of interactions designed to facilitate learning and development and to impose meaning on experience. The explicit intentions usually are expressed in written curricula and in courses of study; the

implicit intentions are found in the 'hidden curriculum' by which we mean the roles and norms that underlie interactions in the school.

The curriculum can be defined as a course of learning activities set out for the learner to perform to make him achieve certain goals prescribed by the educational system. The curriculum generally includes all subjects and activities over which the school has responsibility. It also defines the limits within which certain types of learning are to take place. It denotes those experiences and activities which are devised by the school or other institutions of learning for the purpose of changing a learner's behaviour, acquiring or reinforcing certain skills and preparing him to fit properly into his society.

Types of Curriculum

Formal or Official Curriculum - This includes the activities accommodated in the regular hours of school. The timetable of the school allocates specific periods of teaching time for different areas of the formal curriculum.

Informal Curriculum **-** Activities that occur outside of regular school hours, during breaks of lunch time, after school and sometimes on weekends, are also sources of learning and constitute the informal curriculum. These are sometimes referred to as ***extra-curriculum*** or ***co - curriculum*** activities and are therefore treated in a different way from the activities of the formal curriculum.

Hidden Curriculum **-** Educationists speak of the 'hidden curriculum' by which they mean those things which pupils learn at school because of the way in which the of the school is planned and organized but which are not in themselves overly included in the planning or even in the consciousness of those responsible for school arrangements.

Actual or Received Curriculum – These terms are often used interchangeably. This view of curriculum acknowledges that a definition of curriculum out to embrace all the learning that results from the experience of schooling. This includes not only learning that is explicitly planned in the *formal curriculum*, but also unplanned learning that is a by-product of planning and practice and is learnt through the *hidden curriculum*. Examples of this are social roles, sex roles and certain attitudes and values. For this reason, some writers prefer to make a distinction between the *official curriculum* and the *actual curriculum* or between *planned* and the *received curriculum*. The official or planned curriculum refers to what is openly acknowledged and often written down while the actual or received curriculum is the full range of pupils' experiences in school.

Total Curriculum – The curriculum offered by a school to students should not be simply a collection of separate bits of information and unrelated experiences. Schools need to be concerned with a 'total curriculum'. There must be vertical and horizontal organization of the curriculum elements.

Defining Teaching

Teaching is the imparting of knowledge, developing of skills and attitudes, and meeting of special needs in various ways ranging from structured to individualized activities, including instructional support activities which aid and enrich the teaching-learning process. Evaluation is vital to the teaching-learning process and is a basis for academic programme planning and student advising.

Defining Learning

Learning is the process by which a growing child orders its experience with the environment. Long before the child comes to school; it has an encounter with geographical phenomena, that is, with the buildings, soil, climate and people in its immediate surroundings. At first, the child sees geographical phenomena as a muddled confusion but begins to classify the environment both according to the differences and the relationships between them. Of course the child does not call what it is doing geographical study.

Children learn about the environment *intuitively* without being able to elucidate the principles they are following, or place them in any kind of theoretical context. Nevertheless, geographical enquiry has started, albeit in a rather disorderly or unsystematic fashion. In this regard, the task of the teacher when the child enters school is to *build upon* and help the child put order to what it has already started learning. It is, therefore, a fallacy for the teacher to think of

the new pupil as a blank tape, requiring to be filled up with geographical knowledge. This is the thinking of educationist John Locke that the child was a clean page on which the teacher or adult wrote knowledge.

The formal definition of learning describes the process as a relatively permanent change in behaviour based on an individual's interactional experience with its environment. As such, learning is an important form of personal adaptation. Behavioural change occurs in all animals, both human and non-human, and is a process of personal, or ontogeny, adaptation that occurs within the lifespan of each individual to make one's survival more likely. To say that learning is relatively permanent is to emphasize that behaviour is flexible and not genetically pre-programmed in form or function. Learned behaviours may exist for a lifetime, but they may also not appear throughout an individual's life.

Experience of, or interaction with, the environment that precedes and follows behaviour presents the adaptation requirement and consequence of each interaction. An individual placed in a bubble and kept from any contact with variations in stimuli from the day it is born does not learn much behaviour. The actions of such an organism in this case would be very limited. A living creature may barely survive such an existence. Because learning is so intertwined with individual and environment, it is often emphasized as one of the two major forms of biological adaptation.

Ontogeny adaptation, the basis of learning, creates behavioural change that is unique for each individual and the process only occurs within the lifespan of that individual based on that individual's experiences with its personal environmental interaction history.

TEACHING AND LEARNING METHODS IN GEOGRAPHY

The term teaching method refers to the general principles, pedagogy and management strategies used for classroom instruction. The choice of teaching method depends on what fits the educational philosophy, classroom demographic, subject area(s) and school mission statement. The methods used in Geography teaching include the following:

EXPOSITION OR LECTURE METHOD

(Teacher talking – Pupils listening)

This is mostly teacher's explanation of major concepts and principles. A teacher uses a lecture in the classroom to pass on information and skills to the class in a cost-effective manner, that is, to a large number of pupils in a short time. A lecture starts with an introduction, then the content is presented and then there is a summary of what has been covered. The teacher should, however, take note of the following:

- The exposition must be clear and logical.

- Attempt to find out as the exposition proceeds if the pupils are following or not, e.g. asking questions like, 'Is it clear?' 'Are you with me?' Or ask questions from time to time, which require the pupils to give an answer.
- The vocabulary and sentence construction must suit the pupils' age and background experience.
- You should know beforehand which parts of the explanation are difficult and be ready to deal with them without wasting much time.
- Illustrate the lesson to enhance understanding.
- Since people are poor listeners, use changes in voice intonation, volume, pitch, etc. to assist the pupils during the exposition. In this way, important points in the lesson are stressed, enabling the operation of *selective hearing strategy*.
- The social context in which the lesson is taught is also important, e.g. good class management (i.e. discipline), an interesting presentation of material (i.e. giving examples and illustrations which are relevant and interesting), and pleasant inter-personal relationships (*rapport*).

Advantages of lectures

- The teacher can reach a large number of pupils easily.
- He/she can convey a large amount of material in a short time.

- He/she has complete control unless listeners rebel.

Disadvantages of lectures

- There is little opportunity for the learner to question the teacher. There can be only one-way communication unless the teacher offers an opportunity for questions.
- There is no feedback regarding the effectiveness of the teaching-learning process, especially to the inexperienced teacher.
- You need a large and comfortable room.
- You need to be an effective communicator.
- A large group could lower the teacher's enthusiasm for teaching.
- Pupils are often passive as they can just listen and take notes.

Lecturing or exposition is an essential part of a teacher's teaching repertoire. Nevertheless, in order for it to be overly successful, there is need to combine it with other strategies.

QUESTION AND ANSWER

(Teacher talks – Pupils talk)

This is when the teacher poses a series of questions to pupils in order to promote thinking and understanding. It is an informal assessment technique, which is used with groups of up to 30 pupils. It is a way of ascertaining the existing level of knowledge at the beginning of a geography lesson and tracking the progress within a lesson. It can be used to build

new vocabulary and encourage pupils to listen and learn from each other.

The interaction between the teacher and the pupils during the question and answer session takes place in four stages:

Step 1: Structuring: This establishes the context and purpose

Teacher: *Today we're going to talk about tourism in Zambia.*

of the question.

Teacher: *Why has the Zambian government in recent years encouraged tourism?*

Step 2: Soliciting: This elicits responses from pupils.

Step 3: Responding: This is an attempt to meet the

Pupil: *Because the government wants to diversify the economy.*

expectations of the soliciting: a response is given.

Step 4: Reacting: This evaluates or modifies the response.

Teacher: *That's right. Zambia wants to diversify its economy from a mono-economy depending on copper exports only.*

Usually, responding to the soliciting is the only talking which teachers approve or organise for their pupils in class-time.

Important elements in questioning strategies

Frequency: It gives the pupils a chance or incentive to think carefully before responding.

Responses:

The major functions of questioning should be to:

- ✓ Elicit points or feedback from the pupils. Therefore, consider the questions carefully so that the pupils have to use their knowledge and cannot just give you 'yes' or 'no' answers.
- ✓ Find out whether or not the pupils know the answer.
- ✓ Lead the pupils to the right answers.

Levels of thinking: Include a variety of questions which encourage different levels of thinking, e.g.:

a) *Recall of knowledge:*Give me examples of sedimentary rocks.

b) *Comprehension of information*: What does the graph tell us about the growth of population in Zambia?

c) *Applying knowledge*: Where would you expect the heaviest rainfall to occur in Zambia, bearing in mind our work on rain-forming processes?

d) *Analysis of information*: What are the main differences described in the text between the sites of Lusaka and Kitwe?

e) *Synthesis of information*: What general problems of urban growth seem to be characteristic of cities in southern Africa?

f) *Evaluation of information*: Does this seem to be the most reliable method of investigating rural-urban migration in Zambia?

Poor questioning techniques

Some poor questioning techniques include:

Lack of patience - which causes the teacher to answer him/herself or hasten to elaborate the original question. *An acceptance of the first answer* - Which limits the reliability of the feedback. The teacher should invite other pupils to evaluate and amplify all the answers. This allows wider participation and the teacher gets a better impression of the pupils' understanding.

Poor distribution of questions around the classroom - Usually, teachers concentrate questions on those pupils sitting at the front of the classroom and very few questions go to those sitting on the sides (wings) and the back. This creates a *funnel vision*. Therefore, effort should be made to maintain contact with:

- Pupils sitting at the back of the room.
- Pupils sitting in the wings.
- Volunteers and non-volunteers.

Ambiguous and ill-considered questions - Which produce disconnected responses, e.g. where did these rocks come from? Such a question may mean where the rocks were picked from, or the origin in terms of formation. Therefore, questions should be *structured* carefully to alleviate this problem.

Advantages of the question and answer Method

- ✓ Pupils are involved and feel they are contributing to learning.
- ✓ Misconceptions held by pupils may be spotted and corrected at an early stage.
- ✓ The structure can build from simple to complex, familiar to the unfamiliar, real to the abstract, etc.
- ✓ Key questions can be worked out in advance and answers checked.
- ✓ Feedback on the quality of learning is gained immediately and directly.

Disadvantages of question and answer techniques

- ✓ In Zambian classes where there are more than 40 pupils, there is stiff competition for 'air space'. Very few pupils actually talk. Without good discipline, only a few outspoken pupils monopolise the answering.
- ✓ You need to be able to respond quickly to pupils' answers.
- ✓ Unless the questions are wide ranging, the responses can be trivial.

In conclusion, question and answer is a teacher-led strategy in which the learner is fully involved. The length of time can be anything from a few minutes up. The feedback is very valuable since it enables you to adjust your teaching.

GROUP DISCUSSION

(Pupils talking to pupils)

A discussion is where the pupils are actively involved in talking to each other about relevant issues. If the children are going to benefit from discovery learning, they should be able to talk. A discussion gives them this chance. A discussion is often used to help solve problems or to explore issues and make decisions. It is a useful way of exploring attitudes (and so can be used to teach sensitive topics like HIV/Aids, family planning) and helping change anti-social attitudes such as being shy, too quiet, or noisy. The teacher's task is to manage the situation so that learning takes place effectively and enjoyably. He/she becomes a learning counsellor, encourager, and disciplinarian.

Group discussions are *resource-based discovery methods*. The pupils are divided into groups of 5 or 6 and then each group is given a 'package' for discussion. The pupils sense and define their problem, seek out the relevant data and make meaning out of their own efforts. The teacher moves from group to group, finding out the pupils' problems and their learning difficulties. The teacher should be wary of the following types of pupils during the discussion:

- ✓ Attention seekers.
- ✓ Intermittent workers.
- ✓ Solitary workers.
- ✓ Quiet collaborators.

After some time, say 10 minutes, the discussion is stopped and each group reports its findings. The teacher then makes a

summary of the main points, which the pupils can take down as their notes.

Advantages of a discussion

- Almost every pupil has a chance to say something because the group is small. It is the teacher's task to ensure that all the pupils take part in the discussion in their groups.
- A discussion can follow a video or lecture to reinforce the learning.
- It involves the pupils and even quiet members of the group can emerge as leaders.
- It encourages creativity among learners.
- It encourages the pupils to become more articulate and improve their communication skills.
- Pupils learn from one another so they are not restricted to the teacher's or their own knowledge.

Disadvantages of discussions

- Pupils sometimes take the opportunity for casual 'chat' instead of discussing the issue.
- A discussion may take a longer time than scheduled. Pupils may not progress through the material as fast as might have been expected. Discovery learning should accelerate and deepen learning, not slow it down.
- Monolithic packages assume that all pupils have the same learning style. To teach as though all pupils learned in the same way is a grave mistake.

- The highly intelligent pupils may find the method insufficient, e.g. something that a teacher can explain in 5 minutes may take the whole period if the group method is used.
- It can be ineffective if the pupils do not have the necessary information.

DEBATE

This is similar to a discussion but has more rules about procedure. There is often no right answer to the matter at hand. The benefit is that pupils gain from exploring both sides of the argument, learning new ideas in the process. In addition, it enhances pupils' formal communication skills.

Procedure: Nominate or elect a chairperson from among the pupils to ensure that rules are followed impartially. Select the main speakers, one for the motion, the other against the motion. Give them time to prepare. Brief the chairperson about what to do. Arrange the debate steps like these:

- ***Proposer*** to speak in favour of the motion.
- ***Opposer*** to speak against the motion.
- ***Seconder*** for the motion and seconder against the motion.
- ***Voting*** by the whole group.
- ***Teacher*** summarises the main points and pupils take them as notes.

Advantages of debate

- It has a clear structure and an element of competition.
- It ensures participation of all the pupils.
- The pupils can take the leading roles.
- It is good for considering contentious and sensitive issues.
- It encourages reflective or critical thinking.

Disadvantages of debate

- A few louder pupils (attention-seekers) can take control and drown out the quieter ones.
- Arguments can break out.
- Some pupils are too shy to join.
- The subject in-put is limited to the knowledge of the participants unless the teacher introduces extra information.

Debate is a pupil-centred strategy. It is a structured technique for learning communication skills and extracting key geographical points of a topic.

SEMINAR

This is a strategy where a pupil researches a topic, presents the findings to the other pupils and leads the ensuing discussion. Seminars are widely used with mature *students* to explore specific topics.

Guidelines: Pupils should be given enough time to consider readings, view videos, listen to lectures, do research in the library, etc. before the seminar. At the seminar, all the pupils

should be encouraged to share their views so that the range of issues can be explored.

Advantages of seminars

- Pupils are involved in finding the information.
- They know what is involved and they have the opportunity to participate.
- Pupils have the opportunity to ask their peers and the teacher questions.
- Seminars are pupil-led.

Disadvantages of seminars

- The pupils may be reluctant to participate at first.
- A seminar can be dull and boring if the topic is not appealing, or if only a few pupils contribute, or their contributions are badly researched or presented.

A seminar is a learner-centred strategy. It improves pupils' skills at finding information, presenting the information, and answering colleagues' questions. These three phases must be present in a seminar.

SIMULATION

This means providing a *replica* experience that gives the appearance of being real. It is used in situations where it is not possible or desirable to undertake learning in the actual conditions, e.g. where the real situation is too dangerous, costly, difficulty or time consuming to be studied. It can be repeated until the desired level of learning is achieved.

However, it can be time consuming and may be difficult to supervise all the pupils adequately.

ROLE-PLAY

This is a teaching-learning strategy where a part or role in events is acted out. It helps to make the pupils feel and understand the influences and pressures in the situation they are examining, therefore, it is particularly effective when dealing with emotive issues such as the effects of large family size in a home.

Guideline: Prepare role-play cards for participants and other activities for those pupils who are not in role, i.e. the observers, for feedback on certain parts of the play. The players should not see each other's role cards. Introduce the role-play and indicate its function in the learning, i.e. why you are doing it. Monitor the role-play and only step in if things go badly wrong, e.g. when a pupil is getting embarrassed. Afterwards, *debrief* the pupils so that they are no longer 'in role'. This is important to avoid confusion between a person's real life situation and the one they were playing in role. Ensure that the role-play is analysed and related to the intended learning outcomes.

Advantages of role-play

- It is good for addressing emotive issues.
- It ensures a high degree of pupil participation.
- It is realistic.

- It arouses emotions and enables pupils to teach their peers about their feelings in their roles rather than the teacher telling them.

Disadvantages of role-play

- It can be unsettling, especially for the shy pupils.
- It needs careful preparation.
- It needs careful management.
- It needs thorough debriefing.
- It can be time consuming.

ASSIGNMENT

This strategy provides an opportunity for pupils to work on their own, hence to work independently. The pupils are given a topic for in-depth analysis. Individually, the pupils do research and then make a report, either in writing or verbally.

Advantages of assignments

- They promote independent learning.
- Pupils feel in control of their own learning.
- They can be highly motivating.
- They enhance study and writing skills.
- They are cross-curricular, i.e. the skilled learned can be applied in other subjects and daily life.

Disadvantages of assignments

- They may be time-consuming.
- Some pupils may need a lot of attention.
- Resources need to be made available.

Basic Principles and Theories of Teaching And Learning Process

There are many different theories of how people learn. What follows is a variety of them, and itis useful to consider their application to how your students learn and also how you teach in educational programmes. It is interesting to think about your own particular way of learning and to recognize that everyone does not learn the way you do. Learning is conceived as a relatively permanent change in behaviour with behaviour including both observable activity and internal processes such as thinking, attitudes and emotions. It is clear that motivation is included in this definition of learning. Learning might not manifest itself in observable behaviour until sometime after the educational program has taken place.

SENSORY STIMULATION THEORY

Traditional sensory stimulation theory has as its basic premise that effective learning occurs when the senses are stimulated. Research that found that the vast majority of knowledge held by adults (75%) is learned through seeing. Hearing is the next most effective (about 13%) and the other senses - touch, smell and taste - account for 12% of what we know. By stimulating the senses, especially the visual sense, learning can be enhanced. However, this theory says that if multi-senses are stimulated, greater learning takes place. Stimulation through the senses is achieved through a greater

variety of colours, volume levels, strong statements, facts presented visually, use of a variety of techniques and media.

REINFORCEMENT THEORY

This theory was developed by the behaviourist school of psychology, notably by B.F. Skinner. Skinner believed that behaviour is a function of its consequences. The learner will repeat the desired behaviour if positive reinforcement (a pleasant consequence) follows the behaviour. Positive reinforcement, or 'rewards' can include verbal reinforcement such as 'that's great' or 'You're certainly on the right track' through to more tangible rewards such as a certificate at the end of the course or promotion to a higher level in an organization. Negative reinforcement also strengthens behaviour and refers to a situation when a negative condition is stopped or avoided as a consequence of the behaviour. Punishment, on the other hand, weakens behaviour because a negative condition is introduced or experienced as a consequence of the behaviour and teaches the individual not to repeat the behaviour which was negatively reinforced. Punishment creates a set of conditions which are designed to eliminate behaviour. It is widely used in everyday life although it only works for a short time and often only when the punishing agency is present.

COGNITIVE-GESTALT APPROACHES

The emphasis here is on the importance of experience, meaning, problem-solving and the development of insights.

This theory has developed the concept that individuals have different needs and concerns at different times, and that they have subjective interpretations in different contexts.

HOLISTIC LEARNING THEORY

The basic premise of this theory is that the 'individual personality consists of many elements specifically the intellect, emotions, the body impulse (or desire), intuition and imagination' that all require activation if learning is to be effective.

FACILITATION THEORY (THE HUMANIST APPROACH)

Carl Rogers and others have developed the theory of facilitative learning. The basic premise of this theory is that learning will occur by the educator acting as a facilitator, that is by establishing an atmosphere in which learners feel comfortable to consider new ideas and are not threatened by external factors.

Other characteristics of this theory include:

- a belief that human beings have a natural eagerness to learn
- there is some resistance to, and unpleasant consequences of, giving up what is currently held to be true
- the most significant learning involves changing one's concept of oneself

Facilitative teachers are:

- less protective of their constructs and beliefs than other teachers
- more able to listen to learners, especially to their feelings
- inclined to pay as much attention to their relationship with learners as to the content of the course
- apt to accept feedback, both positive and negative and to use it as constructive insight into themselves and their behaviour

Learners:

- are encouraged to take responsibility for their own learning
- provide much of the input for the learning which occurs through their insights and experiences are encouraged to consider that the most valuable evaluation is self-evaluation and that learning needs to focus on factors that contribute to solving significant problems or achieving significant results

EXPERIENTIAL LEARNING

Kolb proposed a four-stage learning process with a model that is often referred to in describing experiential learning. The process can begin at any of the stages and is continuous, i.e. there is no limit to the number of cycles you can make in a learning situation. This theory asserts that without reflection we would simply continue to repeat our mistakes.

According to the ‘experiential learning cycle’ model, learning is:

- through concrete experience
- through observation and reflection
- through abstract conceptualization
- through active experimentation

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UNIT II

Learning objectives:

Having gone through this unit, students should be able to

- State the components of the curriculum.
- Define the word syllabus.
- Discuss the importance of the syllabus.

Teaching Subject Curriculum: Definitions and Components of the Curriculum – Developing the Content

In Zambia, planning to teach is done at various levels. At national level, planning is reflected in the statement of the *aims* of the educational system both in the **curriculum** and the **geography syllabus.** These two documents are prepared by the government through the Ministry of Education (MOE) at the Curriculum Development Centre. Aims formulated at national level affect all schools and colleges and are general goals. At classroom level, planned education takes place through the preparation of schemes of work and lesson plans by heads of departments and individual geography teachers who formulate specific teaching-learning objectives based on the topics from the syllabus.

In its broadest sense, a curriculum is a way in which *society* tries to meet its educational goals. To meet theoretical knowledge, the curriculum provides for time tabled subjects that society feels are required for the development of the nation at that particular time. The Zambian educational goal in

this area is "*to promote extensive knowledge, exact skills and accurate understanding of chosen areas in language, mathematics, science and technology, the social sciences, practical subjects and the arts*" (CDC, 2002). Pursuing morally unobjectionable behaviour is catered for by the '*hidden' curriculum*, where the children learn aspects of behaviour sub-consciously. The pupils are also involved in out-of-class activities, such as sports, games, clubs and recreation, called *co-curricular* rather than extra-curricular activities.

Major Considerations in Curriculum Formulation

Aims and Objectives

The aims and objectives of a curriculum should take into account the aspirations of society. They should be based on what society wants to achieve at any given point in time. Therefore, the subjects to be included in the curriculum will be chosen on the merit of their relevance to society's aspirations. It is clearly imperative that preparation of the curriculum should court broad-based participation of the country's population. National debates are necessary before the curriculum can be adopted as representing the aspirations of society.

Learning Experiences

These, as we shall see later, are the things teachers do during the course of a lesson to bring about learning and those

things pupils do in order to learn. The structure of the learning experiences depends on:

- The nature of the learner.
- The resources available to the teacher and the learner.
- The knowledge and skills of the teacher.

The Content of the Discipline

When a subject like geography has been selected for inclusion in the curriculum, the question that arises is, 'what should be selected from the total content of geography as a discipline to be taught in our schools?' This becomes a matter for the geography syllabus. Not all geography is relevant to Zambia. Therefore, there is need to only include in the geography syllabus topics that are relevant and meaningful to the Zambian situation. Content is important only in so far as it helps to bring about intended outcomes.

Evaluation

The curriculum should provide for an evaluative structure. Evaluation involves three considerations:

- Evaluating pupil's learning.
- Evaluating teacher's teaching.
- Evaluating the curriculum in action.

The Zambian High School Geography Syllabus

A syllabus is your guide to a course and what will be expected of you in the course. Generally, it will include course policies, rules and regulations, required texts, and a

schedule of assignments. A syllabus can tell you nearly everything you need to know about how a course will be run and what will be expected of you.

A syllabus is further defined as a list of topics which are to be included in a subject. Therefore, a geography syllabus is made up of a list of topics, which are deemed to be *relevant* to the kind of geography the Zambian people aspire to teach in Zambian schools. It shows the aims and objectives, the learning experiences, the content and how evaluation will be done.

The syllabus is drawn from the curriculum. This is done by a group of professionals who are experts in the field of geography. The group may include teachers, lecturers, inspectors of schools (now called education standards officers, or ESOs), subject specialists from Curriculum Development Centre (CDC), and examiners from the Examinations Council of Zambia (ECZ) and policy makers from the Ministry of Education (Moe).

The new high school geography syllabus for Zambia is a revised version of the old geography syllabus for senior secondary school which had been in place since 1964. The new syllabus was approved in 2002 and was implemented in 2004. Commenting on the circumstances that led to the revision of the syllabus, the then Permanent Secretary for the MoE, Dr Sichalwe Kasanda, said, “the review of the syllabus was necessitated by the need to improve the quality of

education at high school level as stipulated in the national policy document 'Educating Our Future – 1996' … and also to address issues of national concern such as environmental education, gender and equity, health education and HIV/Aids, reproductive health, population education …" (CDC, 2002).

Major Changes in The High School Geography Syllabus

(a) Changes in content

The major changes in the content are doing away with topics in regional geography which were viewed as being alien to Zambian pupils. Thus, the regional geography of North America and Western Europe were omitted. Instead, topics related to the regional geography of the 'home' area, Zambia, and the southern Africa sub-region was incorporated. The areas of study include COMESA/SADC countries such as Angola, Kenya, Malawi, South Africa, Democratic Republic of Congo (DRC) and Zimbabwe. In addition, the new syllabus addresses population, settlement, natural and environmental issues, and the possible solutions to the problems they pose. Also removed from the syllabus are physical geography topics like glaciations, wave action, and desert landforms, which cover landforms that are not found in Zambia or the pupils' immediate neighbourhood. An attempt, therefore, has been made to include only those topics, which focus on events currently evolving in Africa south of the Sahara,

which have greatly affected the southern Africa sub-region.

(b) *Changes in methodology*

The traditional method of teaching and learning geography in the classroom has been complemented by the inclusion of fieldwork in the syllabus. This is compulsory to all pupils taking geography. Fieldwork allows pupils to have *real life encounter* with geographical phenomena. This encourages pupils to think logically, interpret and evaluate statistical data, graphs and tables. The theoretical knowledge and skills learnt in class are put into practice during fieldwork.

(c) *Changes in evaluation*

Up to now, the new syllabus has fully localised the examinations which at high school level were previously set by the University of Cambridge Local Examinations Syndicate in the UK. The examinations are now handled by the Examinations Council of Zambia (ECZ). The school certificate geography examination still has two papers, Paper 1 and Paper 2, but the format has changed substantially to tally with the changes in the content. Paper 1 still has 50 multiple choice questions and has three section, A, B, and C. Section A has 12 questions based on Map work, Section B has 20 questions on Elements of Physical Geography while Section C has 18 questions on

Elements of Human Geography. The paper carries 40% of the total marks.

The major changes are in Paper 2 which previously had a section (A) on Zambia, Malawi and Zimbabwe, with a few more questions covering other parts of Africa, a section (B) on Western Europe and another section (C) on North America. In the new format, the paper still has 12 questions in 3 sections and the candidates are still supposed to answer 4 questions. However, Section A is now Zambia, Section B is the southern Africa sub-region, and Section C is settlements and population studies, with reference to Zambia and the sub-region. The candidates are supposed to answer one question from Section A, one from Section B, one from Section C and the fourth from anyone of the three sections. The paper carries 48% of the total marks.

Before the candidates sit for the school certificate examinations, they are required to write a fieldwork report. This carries 12% of the total marks.

IMPORTANCE AND USE OF THE SYLLABI

Three major purposes that a syllabus should serve are:

- Syllabus as a contract
- Syllabus as a permanent record
- Syllabus as a learning tool

Syllabus as a contract

- Sets forth what is expected to happen during the semester
- Delineates the responsibilities of students and of the instructor
- Describes appropriate procedures and course policies

Syllabus as a permanent record

- Contains information useful for evaluation of instructors, courses, and programs
- Documents what was covered in a course, at what level, and for what kind of credit (useful in course equivalency transfer situations, accreditation procedures, and articulation)

Content required for a syllabus to be useful as a permanent record

Subject name, time allocation

- Name, title, and rank of the teacher(s)
- Pre- or co-requisites
- Required texts and other materials
- Course objectives (linked to professional standards if appropriate)
- Description of course content
- Description of assessment procedures

Syllabus as a learning tool

Helps students become more effective learners in the course to:

- Inform students of the instructor's beliefs about teaching, learning, and the content area
- Focus on students and what they need to be effective learners
- Place the course in context (how it fits in the curriculum, how it relates to students' lives)

Content required for a syllabus that serves as a learning tool for students

- Instructor's philosophy about the course content, teaching and learning
- Relevance and importance of the course to students

COMPONENTS OF SUBJECTS SYLLABUS

- Basic Information and key competencies
- Course Description
- Learning outcomes/goals/objectives
- Materials
- Knowledge skills and values

CONDUCTING A FIELD STUDY IN GEOGRAPHY

Fieldwork is a method of *planned discovery*, where the teacher prepares situations from which his pupils learn facts and ideas for themselves. It is different from *research* because in fieldwork, pupils only find out what their teachers already

know. It can be done anywhere, in any kind of landscape, or townscape, and does not necessarily have to involve long journeys, or large amounts of time to make it worthwhile.

A *field trip* is a journey by a group of people (teacher and pupils) to a place away from their normal environment (the classroom or school). The purpose of the trip is usually *observation* for education, non-experimental research or to provide students with experiences outside their everyday activities. The aim of this study is to observe the subject in its natural state and possibly collect samples. Field trips are normally one day long, but they can be longer. Such excursions usually consist of visits to local landmarks and educational institutions, like zoos, parks, museums, and play facilities.

Social studies/Geography is not confined within the walls of a building or within the cover of a textbook. Through fieldwork, the pupils gain a realization that the entire world and all of human activities contribute to their *education*.

Philosophies Informing Learning by Fieldwork

Teaching through fieldwork is informed by the philosophies of *scientific empiricism* and *pragmatism*.

(a) *Scientific empiricism*

In philosophy generally, *empiricism*is an *epistemological* concept, or a theory of knowledge, emphasizing the role of *experience* and *evidence*, especially *sensory perception*, in the formation of ideas, while

discounting the notion of *innate ideas*. In the philosophy of science, *empiricism* is a theory of knowledge which emphasizes those aspects of scientific knowledge that are closely related to evidence, especially as formed through deliberate experimental arrangements. It is a fundamental requirement of scientific method that all hypotheses and theories must be tested against *observations* of the natural world, rather than resting solely on *a priori reasoning*, *intuition* or *revelation*. Hence, science is considered to be *methodologically* empirical in nature.

*Empiricism*is a theory which holds that the origin of all knowledge is sense experience. The term also refers to the method of observation and experiment used in the natural sciences. Often, empiricism is contrasted with *rationalism*, a theory which holds that the mind may apprehend some truths directly, without requiring the medium of the senses.

(b) *Pragmatism*

Pragmatism considers practical consequences or real effects to be vital components of both meaning and truth. It was founded by C. S. Peirce and William James (American philosophers) and marked by the doctrines that the meaning of conceptions is to be sought in their practical bearings, that the function of thought is to guide action, and that truth is preeminently to be tested by the practical consequences of beliefOne of the central tenets of pragmatism is, therefore, the *primacy of practice.*

Rationale for fieldwork

Learning by fieldwork or *direct observation* has the following advantages:

- An event, institution, facility, or process can be studied in its natural setting, thereby providing a richer understanding of the subject. For example, a class that visits a factory is likely to better understand the nature of the plant, problems, and successes after directly observing the products, technologies, employees, and processes, than by relying solely on documents or other secondary sources.
- It may reveal conditions, problems, or patterns many secondary sources may be unaware of or unable to describe adequately. The pupils therefore appreciate the extent and gravity of the issues under study.
- It makes pupils realize that the problems and issue they discuss in class about their communities are real and affect people on a daily basis, e.g. poverty and unemployment.
- It helps pupils to become responsible and make good suggestions aimed at solving the problems they have been exposed to.
- It influences the pupils' attitudes and behaviours where the aim of teaching is attitude and behaviour change, e.g.

Issues of the environment, reproductive health, gender, HIV/AIDS and human rights.

- It enhances *reflective social inquiry* in the pupils which trains them for democratic living.
- It stimulates and motivates pupils' learning because children by nature want to find out about things that surround them.
- It is one of the ways of sensitising pupils about significant problems and issues of their communities.
- It helps learners to become active seekers of knowledge instead of being passive recipients of knowledge.

Bottlenecks (Challenges) of Learning by Fieldwork

Some of the difficulties of learning by fieldwork are:

- Direct observation is susceptible to observer bias. The very act of observation also can affect the behavior being studied.
- Financial constraints
- Transport problems
- Lack of corporation from other teachers
- The head teacher may not sanction the trip
- Parents may be apprehensive about the safety of the field trip.
- The impact of lessons missed by teachers supervising fieldwork,
- large classes which are not conducive for field study

Importance of Field Work

- *It provides a direct learning experience* in which the pupil is the active agent. By working out the geography of his area, the pupil learns how the geography of other regions has been gradually worked out.
- *It encourages the spirit of exploration* – a study of the local community helps to keep alive the pupil's spirit of exploration and investigation. Once the pupil discovers how interesting exploration is, he is likely to continue to explore, even after school life.
- *It aids visualization* – concrete imagery resulting from fieldwork affords experiences for building comparisons of local conditions with conditions elsewhere in the country and the world, which the pupil reads about in text books but cannot observe directly.
- *It assists comprehension* – fieldwork broadens the pupils' environment, their background and helps them to build meaning of things that have not been part of their environment. Fieldwork makes the obvious meaningful.
- *It furthers understanding of the community* – the study of the local community contributes to the development of an understanding of their own community and its problems, the individuality (uniqueness) of the community, interdependence of communities, etc.

- *It aids map interpretation* – by giving meaning to map symbols.
- *It improves community relations* – a well organised and executed community study helps to improve relations between school and community.
- *It helps to build social relations within the class.*
- *It forwards personal development* – if the teacher carefully plans and guides the excursion, the children should learn the necessity of planning their work if a project is to be carried out successfully in a addition to the textbook.

Preparation for Fieldwork

To secure maximum results, the teacher must make detailed and careful preparations for the field trip. Preparation includes: teacher preparing himself, planning the administrative details, preparing the class, conducting the trip and, finally, collating the information collected and writing a report.

The Teacher's Preparation

- ✓ In selecting the trip, the teacher needs to consider the age and maturity of the pupils and also what he wishes the pupils to learn.
- ✓ The trip should not be so long as to exhaust both the teacher and the pupils, nor should too much be attempted.

- ✓ The teacher must consider the cost, the means of transport, size of the group, willingness of the head teacher and fellow teachers to cooperate and the attitude of the parents.
- ✓ Getting permission of the manager or owner of the premises to be visited
- ✓ Preparing clear instructions and explanations for the whole class to make observation by the pupils easier

Personal Preparation of the Teacher

- ✓ ***Prior visit*** (reconnaissance trip) - In order to familiarize himself with the place to be visited, the teacher should take a reconnaissance visit to the study area.
    - During this trip, he should make notes on the natural and cultural features to be observed during the study in the order that they will be seen.
    - If the group will visit a factory where a guide will be used he should have a conference with the guide. This is to acquaint him with the interests of the pupils and the questions they are likely to ask.
- ✓ ***Study instruments*** - After the prior visit, the teacher needs to make a definite *lesson plan* for the excursion and prepare a *guide* or *worksheet* for the use of the class. In more detailed studies, a *questionnaire* may be

made. A *map* of the study area to accompany the guide sheet is a requisite. He should also make a tentative plan for later analyzing the data.

Preparation of the Class

- ✓ The class's interest should be stimulated and aroused about the need for the field trip, through class discussions, by asking questions that arouse curiosity or which challenge.
- ✓ Through these means, the trip may be suggested as a means of securing more information, or for clearing up points that bother them. Our trips have definite purposes growing out of school work, such as finding answers to these questions: How is land used in the vicinity of our school? From what places do our fruits and vegetables come?
- ✓ Through teacher-pupil planning, the following are set up:
  - The specific problem
  - Specific aims and objectives
  - Rationale of the study
  - The method of study
  - How the information will be analysed

The administrative organization of the class is also considered:

- Divide the class into groups.

- Each group to have a leader who is also the spokesperson of the group
- Assign responsibilities to group members.
- Emphasise need for good behaviour, that the trip is a privilege. Let groups establish standards of behaviour.
- Go over the route or study area with the class.
- Discuss how and why the trip should be collated.

During the Trip

- ✓ The teacher should be in control at all times. However, he should not be fussy over minor matters.
- ✓ The teacher should keep in touch with the entire group, making necessary explanations, calling attention to pertinent points, and asking questions.

Follow-up Activities

- ✓ Give time for thorough discussion of the trip, for verifying the information, and seeking additional for questions that were not satisfactorily answered.
- ✓ The class should also evaluate the trip in terms of (a) information gained, and (b) social value.
- ✓ The teacher can evaluate the trip in terms of motivation of other activities, the amount of learning and understanding that has taken place to make the trip worth the time involved, how the plans could be improved.

COLLECTING DATA FROM THE FIELD

Techniques of Data Collection

There are many techniques that can be used to collect data in the field. The ones that will be discussed here are some commonly used techniques but the list is not by any means exhaustive.

1. **Questionnaires**

A **questionnaire** is a *research* instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. The questionnaire was invented by Sir Francis Galton. Questionnaires have advantages over some other types of *surveys* in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data. However, such standardized answers may frustrate users. Questionnaires are also sharply limited by the fact that respondents must be able to read the questions and respond to them. Thus, for some demographic groups conducting a survey by questionnaire may not be practical.

As a type of survey, questionnaires also have many of the same problems relating to question construction and wording that exist in other types of *opinion polls*. The steps required to design and administer a questionnaire include:

1. Defining the Objectives of the survey
2. Determining the Sampling Group

3. Writing the Questionnaire
4. Administering the Questionnaire
5. Interpretation of the Results

This document will concentrate on how to formulate objectives and write the questionnaire. Before these steps are examined in detail, it is good to consider what questionnaires are good at measuring and when it is appropriate to use questionnaires.

What can questionnaires measure?

Questionnaires are quite flexible in what they can measure, however they are not equally suited to measuring all types of data. We can classify data in two ways, subjective vs. objective and quantitative vs. qualitative. When a questionnaire is administered, the researchers control over the environment will be somewhat limited. This is why questionnaires are inexpensive to administer. This loss of control means the validity of the results are more reliant on the honesty of the respondent. Consequently, it is more difficult to claim complete objectivity with questionnaire data then with results of a tightly controlled lab test. For example, if a group of participants are asked on a questionnaire how long it took them to learn a particular function on a piece of software, it is likely that they will be biased towards themselves and answer, on average, with a lower than actual time. A more objective usability test of the same function with a similar group of participants may return a significantly higher learning time.

More elaborate questionnaire design or administration may provide slightly better objective data, but the cost of such a questionnaire can be much higher and offset their economic advantage. In general, questionnaires are better suited to gathering reliable subjective measures, such as user satisfaction, of the system or interface in question.

Questions may be designed to gather either qualitative or quantitative data. By their very nature, quantitative questions are more exact then qualitative. For example, the word "easy" and "difficult" can mean radically different things to different people. Any question must be carefully crafted, but in particular questions that assess a qualitative measure must be phrased to avoid ambiguity. Qualitative questions may also require more thought on the part of the participant and may cause them to become bored with the questionnaire sooner. In general, we can say that questionnaires can measure both qualitative and quantitative data well, but that qualitative questions require more care in design, administration, and interpretation.

When to use a questionnaire?

There is no all-encompassing rule for when to use a questionnaire. The choice will be made based on a variety of factors including the type of information to be gathered and the available resources for the experiment. A questionnaire should be considered in the following circumstances.

a. **When resources and money are limited.** A Questionnaire can be quite inexpensive to administer. Although preparation may be costly, any data collection scheme will have similar preparation expenses. The administration cost per person of a questionnaire can be as low as postage and a few photocopies. Time is also an important resource that questionnaires can maximize. If a questionnaire is self-administering, such as a e-mail questionnaire, potentially several thousand people could respond in a few days. It would be impossible to get a similar number of usability tests completed in the same short time.

b. **When it is necessary to protect the privacy of the participants.** Questionnaires are easy to administer confidentially. Often confidentiality is the necessary to ensure participants will respond honestly if at all. Examples of such cases would include studies that need to ask embarrassing questions about private or personal behaviour.

c. **When corroborating other findings.** In studies that have resources to pursue other data collection strategies, questionnaires can be a useful confirmation tools. More costly schemes may turn up interesting trends, but occasionally there will not be resources to run these other tests on large enough participant groups

to make the results statistically significant. A follow-up large scale questionnaire may be necessary to corroborate these earlier results.

Questionnaire construction

A questionnaire is a series of questions asked to individuals to obtain statistically useful information about a given topic. When properly constructed and responsibly administered, questionnaires become a vital instrument by which statements can be made about specific groups or people or entire populations. Questionnaires are frequently used in quantitative marketing research and social research. They are a valuable method of collecting a wide range of information from a large number of individuals, often referred to as respondents. Good **questionnaire construction** is critical to the success of a survey. Inappropriate questions, incorrect ordering of questions, incorrect scaling, or bad questionnaire format can make the survey valueless. A useful method for checking a questionnaire and making sure it is accurately capturing the intended information is to pretest among a smaller subset of target respondents.

Questionnaire construction issues

- The research objectives and frame of reference should be defined beforehand, including the questionnaire's context of time, budget, manpower, intrusion and privacy.

- The nature of the expected responses should be defined and retained for interpretation of the responses, be it preferences (of products or services), facts, beliefs, feelings, descriptions of past behavior, or standards of action.
- Unneeded questions are an expense to the researcher and an unwelcome imposition on the respondents. All questions should contribute to the objective(s) of the research.
- The topics should fit the respondents' frame of reference. Their background may affect their interpretation of the questions. Respondents should have enough information or expertise to answer the questions truthfully.
- The type of scale, index, or typology to be used shall be determined.
- The types of questions (closed, multiple-choice, open) should fit the statistical data analysis techniques available.
- Questions and prepared responses to choose from should be neutral as to intended outcome. A biased question or questionnaire encourages respondents to answer one way rather than another. Even questions without bias may leave respondents with expectations.
- The order or "natural" grouping of questions is often relevant. Prior previous questions may bias later questions.

- The wording should be kept simple: no technical or specialized words.
- The meaning should be clear. Ambiguous words, equivocal sentence structures and negatives may cause misunderstanding, possibly invalidating questionnaire results. Double negatives should be reworded as positives.
- If a survey question actually contains more than one issue, the researcher will not know which one the respondent is answering. Care should be taken to ask one question at a time.
- The list of possible responses should be inclusive. Respondents should not find themselves with no category that fits their situation. One solution is to use a final category for "other _____".
- The possible responses should be mutually exclusive. Categories should not overlap. Respondents should not find themselves in more than one category, for example in both the "married" category and the "single" category - there may be need for a "not living with spouse" category.
- Writing style should be conversational, yet concise and accurate and appropriate to the target audience.
- Most people will not answer personal or intimate questions.
- "Loaded" questions evoke emotional responses and may skew results.

- Presentation of the questions on the page (or computer screen) and use of white space, colors, pictures, charts, or other graphics may affect respondent's interest or distract from the questions.
- Numbering of questions may be helpful.
- Questionnaires can be administered by research staff, by volunteers or self-administered by the respondents. Clear, detailed instructions are needed in either case, matching the needs of each audience.

Types of questions

1. **Contingency questions** - A question that is **answered** only if the respondent **gives** a particular response to a previous question. This avoids asking questions of people that do not apply to them (for example, asking men if they have ever been pregnant).
2. **Matrix questions** – A matrix question is a set or series of questions that share answer choices. This is an efficient use of page space and respondents' time. Matrix questions also provide (if you choose) introductory text for the question series or instructions for completing the set of questions. A matrix question is arranged like a table, where the questions are listed down the left, and answer choices across the top. There are three kinds of matrix questions: **Matrix - one answer per row (button)** restricts the participant to one response per question, while

Matrix - multiple answers per row (check) lets the participant select all answer choices that apply for each question in the matrix. **Matrix - one answer per row (menu)** restricts the participant to one response per question and displays the answers in a drop-down menu.

3. **Closed ended questions** - Respondents' answers are limited to a fixed set of responses. Most scales are closed ended. Other types of closed ended questions include:
   - **Yes/no questions** - The respondent answers with a "yes" or a "no".
   - **Multiple choice** - The respondent has several option from which to choose. Multiple-choice items consist of a stem and a set of options. The *stem* is the beginning part of the item that presents the item as a problem to be solved, a question asked of the respondent, or an incomplete statement to be completed, as well as any other relevant information. The options are the possible answers that the examinee can choose from, with the correct answer called the *key* and the incorrect answers called *distractors*.

     In the equation $2x + 3 = 4$, solve for x.

     A. 4

     B. 10

     C. **0.5**

     D. 1.5

     E. 8

- **Scaled questions** - Responses are graded on a continuum (example: rate the appearance of the product on a scale from 1 to 10, with 10 being the most preferred appearance). Examples of types of scales include the Likert scale, semantic differential scale, and rank-order scale.

  *Likert scale*The format of a typical five-level Likert item is:

  - Strongly disagree
  - Disagree
  - Neither agree nor disagree
  - Agree
  - Strongly agree

  Semantic differential scale The respondent is asked to choose where his or her position lies, on a scale between two bipolar words, or a range of words or numbers ranging across a bipolar position (for example, `Excellent', `Good', Adequate', `Poor', `Inadequate'; or from 5 (powerful) down to 1 (weak).

  Rank-order scale - a respondent is presented with several items simultaneously and asked to rank them (example : Rate the following advertisements from 1 to 10.). This is an ordinal level technique.

4. **Open ended questions** - No options or predefined categories are suggested. The respondent supplies their

own answer without being constrained by a fixed set of possible responses. Examples of types of open ended questions include:

- **Completely unstructured** - For example, “What is your opinion of questionnaires?”
- **Word association** - Words are presented and the respondent mentions the first word that comes to mind.
- **Sentence completion** - Respondents complete an incomplete sentence. For example, “The most important consideration in my decision to buy a new house is . . .”
- **Story completion** - Respondents complete an incomplete story.
- **Picture completion** - Respondents fill in an empty conversation balloon.
- **Thematic apperception test** - Respondents explain a picture or make up a story about what they think is happening in the picture

A closed-ended question is a form of question, which normally can be answered with a simple "yes/no" *dichotomous question*, a specific simple piece of information, or a selection from multiple choices (multiple-choice question), if one excludes such non-answer responses as dodging a question, refusing or declaring an inability to answer, etc..

Examples:

- Do you know your weight? -- Yes

- What is your weight? -- 167 lbs

An open-ended question is a form of question, opposite to the closed-ended one, which cannot be answered with a simple "yes/no" or a specific piece of information.

- What do you think about your weight?

Question sequence

- Questions should flow logically from one to the next.
- The researcher must ensure that the answer to a question is not influenced by previous questions.
- Questions should flow from the more general to the more specific.
- Questions should flow from the least sensitive to the most sensitive.
- Questions should flow from factual and behavioural questions to attitudinal and opinion questions.
- Questions should flow from unaided to aided questions
- According to the three stage-theory (also called the sandwich theory), initial questions should be screening and rapport questions. Then in the second stage you ask all the product specific questions. In the last stage you ask demographic questions.

What kind of questions do we ask?

In general, there are two types of questions one will ask, **open format or closed format.**

Open format questions are those that ask for unprompted opinions. In other words, there are no predetermined set of

responses, and the participant is free to answer however he chooses. Open format questions are good for soliciting subjective data or when the range of responses is not tightly defined. An obvious advantage is that the variety of responses should be wider and more truly reflect the opinions of the respondents. This increases the likelihood of you receiving unexpected and insightful suggestions, for it is impossible to predict the full range of opinion. It is common for a questionnaire to end with and open format question asking the respondent for her unabashed ideas for changes or improvements.

Open format questions have several disadvantages. First, their very nature requires them to be read individually. There is no way to automatically tabulate or perform statistical analysis on them. This is obviously more costly in both time and money, and may not be practical for lower budget or time sensitive evaluations. They are also open to the influence of the reader, for no two people will interpret an answer in precisely the same way. This conflict can be eliminated by using a single reader, but a large number of responses can make this impossible. Finally, open format questions require more thought and time on the part of the respondent.

Whenever more is asked of the respondent, the chance of tiring or boring the respondent increases. Whether your questions are open or closed format, there are several points

that must by considered when writing and interpreting questionnaires:

1. **Clarity:** This is probably the area that causes the greatest source of mistakes in questionnaires. Questions must be clear, succinct, and unambiguous. The goal is to eliminate the chance that the question will mean different things to different people. If the designers fail to do this, then essentially participants will be answering different questions. To this end, it is best to phrase your questions empirically if possible and to avoid the use of necessary adjectives. For example, it asking a question about frequency, rather than supplying choices that are open to interpretation such as:
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

It is better to quantify the choices, such as:

6. Every Day or More
7. 2-6 Times a Week
8. About Once a Week
9. About Once a Month
10. Never

There are other more subtle aspects to consider such as language and culture. Avoid the use of colloquial or ethnic expressions that might not be equally used by all participants. Technical terms that assume a certain background should also be avoided.

2. **Leading Questions:** A leading question is one that forces or implies a certain type of answer. It is easy to make this mistake not in the question, but in the choice of answers. A closed format question must supply answers that not only cover the whole range of responses, but that are also equally distributed throughout the range. All answers should be equally likely. An obvious, nearly comical, example would be a question that supplied these answer choices:

    1. Superb
    2. Excellent
    3. Great
    4. Good
    5. Fair
    6. Not so Great

    A less blatant example would be a Yes/No question that asked:

    7. Is this the best CAD interface you have every used?

    In this case, even if the participant loved the interface, but had an favourite that was preferred, she would be

forced to answer No. Clearly, the negative response covers too wide a range of opinions. A better way would be to ask the same question but supply the following choices:

8. Totally Agree
9. Partially Agree
10. Neither Agree or Disagree
11. Partially Disagree
12. Totally Agree

This example is also poor in the way it asks the question. Its choice of words makes it a leading question and a good example for the next section on phrasing.

3. **Phrasing:** Most adjectives, verbs, and nouns in English have either a positive or negative connotation. Two words may have equivalent meaning, yet one may be a compliment and the other an insult. Consider the two words "child-like" and "childish", which have virtually identical meaning. Child-like is an affectionate term that can be applied to both men and women, and young and old, yet no one wishes to be thought of as childish.

   In the above example of "Is this the best CAD interface you have every used?" clearly "best" has strong overtones that deny the participant an objective environment to consider the interface. The signal sent

the reader is that the designers surely think it is the best interface, and so should everyone else. Though this may seem like an extreme example, this kind of superlative question is common practice.

A more subtle, but no less troublesome, example can be made with verbs that have neither strong negative or positive overtones. Consider the following two questions:

1. Do you agree with the Governor's plan to oppose increased development of wetlands?
2. Do you agree with the Governor's plan to support curtailed development of wetlands?

They both ask the same thing, but will likely produce different data. One asks in a positive way, and the other in a negative. It is impossible to predict how the outcomes will vary, so one method to counter this is to be aware of different ways to word questions and provide a mix in your questionnaire. If the participant pool is very large, several versions may be prepared and distributed to cancel out these effects.

4. **Embarrassing Questions:** Embarrassing questions dealing with personal or private matters should be avoided. Your data is only as good as the trust and care that your respondents give you. If you make them feel

uncomfortable, you will lose their trust. Do not ask embarrassing questions.

5. **Hypothetical Questions** Hypothetical questions are based, at best, on conjecture and, at worst, on fantasy. A simple example is a question such as:

   If you were governor, what would you do to stop crime?

   This force the respondent to give thought to something he may have never considered. This does not produce clear and consistent data representing real opinion. Do not ask hypothetical questions.

6. **Prestige Bias**

   Prestige bias is the tendency for respondents to answer in a way that makes them feel better. People may not lie directly, but may try to put a better light on themselves. For example, it is not uncommon for people to respond to a political opinion poll by saying they support Good Samaritan social programmes, such as food stamps, but then go on to vote for candidates who oppose those very programs. Data from other questions, such as those that ask how long it takes to learn an interface, must be viewed with a little scepticism. People tend to say they are faster learners than they are.

There is little that can be done to prevent prestige bias. Sometimes there just is no way to phrase a question so that all the answers are noble. The best means to deal with prestige bias is to make the questionnaire as private as possible. Telephone interviews are better than person-to-person interviews, and written questionnaires mailed to participants are even better still. The farther away the critical eye of the researcher is, the more honest the answers.

INTERVIEWS

The interview is a method for discovering facts and opinions held by respondents. It is usually done by one interviewer speaking to one respondent at a time.

Benefits

Because of the one-to-one nature of the interview, what is talked about can address directly the respondent's individual concerns. Mistakes and misunderstandings can be quickly identified and cleared up.

Method

Planning

Consider the information you require, and prepare an 'interview schedule'. This is a set of topics that you need to obtain that information. Decide on the order in which you will cover the topics. For each topic, ensure that you have an 'ask able prompt' (how you will ask for the information you need) and an explanation of each topic (in case the respondent does

not understand the 'ask able prompt'). If you want to do a highly structured interview, each topic will be broken down into a series of sub-topics, each with their own 'ask able prompt'.

The ideal interview situation is composed of an interviewer and a respondent. Several respondents may be interviewed simultaneously. If there is more than one interviewer, there should be one principal interviewer or chairperson. There should never be more interviewers than there are respondents.

Decide how you will record the respondent's responses. In order of preference, these are: your memory, concurrent written notes by yourself, tape recorder, and video.

Decide how you will present the interview results (make an indicative table of contents), and check with the intended audience that this is useful for them.

Do at least one trial run of the interview. Make sure you know the interview schedule extremely well (by preference, commit to memory.)

Running

There are typically four phases in the interview:

1. The "nurturing" phase. This is the initial warm-up to the interview when the parties to the interview introduce themselves and talk briefly about neutral topics to establish themselves.

2. The "energising" phase. Here the area of discourse, and any existing problems are identified.
3. The "body" of the interview. This is the peak phase of activity, where the interviewer is continually probing, bringing out the 'askable prompts' in the predetermined order to understand the range of responses the respondents produce. It is important at this stage for the interviewer to remain analytical and neutral. If the interview is fairly free in structure, the respondent may direct the order of topics, and the interviewer should follow them. Otherwise the order of topics is at the interviewer's discretion. Before this phase ends, the interviewer should check whether all the topics have indeed been covered.
4. The "closing" phase. The interviewer should summarise what he has learnt from the interview, and ask the informant whether this is correct. The informant should be asked whether they thought the interview covered all the areas of concern, and whether there were issues which had not been touched upon. It is a good idea to spend a little time on how the informant felt about doing the interview, and whether there was anything that could be improved.

Reporting

The biggest danger in using interviews as methods of data gathering is the unstructured nature of the resulting data,

which is extremely easily misinterpreted or censored. The primary method of analysis that helps guard against censoring information that is difficult to handle or unexpected is to break up the text or notes from each respondent into a set of simple propositions, using the respondent's own words as much as possible. These propositions can then become the input to a content analysis activity. The analysis should fit into the indicative table of contents agreed beforehand with your target audience. Notes and transcripts etc. may be contained in an appendix or appended CDs/ diskettes/ tapes.

OBSERVATION

In an observation, the investigator simply observes and records what happens in the natural environment. As an eager tourist noted, "You can observe an awful lot just by watching." Yet there are important decisions to be made and subtle procedures to be followed. Observation can be both a *diagnostic tool*– to help understand what is going well and what is going wrong – and an ***illuminative tool***, when it is particularly useful in helping discover what individual organisations do and don't do, rather than what they say they are doing.

Types of observation

Direct (Overt) Observation

In overt observation**,** the subjects are aware that they are being studied; the research purpose is acknowledged. Milgram sometimes studied familiar strangers by taking

photographs of people at train stations, later showing them to commuters, and then asking them whom they recognized. From their responses, he determined that the typical commuter encountered four or five familiar strangers at the station compared with only one or two speaking acquaintances. The focal point here is that these commuters knew they were being observed and photographed. Milgram and the other researchers even stated their purpose. Hence, this investigation was an instance of overt observation.

Overt observation may not influence subjects at some distance or subjects who are sleeping, for example, but in other instances this research procedure could be disruptive. Commuters might alter their behavior to impress the observer, or they might avoid the observer, taking a different train. To deal with this problem, the investigator might spend time helping them become accustomed to his or her presence and the research procedure. After the subjects seem to be behaving naturally once again, the actual research begins.

From these observations, Milgram drew a conclusion about familiar strangers. When making a small request, such as asking the time of day, a person is more likely to ask a complete stranger than a familiar stranger--someone never spoken to but seen regularly for years. "Each of you is aware that a history of non-communication exists between you," he said, "and both of you have accepted this as the normal state."

Requesting even a small favor would disrupt this well-established, tacit agreement.

Indirect (Covert) Observation

To ensure that the subjects behave in a natural manner, the investigator sometimes uses covert observation**,** in which the individuals being studied do not know they are part of a research project. The investigator can mingle openly with the subjects and then make notes secretly or remain hidden in some way. Of course, this effort to hide one's work may restrict the range of observation. A question of research ethics emerges immediately. To what extent is a researcher justified in secretly studying commuters, coworkers, or even neighbors? The answer is complex, but it depends on the way in which the unsuspecting individuals are involved, the extent to which they may be affected, whether recordings are made, and so forth.

Participant Observation

Participant observation is a research method in which an investigator joins the people being studied and takes part in their activities, living with them for an extended period, if necessary.

Some years ago, a small religious group in Chicago believed that the world would be destroyed by a series of floods and earthquakes on December 21. They would be saved by flying saucers, they decided, if they followed appropriate rituals, such as removing all metal from their clothing,

remaining indoors, and reading the sacred writings. A team of psychologists and sociologists wanted to study them, but the cult did not permit outsiders to observe its activities. Thus, the investigators used their only recourse: They became cult members. Their research method was **participant observation**. These investigators used *covert* participant observation out of necessity. If they had used *overt* participant observation, they would have been banished from the premises as disbelievers. If they had not participated, they would not have gained access to the group's activities.

Non-participant Observation

This is research method where researchers do not engage in the daily activities of their subjects. They generally remain apart from the people they are. Stanley Milgram once observed crowds of pedestrians from a sixth-floor window. These people did not know they were being studied, and Milgram did not participate in their activities. His method was *covert* non-participant observation. Later, he stood in the street and openly made notes about the pedestrians: *overt* non-participant observation.

Selecting a Research Setting:

- Find appropriate site in which to conduct study
- The site should permit clear observation
- It should be accessible
- It must be detached enough to be objective

Gaining Access: How to get in the group you wish to study

- If formal, seek permission from the person in charge (the gatekeepers)
- Must vouch for research (assure the respondents)
- If public –no need to negotiate, but make those potentially involved aware
- Figure out ways to interact with people-"key informant": a highly regarded person who gets you in-know where to start in order to conduct study

Gathering Information

- Realize limitations
- Use recording devices to take down large amounts of information,
- Videography
- Tape recorder
- Notebook
- Memory
- In-depth/Intensive Interviews or Surveys
- Make complete descriptions
- include your feelings and ideas

FOCUS GROUPS

A focus group is an informal assembly of users whose opinions are requested about a specific topic. The goal is to elicit perceptions, feelings, attitudes, and ideas of participants about the topic. Focus groups are not generally appropriate for

evaluation; they can only assess what customers *say* they do and not the way customers actually operate the product. Since there are often major differences between what people say and what they do, direct observation of one user at a time always needs to be done to supplement focus groups.

Benefits

Individuals come together and express diverse views on the topic: useful not only to find the range of views, but also for the participants to learn from each other, and to generate a sense of social cohesion.

Method

Planning

The moderator should prepare a script or list of issues which need to be tackled. It is wise not to be too prescriptive, to allow spontaneity in the group. A focus group session should feel free-flowing and relatively unstructured. Focus groups often bring out users spontaneous reactions and ideas through the interaction between the participants. Meetings should last between 1 to 2 hours.

Try to avoid selecting all the participants from the same department or neighborhood. Diversity is useful. Usually about 6 to 12 users participate in any one focus group meeting session. A programme of focus group sessions may be planned to cover a wide range of responses.

A selection of users should be individually invited to each focus group session. The invitation should explain that this is to a focus group, and if necessary, a few words about what will be discussed and what the format of a focus group meeting is. Hospitality may be offered (e.g. tea or coffee).

A video, a short demonstration, or putting on the table examples of artifacts relevant to the focus group topic may be used to start the discussion.

Running

The session should be run by an experienced moderator who is responsible for maintaining the focus of the group on the issues of interest to the addressees of the focus group results. Moderators can gain experience from participating as delegates in other focus groups: no amount of reading is a substitute for experience.

It is usual to spend a few minutes of introduction time, going round the table. Participants may be given name tags or desk labels to assist in identifying who is who.

The purpose of focus groups is not consensus building - rather, it is to obtain a range of opinions from a representative set of target users about issues to hand. Each user's point of view is of interest and it is the moderator's task to encourage each user to express their unique points of view.

The end of a focus group may be wound up with a slight hint of formality, and the participants should be thanked for their time and showing their interest.

Reporting

Focus groups are mainly designed to obtain people's opinions and not to determine the exact strength of their opinions. Notice that focus group interviews do not generate quantitative information and the results strictly speaking should not be generalized or "projected" to a larger population although in fact they often are - hence the use of a programme of focus group sessions.

The results of focus groups can be used as a basis for generating hypotheses for further evaluation and user validation using both qualitative and quantitative methods, e.g. the results can assist in the development of questionnaires, surveys, and items for tests by identifying response categories and constructs that evaluators might not have otherwise considered. Focus groups can make questionnaires and other evaluation methods more language sensitive, because vocabulary that is common to the users can be discerned in the focus group interview and then incorporated into the measure.

BRAINSTORMING

Brain storming is one of the oldest known methods for generating group creativity. A group of people come together and focus on a problem or proposal. There are two phases of the activity. The first phase generates ideas, the second phase evaluates them. An experienced facilitator is useful.

Benefits

Although some studies have shown that individuals working alone can generate more and better ideas than when working as a group, the brainstorming activity enables everyone in the group to gain a better understanding of the problem space, and has the added benefit of creating a feeling of common ownership of results.

Method

Planning

Brainstorming is done with a group of people, which may be as small as two, but usually no larger than 12. One of the group should be nominated as facilitator. It is useful if the facilitator has had previous experience of brainstorming. The group should be assembled, and the facilitator should explain to the group: firstly the problem or idea to be explored; and secondly, the sequence of events that will take place during the method.

REFERENCES

Bass, R. (1993) *The Syllabus Builder: A Hypertext Resource for Teachers of Geography*. London: Routledge.

CDC (2013) *New Geography Syllabus*. Lusaka: Curriculum Development Center.

Grunert, J. (1997) *The course syllabus: A learning-centered approach*. Bolton:Anker Publishing Company.

UNIT III

Learning objectives:

Having gone through this unit, students should be able to

- Demonstrate how to develop schemes of work.
- State the importance of the schemes of work.
- Prepare a lesson plan.
- Explain ways of curbing indiscipline in class.

DEVELOPING SCHEMES OF WORK

A scheme of work is simply a list of topics to be covered over a period of time. It shows the pupils who will be taught, the strategies that the teacher will employ and what materials or resources will be used. In other words, a scheme of work shows what work will be done, for whom it will be done, and how it will be done for a period of time. It is a detailed breakdown of the syllabus in terms of lessons, weeks, terms and year for the purpose of orderly and systematic teaching. The scheme of work is derived from the Life Skills Education Syllabus. The scheme of work details how the Life Skills Education content for each class is to be covered on a weekly, termly and yearly basis.

At school level, it is incumbent upon the HOD to divide the syllabus into smaller units called weekly, monthly, or annual schemes of work. (The HOD may, however, delegate this task to any member of staff in the department).

A scheme of work has the following components:

- Week: This is the week of term in which a particular topic content is to be taught
- Lesson: Specific Lesson in the week in which a particular topic/sub-topic is to be taught.
- Topic/sub-topic: These are specific areas identified for study in the Life Skills Education syllabus. A sub topic is a sub division of topic for ease of study.
- Specific Objective: This refers to what the teacher intends to achieve by the end of the lesson. They must be SMART, that is

S - Specific M - Measurable A - Attainable/achievable R - Realistic T - Time bound

Objectives

These should point to the expected change of behaviour of the learner.

Teaching/Learning Experiences

The column clarifies the activities carried by the learner and the teacher for effective teaching and learning during and after the lesson. These experiences should be stated clearly using action verbs and be sequentially geared towards achieving the specific objectives. They guide the teacher to plan in advance the teaching/learning experiences, methods and the varied activities the class will be engaged in during the lesson.

Teaching/Learning Resources

These spells out the instructional materials the teacher intends to use to make the lesson effective. They include human and material resources. The teacher should creatively select, develop and assemble resources before the lesson such as; text books, newspaper cuttings, charts, audio and audio visual materials.

References

The teacher indicates text books, reference materials and documents which should be used to source content on specific topics. A variety of references should be used to enrich the content.

Remarks

These are comments that the teacher makes to show whether the set objectives have been achieved.

Importance of Schemes of Work

It is inevitable to have a scheme of work for the following reasons:

(i) It will guide newly qualified and expatriate teachers who have little or no experience teaching topics from the Zambian high school geography syllabus.

(ii) Because of shortage of trained geography teachers at both upper basic and high school levels, teachers are being seconded to teach at these levels from the middle and lower basic. Such non-specialist teachers need a well-planned scheme of work.

(iii) It is useful for a teacher who is handling several classes at the same level because it helps him/her to ensure that all the classes are moving at the same pace.

(iv) It helps to guide pupils' study if a copy of the scheme is given to each pupil or is posted on the class notice board.

(v) It helps the teacher and his/her pupils to plan their work well in advance. For example, relevant teaching and learning aids would be prepared ahead of time, and necessary arrangements would be made if fieldwork were to be undertaken.

It is, therefore, wrong for teachers to think schemes of work are not necessary because they (teachers) are competent in the subject.

How does one make a scheme of work?

To make a scheme of work the following procedure may be followed:

(i) Study the syllabus very carefully.

(ii) Make a list of topics to be covered.

(iii) Work out the sequence of the topics following the principle that it is best to proceed from the known to the unknown, the particular to the general, the simple to the complex, the real to the abstract, and from the analysis of descriptive data to describing distributions, trends or relationships.

(iv) Decide on those topics that may be included from time to time, e.g. mapwork and fieldwork.

(v) Incorporate teaching-learning methods and strategies that would promote the learning of concepts, principles, and skills rather than factual learning.

(vi) Lessons should be varied in terms of methods and approaches (indirect and direct observation), strategies, teaching-learning aids, pupils' activities and class organisation.

(vii) Take note of public holidays; avoid them when drawing up the scheme.

The levels at which work can be planned

In preparing the scheme, the following levels are ideal:

(i) Yearly schemes of work – usually as given by the official syllabus.

(ii) Termly schemes of work

(iii) Weekly schemes of work

Points to note about a scheme of work

Once we make a scheme of work, we are by no means to be slaves of it. We should note that a scheme of work could be altered, added to or subtracted from as a result of experience and availability of materials. Similarly, the sequence of topics in the scheme can be broken when teaching-learning materials become unavailable. By consulting other departments in the school, such as

mathematics and science, the scheme could be made less repetitive because some work covered in geography is also covered in these subjects. The following is a weekly scheme of work format:

WEEK BEGINNING DATE	**ITEM/TOPICS TO BE TAUGHT**	**OBJECTIVES P.S.B.A.T**	**TEACHING MATERIALS/ REFERENCE**	**COMMENTS/ REMARKS**

LESSON PLAN

It is a detailed account of what is to be covered in a lesson. It is extracted from the scheme of work.

Importance of Lesson Planning

A lesson plan is necessary in the effective teaching of because it helps the teacher to:

- Focus clearly on the content to be covered and the way it should be taught thus avoiding vagueness and irrelevance
- Organize the content to be taught in advance
- Plan, prepare and assemble teaching/learning resources

- Take the opportunity to visualize and conceptualize in advance the teaching strategies and methods.
- Select and design appropriate assessment methods.

What is to be taught and how?

In geography, we teach concepts, principles and skills. The material to be taught determines the method and strategy to be used that will serve the purpose of teaching best. The teacher should, however, bear in mind that no methods and strategies should not be overused; a method or strategy, which might be delightful and stimulating if over-used, can become boring. The secret then is to vary the methods and strategies, to use the *eclectic approach*. Essentially, a teacher's task with every lesson is to:

- Introduce the lesson topic.
- Introduce and consolidate each leading step of the lesson development.
- Deal with situations that arise during the lesson, e.g. discipline, visitors, etc.
- Bring the lesson to a satisfactory conclusion.

Patterns of a lesson plan

(i) ***Context:*** The first step in lesson planning is to establish where the lesson fits into the entire course, what aspects of the work already done will be developed further (i.e. moving from the known to the unknown), whether there will be a deliberate revision

of previous work, whether the lesson is the beginning, middle or end of a sequence and what is to follow.

(ii) ***Format:*** The following pattern is one which can be used to write a full lesson plan and what is to be borne in mind at each stage:

COMPONENTS OF A LESSON PLAN

General information

This part includes the name of the teacher, the school, the subject, the date, time, duration of the lesson, the sex and age of the pupils, the size of the class, the standard (grade) of the class, and whether it is a mixed ability or streamed class. Important in this section is the *title* or *topic* of the lesson which must be announced at the beginning of the lesson.

References

The textbooks used in the preparation of the lesson are cited in this section.

Teaching-learning Aids

These include all the materials and audio-visual aids that will be used to teach and learn. They include lesson notes, the chalkboard, chalk, duster, audio-visual hardware (projectors, tape recorders, radios), charts and the display materials (manila paper, glue, gum, etc), stationery (paper, note books, pencils, markers, highlighters, rulers, pins, etc), equipment for games, and textbooks for the teacher and pupils.

Aims and objectives

These should be expressed explicitly, simply and clearly. They should be attainable therefore must be realistic. The purpose of aims and objectives is to keep the teacher from wandering. They also help in the selection of the content to be taught and what areas to emphasise during the lesson. When writing the objectives, state them in a *behavioural manner*, that is, in an observable and measurable form, for instance, 'to write'. Avoid vague expressions like 'to understand' which cannot be measured. In addition, do not propose too many objectives. A separate section addresses how behavioural objectives ought to be stated.

Introduction

The lesson introduction must be done in an interesting and stimulating manner, arousing the curiosity of the pupils and making them responsive and alert. There is no limit to kinds of introduction one can make. The teacher should decide for each lesson and according to the interest and age of the pupils.

Lesson development

The lesson development caters for the main lesson. The teacher should identify the main teaching and learning steps of the lesson. The steps should be shown clearly, indicating what exactly will happen at each stage. Each step should show what content will be taught/learnt, what strategy

the teacher will be using and what activity the pupils will be engaged in.

Lesson Conclusion

At all events, the lesson should come to an end in a decent and orderly manner. It should not be concluded by the sound of the bell.

Follow-up Exercise

This is the part of the lesson where the main aim is finally realised. If the teacher is going to know whether the objectives of the lesson have been met or not, he/she has to ask some evaluative questions about what has been covered. The exercise can either be given orally or in a written form.

Self-Evaluation

The teacher reflects on the lesson and makes a judgement as to whether the lesson was successful or not. If the latter is the case, it is important to state why you think the lesson failed and make suggestions for the future.

The following is an example of a lesson plan written by a student teacher during the 2006 Student Teaching Practice (STP):

LESSON PLAN

NAME: THOMAS MULYELYA DATE: 28/02/06

SCHOOL: NABOYE HIGH SCHOOL DURATION: 80 MINUTES

SUBJECT: GEOGRAPHY NUMBER OF PUPILS: 47

CLASS: 11 E AVERAGE AGES: 17 YEARS

GENDER: MIXED

TOPIC: ATMOSPHERIC PRESSURE AND HOW IT IS MEASURED

TEACHING AIDS: Chalkboard, Chart showing barometers.

REFERENCES: 1. Bunnett, R.B. (1984) Physical Geography in Diagram for Africa, page

2. Leong, G.C. (1983) Certificate Physical and Human Geography, page

OBJECTIVES: By the end of the lesson, pupils should be able to (PSBAT):

1. Define atmospheric pressure.
2. Describe the mercury barometer.
3. Explain how the mercury barometer is used.
4. Describe an aneroid barometer.
5. Explain how the aneroid barometer is used.

INTRODUCTION: The lesson will begin by going over the previous lesson which was about temperature. The pupils will be asked to define weather and also state how temperature is measured (5-10 minutes).

LESSON DEVELOPMENT (25 minutes):

Step/ Duration	CONTENT	METHODOLGY	
		Teacher Activity	**Pupil Activity**
1. 5 minutes	Definition of pressure - Air is a mixture of gases and has weight. - It therefore exerts this weight on the earth's surface. - This weight is what is called pressure. - Pressure varies from one place to another, depending on temperature and altitude.	Teacher exposition - explaining - jotting down chalk board notes - making chalkboard illustrations	Listening to the teacher. Asking questions where they are not clear. Taking down notes
2. 20 minutes	Measurement of pressure - Pressure is measured using an instrument called a	Chart study and question & answer - displays a chart	Pupils observe the chart answering questions taking down notes

	barometer. - It is measured in units called millibars (mbs). - There are two types of barometer, the mercury and aneroid barometers. (a) Mercury barometer: This is made up of a large dish filled with mercury and a long glass tube inverted into the mercury. - When the pressure of the air begins to rise the pressure of the air presses on top of the mercury causing it to rise. - The mercury	showing the mercury barometer - asks questions: 1. What instrument is used to measure pressure? 2. What units are used to measure pressure? 3. Name the two types of barometer. - demonstrates how the mercury barometer works - jots notes on the chalkboard	

	column can rise to about 760 mm (high pressure). - When pressure on the surface of the mercury subsides, the column will drop to about 700 mm (low pressure). - Because the mercury barometer is heavy and cumbersome to carry it cannot be used for out-door field measurements.		
3. 20 minutes	(b) Aneroid barometer - The aneroid barometer is used for out-door measurements. It is more portable	Group work **divides class into groups of 6.** - circulates a photocopied passage about the	Go to their groups. Study the passage about the aneroid barometer. - Jot down notes

	than the mercury barometer, but less accurate. - It consists of a small metal box which contains very little air. - The top of the box bends inward when air pressure rises, and a spring pushes it outward when the pressure falls. - An altimeter is a modified type of aneroid barometer used in aeroplanes. - A barogram is a self-recording barometer which records continuous changes in pressure.	aneroid barometer to each group. - asks each group to read the passage and come up with statements about how the aneroid barometer, altimeter and barogram work. - asks the group leaders to report their findings. - jots notes on chalk board as reports are given.	about how the aneroid barometer, altimeter and barogram work. - Group leader makes report. - Take down the consolidated notes.

CONCLUSION: Atmospheric pressure is an important element of weather. It affects the mixing up of warm and cold air so that no part of the world can become either too hot or too cold. Pressure also determines where human beings can live comfortably.

FOLLOW-UP EXERCISE (15 minutes): Pupils to do the following exercise:

1. What is atmospheric pressure?
2. Name the two types of barometer.
3. What are the main parts of a mercury barometer?
4. Explain how the aneroid barometer works.

HOMEWORK (5 minutes): Pupils to go and find out what the lines connecting places of equal air pressure on a map are called.

SELF-EVALUATION: The lesson was well taught though the pupils were not able to draw the diagrams of the mercury barometer and aneroid barometer. This will be done as part of homework.

TEACHING AND LEARNING AIDS

The actual landscape is the geographical laboratory. If time and cost permitted, the ideal way to study geographical phenomena would be for the class and teacher to go to study the phenomena in their natural setting. Since this is not always possible, teaching and learning aids which represent the actual landscape can be used. This is called *abstraction.* The devices

make the teaching and learning of geography *interesting* and *attractive.* Their absence makes the geography lessons dry and ineffective. Collectively, the teaching-learning aids are called *audio-visual aids* because they make use of the senses of vision and hearing. They include the following:

The Chalkboard

The chalkboard is the ever-present aid available to the teacher in the classroom. It is the arena or stage of the activity of teaching and learning. It is a multi-purpose medium. The teacher could use it to jot down new terms, make summary notes, show the sequence in the process, and make simplified diagrams and sketches.

The chalkboard should be *neat* and *orderly*. Pupils emulate the teacher's work reflected on the chalkboard. If the chalkboard work is untidy and unsystematic, this will be reflected in the pupils' work. In using the chalkboard, the teacher should consider the following:

- Plan how you will utilise the chalkboard, i.e. which side will be for developing summary notes, which side for rough explanation, etc.
- Maintain constant contact with the class as you write on the board, e.g. by asking questions. Do not turn away from the pupils for a long time.
- Stand aside as you draw or write on the board so that the pupils are able to see the board.

- Write firmly and clearly so that all the pupils are able to read what you are writing.
- Use coloured chalk carefully to help easy interpretation of the chalkboard sketch maps and diagrams.

Charts

A teacher should know the difference between a good chart and a bad one. A good chart:

(i) Must be *big enough* to be seen by the whole class.

(ii) Must have *clarity*, that is, the layout and printing techniques must make the 'message' perfectly clear.

(iii) Must be *simple*. Complexity of situation and too much detail of representation will lead to confusion.

(iv) Must be *attractive* enough to capture and hold the pupils' attention.

(v) Should*employ colour* with discretion. Where colour is employed, it must be in good taste not gaudy.

(vi) Must*tell the truth*, i.e. It must be accurate and authentic in its representation of things and people and in its use of colour.

Drawing and lettering

- For this work, unlike in cartography, we do not need meticulous accuracy.
- We need *bold, firm* lines and *clear, contrasting* colours which can be seen from a distance.
- Lettering should be *simple and effective* not decorative. Do not use colours which run.
- The main titles should be large. Subtitles should be smaller to avoid distracting from the main theme.
- The chart should have a *key or legend.*
- Must be surrounded by a frame if it is a map.

Storage of charts

- Charts should be stored flat – not folded, not rolled.
- They can be laid flat (*horizontal storage*) or suspended (*vertical storage*).
- They should be stored by size, not content. they can be classified as small, medium or large.

Surface protection can be done through varnishing or putting cellophane (laminating) on the surface. *Edge binding* can be done to avoid the chart being damaged on the edges.

Maps

The word *map* comes from the Latin word *mappa* which means a cover or table cloth. Thus, a map gives coverage for the earth or any part of it. it is a locational guide for both physical features and human distribution elements. The maps are the oldest forms of written language. A map

summarises the main points of a lesson and so serves labour and time. It illustrates better than oral description; more information can be expressed on a single map than by volumes of speech or writing. Maps can be classified according to their scale and the subject or theme they show.

(a) *Scale maps*: Maps drawn according to scale are as follows:

(i) *Cadastral maps*: These large-scale maps which show property boundaries, e.g. farm boundaries.

(ii) *Topographical maps*: These are also large-scale which show a wide range of map features, including topography, vegetation, drainage, land-use, and transport and communication.

(iii) *Chorographical maps*: These are small-scale maps of the various parts of the world showing typical features by conventional signs. Atlas maps fall in this category.

(iv) *World maps*: These are small-scale maps showing the whole world.

(b) *Thematic maps*: These are classified according to some important features (topics or themes) that they show, e.g.

(i) *Outline maps* show boundaries of countries and continents only.

(ii) *Political maps* show the political boundaries of states, districts, towns, roads and railways.

(iii) *Bathymetric maps* show the depth of oceans with tints in blue colour.

(iv) *Ethnographical maps* show the distribution of races of humankind.

(v) *Vegetation maps* show the distribution of natural vegetation.

(vi) *Weather maps* show the distribution of temperature, pressure, and rainfall for a short period of time.

(vii) *Distributional maps* show the distribution of some commodity.

(viii) *Geological maps* show the distribution of rock types.

(ix) *Topographical map*s show details of topography and drainage.

The globe

A globe is a good tool in geography because it always conveys the impression that the earth is round. Only globes give a true conception of the relative position and direction of countries, islands, cities, etc. It is the best representation of the earth that we have. A slate globe may or may not have the outlines of continents drawn on them. It is useful for teaching how to fill in details, showing directions, days and nights and motions of the earth.

Models

These are three-dimensional teaching aids which attempt to imitate the real objects. They are important for evaluating, appreciating and interpreting real-life situations.

Advantages of models

- They offer scope for a more realistic approach, i.e. they introduce a third dimension.
- Their construction provides an opportunity for pupils to work in groups or individually.
- The wide variety of models available meets the requirements of every subject or topic.
- They make possible an understanding of the process and constructions not possible with two dimensional aids.
- They appeal to senses other than sight and sound. The handling of specimens and models is an essential part of the learning process.

Qualities of a good model

- It should be *large enough* to be seen clearly from all sides of the classroom.
- It should be *simple* but at the same time resemble the real object.
- It should be *selected according to the age level* of the pupils.
- It should be *attractive* enough to capture attention.
- It should be *accurate and authentic.*
- It should *employ colours* with discretion.

A great deal of models can be made from what most households throw away, such as scraps of wood and cloth,

tins, paper, corrugated card boards, cartons, plastic containers and packaging materials. Clay, glue, sand, plaster, plasticine and other natural products of the local area provide additional good modelling materials.

Pictures

A single well-selected picture makes the topic far clearer than a long description. Pictures make the study of geographical phenomena more interesting and capture pupils' imagination.

Advantages of pictures

- They are cheap and easy to procure and easy to store.
- They make good substitutes for inaccessible objects of which pupils may not have first-hand experience.
- They show objects in their natural surroundings.
- They are more suitable for individual and group study than for class use.

Pictures can be obtained from magazines, official (government) documents, newspapers, periodicals, discarded books and postage stamps. Pupils should be told what to look for because they require guidance and direction. A description has to supplement the observation of the pupils. A picture, when displayed, should be followed by a series of well-arranged questions relating to it.

Educational films

These include films, filmstrips and slides. Films can be in the form of cinema, video or television. Like pictures, these aids are important in the teaching of geography because they show features as they appear in reality.

The textbook

A textbook is a tool both in the hands of the teacher and the pupils. It gives continuity and cohesion to the teaching-learning process. Even pictures, diagrams, and maps contained in the textbook may enhance learning and understanding of the subject matter. It is the most commonly used of all teaching-learning aids. But there is too much dependence upon the textbook. A teacher should not depend on the textbook in its entirety but as a source of information. (The textbook should not be used as a course of study).

In selecting and evaluating a textbook, the teacher should look for the following:

- The content should be accurate and adequate for the age level and should meet the needs and interests of the pupils.
- The textbook should conform to the school syllabus or curriculum.
- The concepts in the book should not be difficult or ambiguous.

- Photographs should be well set out and should amplify the contents of the chapter.
- The quantity and quality of illustrations should be reasonably good.
- The general set-up, appearance, binding, size of the book, quality of paper, the type and length of lines are other factors to consider.

Advantages of textbooks

- They can be produced to meet specific needs of pupils.
- They last long when given reasonable care.
- They need very little maintenance compared to sophisticated aids.
- They are easy to store and transport.
- They offer the advantages of visual aids without limitations.
- Individual as well as groups of learners can use them.
- They can be used at whatever speed the reader can absorb the contents.
- They are flexible as a teaching-learning aid, since they can be used in whole or in part.
- They can be used as a learning aid by pupils of almost any age.

Disadvantages of textbooks

- They get out of date. The teacher should take special plains to keep his/her knowledge up to date and select only modern textbooks and reference books.
- Unresourceful teachers develop the habit of over-dependence upon the textbook.
- The readers may be discouraged by the general set-up, appearance, binding, size of the book, quality of paper used, type and length of lines, etc.

Graphs and statistical tables

The chief function of graphs is to present statistical materials in a simple and interesting form. They facilitate comparisons of qualities, areas, distances, values and other quantitative facts. Statistics in table form, once put into graphic form, become concrete and vivid. Graphs often clarify important facts, relationships and generalisations that are not easily grasped from statistical tables.

Graphs have wide usage. Businessmen, governments and different institutions use them. Therefore, the average person needs to be able to read and interpret graphs if he/she is to be an intelligent and responsible citizen.

CLASS MANAGEMENT AND CONTROL

It is very vital that the teacher controls and manages a class firmly because an uncontrolled class is a runaway vehicle that can cause havoc and misery to many people. Here

are some suggestions for exercising control in an effective manner:

- *Maintain your dignity*

  Do not lower your dignity by involving yourself in arguments or physical struggle with pupils. Avoid being popular with your pupils. It is a mark of weak character. Be exemplary in whatever you do.

- *Be consistent in what you do*

  Do not be strict with discipline only for one day. Don't show favouritism to any pupil in dealing with misbehaviour. Be just and fair. Don't let emotions control your actions. Never take action on pupils when temper is lost; wait till you regain your temper. Respect your pupils and their rights. A sympathetic and understanding attitude to pupils is not a weakness but strength.

- *Be firm*

  Your authority will appear lost if you are uncertain in what you do. Do not say apologetically what you want to do, but speak in decisive tone, showing that you expect obedience. When teaching a class the first time, be too firm and not too easy. If an offence occurs, act at once. Pupils may misinterpret delay as weakness.

- *Use punishment and reward wisely*

  The punishment should aim at stopping and correcting bad habits and practices. The rewards should be used to

acknowledge success and effort. It can also be used as an incentive to spur hard work in future. Do not use big punishment for small offences.

- *Be self-critical*

  By trying to see yourself as seen by the pupils, you will be sparing yourself embarrassment in many situations. To carry authority, you must be aware of your weak and strong points. Personal mannerisms and undesirable character traits are what you need to be careful about. Also, use common sense to judge situations. Some pupils may use jokes to fool you.

Signs of Indiscipline

Indiscipline in pupils will manifest in the following ways:

- *Violent attacks* by pupils on other pupils and even teachers.
- *Deliberate vandalism* to school property.
- *Breeches of school rules.*
- *Chronic misbehaviour* in the classroom or school.
- *Challenging the authority* of the teacher.
- *Disruption of pupils* who are intent on learning.
- *Stealing.*
- *Truancy.*
- *Untidiness* in schoolwork, dress and habits.
- *Late-coming* to school and class.

Common Disorders in a Classroom

The following disorders are representative of the kind of trouble a teacher may have to deal with:

(a) *Inattention and restlessness* caused by:

- Attractions and disorders outside the classroom.
- Excess energy accumulated by pupils kept passive and inactive for a long time.
- Pupils who are physically and mentally tired.
- Lessons which are boring.

(b) *Noise-making* arising from:

- Over-eager pupils with bad manners who snap their fingers and call out ‘sir/madam’ when they know the answer to a question or wish to be chosen for an activity.
- Comments by pupils about something they have been asked to do or a test that has just been returned to them.
- Idleness resulting from the absence of the teacher from the classroom or from the completion of work before the time set.
- Private or group arguments which lead to quarrelling.
- The whispers and subdued laughter.

(c) *Deliberate naughtiness*

- This can take many forms such as plain rudeness, disobedience, lying, stealing, etc. This is always an expression of rebellion in the pupil. The root cause should be established.

(d) *Indiscipline*

- Harmony in the classroom is dependent upon the keeping of rules and relationships in class. Any breakdown in the personal relationships or in the observance of rules leads to disorders, e.g. struggles arising from several pupils trying to enter in or leave the classroom at the same time instead of one at a time.
- Teaching demonstrations for which the pupils are brought around the teacher's table often bring about a good deal of jostling and bad behaviour.
- Pupils rushing for insufficient equipment, chairs, and textbooks.

How to Prevent Disorders in a Classroom

Prevention is better than cure. It is always wise to try to prevent disorder rather than to try to cure it after things have gone out of hand.

1. Ensure that there is enough work to keep every pupil occupied for idleness is a major ingredient for misbehaviour.

2. Make sure every pupil knows exactly what he or she is supposed to do otherwise you have a recipe for confusion.
3. Keep an eye on the performance of each pupil so as to prevent inefficient work or breakdown.
4. Put right at once any fault that may have potentially troublesome consequences.
5. Achieve working harmony between yourself and the pupils and among the pupils themselves.

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UNIT IV

Learning objectives:

Having gone through this unit, students should be able to

- State the procedure of formulating educational objectives.
- Describe the bloom's taxonomy.
- Explain the stages of lesson preparation.
- Discuss the various roles of a Geography teacher.

FORMULATING EDUCATIONAL OBJECTIVES

If the teaching-learning process is going to take place in a systematic way, there is need for the teacher to formulate certain teaching-learning objectives which are going to guide his/her teaching. Since education is largely concerned with changing pupils' behaviour, these teaching-learning objectives (also called *instructional objectives*) must be stated in *behavioural terms*, i.e. in terms of what the pupils are expected to do. Therefore, these *behavioural objectives* should describe explicitly what *observable* and *measurable behaviour* the pupils will exhibit at the end of the lesson or a sequence of instructional experiences.

THE TAXONOMY OF EDUCATIONAL OBJECTIVES

The original purpose of the Taxonomy of Educational Objectives was to provide a tool for classifying instructional objectives. The taxonomy is *hierarchical* (levels increase from the simplest to the most complex) and *cumulative* (each level

builds on and subsumes the ones below). In addition to classifying instructional objectives, the taxonomy may be used to provide a basis for questioning that ensures that pupils progress to the highest level of understanding.

The universe of instructional objectives is divided into *three domains*. The well-rounded and fully functioning person needs development in all these domains. They are *the Cognitive Domain, the Affective Domain,* and *the Psychomotor Domain*.

(a) **The Cognitive Domain** This deals with knowing and mental skills. It was developed by Benjamin Bloom in 1956 and is therefore called *The Bloom's Taxonomy of Educational Objectives*. The following are the levels in the cognitive domain, from the simplest to the most complex:

(i) **Knowledge**: This requires the pupils to recognise or recall geographical information.

Examples:

1. What is the capital city of Zambia?
2. Who is the President of Zambia?
3. The leading world importer of petroleum is …

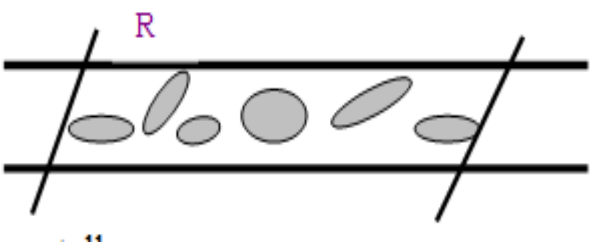
In this type of question, the pupil is only required to *remember*. Words typically used are define, recall, recognise, remember, who, what, where, when.

(ii) **Comprehension** This requires the pupil to demonstrate that he/she has sufficient understanding to organise and arrange material mentally.

Examples:

1. What do you think is meant by the term 'game cropping'?

   The diagram below shows a river with islands from Point R to Point S.



Here, the pupil has to *know* as well as *understand* in order to give the answer. Words typically used are describe, compare, contrast, rephrase, put in your own words, explain the main idea.

Examples:

1. According to our definition of orogenesis, which one of the following processes is orogenetic?
2. Calculate the time a jet which leaves Lusaka (30^{o} E) at 23:00hours on Monday will arrive in New York (75^{o} W) if it takes 10 hours in flight.

(iii) **Application** The pupil is required to apply previously learned information to reach an answer. The application of a concept, principle or law or solving a mathematics word problem is examples. Here, the pupils should know the formula for time calculation, understand the aspects of time ahead and time behind and how to go about doing computations. Words typically used are apply, classify, use, choose, employ, write, solve, how many, which, what is.

(iv) **Analysis** This is a higher order level which requires pupils to think critically and in depth. In analysis, the pupils are asked to engage in two kinds of cognitive processes:

- ❖ Identifying the motives, reasons, and/or causes for specific occurrence e.g. Why was Lusaka chosen as the site for Zambia's new capital?
- ❖ Considering and analysing available information to reach a conclusion, inference, or generalisation based on this information e.g. Which one the following describes the conditions for rice-growing?
- ❖ Analysis requires pupils to break down the information given into its constituent parts e.g. Which of the following are characteristics of the tropical rainforest?
    a) Buttressed tree trunks, closed canopy, needle-leafed, scattered trees.

b) Aerial roots, closed canopy, needle-leafed, stratified.

The tropical rainforest is an entity made up of various parts. To do analysis, the pupil must break it into these various parts.

(v) **Synthesis** This is a higher order level which requires the pupil to perform original and creative thinking. Synthesis questions ask pupils to:

- ❖ Produce original communications
- ❖ What name should be given to the new fabric factory in Kabwe?
- ❖ Write a letter to the Director of Conservation about your concern over wildlife depletion.
- ❖ Make predictions
    - o What will be the likely effect on vegetation and wildlife in Southern Province due to prolonged drought?
- ❖ Solve problems – this does not necessarily require one correct answer, but allows a variety of creative answers.
    - o How should the government deal with the problem of rural-urban migration? Or the city council with the problem of solid waste disposal?

- ❖ Putting together parts or elements to make a whole or pattern "It is a winding low ridge of gravel, sand and clay several kilometres long, stretching across poorly drained lowland with scattered lakes". What feature does this statement describe? Here, the pupil has to put together (synthesise) all these pieces of information to come up with the feature being described, i.e. an esker.

(vi) **Evaluation** This is a higher order level which requires the pupil to judge the merit of an idea, a solution to a problem or an aesthetic work. The pupil may also be asked to offer an opinion on an issue. Evaluation is used to bring to surface values or to cause pupils to realise that not everyone sees things the same way. There usually are more than a single correct answer.

- Do you think schools have become too easy on discipline?
- What phenomenon has been responsible for the increasingly arid weather in the Sahel?
- What is an integrated works in relation to iron and steel works?

The words typically used are appraise, evaluate, compare, conclude, contrast, criticise, describe, discriminate, explain, justify, relate, summarise, support.

Pupils should be brought to the higher levels of analysis, synthesis, and evaluation if *transfer* is going to take place. Transfer means the pupils begin to see the information they are learning not only as useful for passing examinations but also in real life. If teachers don't ask higher level questions, it is unlikely that pupils will transfer schoolwork to real life.

(b) **The Affective Domain** This deals with feelings and attitudes towards human kind, things, and institutions. D.R. Krathwohl developed it in1964. If the teaching purpose is to change attitudes/behaviour rather than to transmit information, then the instruction should be structured to progress through the levels of the Affective Domain:

(i) **Receiving** The pupil *passively* attends to particular phenomena or stimuli (e.g. classroom activities, textbook, music, etc.). The teacher's main concern is that the pupil's attention is focussed. Intended outcomes include the pupil's awareness that a thing exists. Sample objectives: listens attentively, shows sensitivity to social problems. Behavioural terms: asks, chooses, identifies, locates, points to, sits erect, etc.

(ii) **Responding** The pupil *actively* participates. The pupil not only attends to the stimuli but also reacts in some way. Objectives: completes homework, obeys rules, participates in class discussion, shows interest in the

subject, enjoys helping others, etc. Behavioural terms: answers, assists, complies, discusses, helps, performs, practices, presents, reads, reports, writes, etc.

(iii) **Valuing** The *worth* a pupil attaches to a particular object, phenomenon, or behaviour. It ranges from acceptance to commitment (e.g. assumes responsibility for the functioning of a group). Attitudes and appreciation. Objectives: demonstrates belief in democratic processes, appreciates the role of geography in daily life, shows concern for others' welfare, demonstrates a problem-solving approach, etc. Terms: differentiates, explains, initiates, justifies, proposes, shares, etc.

(iv) **Organisation** The pupil is able to *bring together* different values, resolving conflicts among them, and starting to build an internally consistent value system – comparing, relating and synthesising values and developing a philosophy of life. Objectives: recognises the need for balance between freedom and responsibility in a democracy, understands the role of systematic planning in solving problems, accepts responsibility for own behaviour, etc. Terms: arranges, combines, generalises, integrates, modifies, organises, synthesises, etc.

(v) **Characterisation** by a *Value* or *Value Complex*. At this level, the pupil has held a value system that has

controlled his/her behaviour for a sufficiently long time that a characteristic 'lifestyle' has been developed. Behaviour is pervasive, consistent and predictable. Objectives are concerned with personal, social, emotional adjustment: displays self-reliance in working independently, co-operates in group activities, maintains good health habits, etc. Terms: acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, serves, solves, uses, verifies, etc.

(c) **The Psychomotor Domain** This deals with doing practical work and motor skills. E.J. Simpson developed it in 1966. The instructional objectives and derived questions and tasks typically have cognitive and affective elements, but the focus is on motor skill development. The suggested areas for use are speech development, reading readiness, handwriting, and physical education. Other areas include manipulative skills required in business training (e.g. keyboarding), industrial technology, and performance in art, science and music. Key areas include:

- *Reflex movements*: Segmental, intersegmental, and suprasegmental reflexes.
- *Basic-fundamental movements*: Locomotor movements, nonlocomotor movements, and manipulative movements.

- *Perceptual abilities*: Kinaesthetic, visual, auditory and tactile discrimination and co-ordinated abilities.
- *Physical abilities*: Endurance, strength, flexibility, and agility.
- *Skilled movements*: Simple, compound, and complex adaptive skills.
- *Non-discursive communication:* Express and interpretive movement.

In geography, objectives would include draws a map, diagram, or chart; constructs a rainfall or temperature graph, constructs a cross-section; makes a model of a contoured map, locate data on a map, etc. Sample general objectives: writes smoothly and legibly; accurately reproduces a picture, map, etc.; operates a (machine) skillfully; plays a piano skillfully; demonstrates correct swimming form; drives an automobile skillfully; creates a new way of performing (creative dance); etc. Behavioural terms: assembles, builds, composes, fastens, grips, hammers, makes, manipulates, paints, sharpens, sketches, uses, draws, etc.

Some errors in formulating behavioural objectives

- **Using a non-action verb** e.g. understand, know, think, appreciate, etc.
- **Making teacher-centred objectives** – objectives are for pupils' attainment, not the teacher, e.g. 'Given the necessary weather instruments, the teacher will

demonstrate the …' or 'Given a metre rule, the pupils will be shown …'

- **Formulating trivial objectives** – some objectives are too trivial to be for use at high school level, e.g. 'Given notes on the board, pupils should be able (PSBAT) to copy them neatly' or 'Given access to a plot, PSBAT collect soil samples'.
- **Constructing objectives which aim too high** - too high standards may be meaningless and attainable, e.g. 'PSBAT determine the soil temperature within 5% of its correct value'.
- **Expressing more than one desired behaviour in one objective** – this overloads the objective and the pupil may not be able to satisfy both parts, e.g. 'PSBAT *plot***and***interpret* the graph' or 'PSBAT define *gradient, choropleth***and***contour'* or 'PSBAT *assemble apparatus, collect specimens***and***carry out 3 tests.*

How to write instructional objectives

Mager (1962) has suggested that each instructional objective should have three parts:

- **The test situation** This defines the condition under which the pupil will perform, i.e.

- By the end of the lesson (BTEOTL),
- During an oral discussion,
- Using an augur,

- **The performance term** This describes what the pupil will do to show his/her newly acquired skill, e.g.

Pupils should be able to (PSBAT):
(i) state
(ii) mention
(iii) draw

- **The qualifying term** This shows what the teacher is willing to accept as the performance standard, e.g.

  Three crops grown in Zambia.

  Five reasons why rainfall decreases from north to south of the country.

- Examples of behavioural objectives:

- Given data, graph paper, and pencil, PSBAT properly draw four out of five temperature graphs.
- By the end of the lesson, PSBAT mention at least four reasons for rural-urban migration.

Making an interesting introduction

A stimulating introduction to a lesson raises the desire in the pupils to learn. One or more of the following methods may be used:

- *Questioning*: This can be used either to stimulate interest or to solicit answers from the pupils. It can be used to gauge how much the pupils already know about the new topic or how much they can remember about the previous topic.
- *Display of visual aids*: A lesson begun by showing something of interest gets off to a good start because it

focuses the attention of pupils and stimulates their interest.

- *Demonstrations, explanations and dramatising*: These have the same value as visual aids in capturing pupils' attention.
- *Use of activities*: An activity, such as a few quick mental mathematics, is a good way of sharpening concentration. Similarly, activities like issuing textbooks and equipment, and dividing the class into groups, can also help to stimulate interest.
- *Mystery*: Doing something that appears mysterious to the pupils can also attract their attention. For example, a teacher can come with a teaching-learning aid concealed in his/her pocket. The bulge, if noticed by the pupils, will make them curious. Such an introduction whets the pupils' appetite for learning.
- *Problem solving*: When the teacher poses a problem such as "How do you think the East African Rift Valley, part of which you can see in this picture, came about?" the pupils' imagination and desire to find out the answer is heightened. This is different from the uninspiring "Our lesson today is about the formation of rift valleys".

Conclusion

Planning to teach takes place at different levels. The first level is at national level. At this level, the objectives are abstract and include long-term goals, which also appear in the National Development Plan. The second level of educational objectives is at *institutional level*, be it at basic, high school or tertiary level. The third level is at the level of instruction, at subject level. Here, the objectives are called *instructional objectives*. At this more concrete level, the objectives are made into more specific behaviours that form the terminal performance capabilities of pupils successfully completing a course of study as specified in the subject.

Aims like 'The pupils should *understand* the meaning of denudation' or 'The pupils should *really know* the three stages of river valley formation' are vague (unclear) because they do not explicitly indicate any overt (observable) behaviour. It is impossible to 'see' if someone has understood or known by observing them, because understanding and knowing happen in the mind and we cannot see what is on the mind.

To make the objectives observable and measurable, we use *action verbs*, such as recall, state, draw, describe, make, explain, illustrate, etc. The *taxonomy of educational objectives* helps us to have an entire panorama of instructional objectives.

THE SOCIOLOGY OF THE GEOGRAPHY TEACHER AND THE CLASSROOM

Society expects and demands from the teacher excellence in performance both inside and outside class. In the earlier days, the teacher

- Held a position of *trust* in the local community where he/she served.
- Was highly *respected* throughout the community.
- Was often the *only educated* and *enlightened* person in the community.
- *Carried out functions and responsibilities* to the community and individuals, e.g. interpreter for the village headman or letter writer, counsellor on matters of a social, economic, or political nature.
- Was the *chief spokesperson* that bore a mark of respectability and inspired the confidence of the community around the school by providing leadership in various ways.

The trust in the teacher was not misplaced since the teacher lived up to the expectations of the community in which he/she served.

Declined Status of the Teacher

The teacher's status has since declined. Two main reasons can be given for this decline, viz.

a) *The emergence of other leaders* who play the role that the teacher originally played in the community. This has come with the changing cultural, social, political, economic and technological developments. Specialised politicians, economists, medical officers, lawyers, agriculturists, etc. have emerged. There is no need to engage the teacher in these specialised fields when the experts are available. Most of these are better paid and live in better houses than teachers.

b) *The teacher's casual approach and poor attitude* to his/her responsibilities and profession. The teacher behaving in a manner not above reproach:

- By indulging in those activities which previously were regarded as taboo by him/her and his/her colleagues.
- Drunken behaviour.
- Manner of dress.
- Excesses in behaviour.

The teacher, who lives regardless of local attitudes, less than the expectations of his/her profession and society, runs the risk of disapproval from the profession as well as his/her colleagues. The teacher, therefore, has much to contribute towards the restoration of his/her status.

Obligations of Society to the Teacher

Society has obligations towards the teacher:

- It should give encouragement and support the efforts of the teacher.
- It should not put too much demand on the teacher, expecting him/her to cling to those norms and values which society itself no longer adheres to.
- It should seek to influence and develop the teacher's interest in the various activities of the local community.
- It should improve the working environment and conditions of service which have forced many teachers to leave for greener pastures or frustrated to the point where their output has been adversely affected and their morale broken down.

Among other things, the following have been a source of frustration for teachers:

- ✓ Lack of decent accommodation.
- ✓ Poor salaries.
- ✓ Shortage of books, teaching-learning materials, equipment, etc.
- ✓ Dilapidated school structures.

In rural areas, these problems are compounded by other problems, such as:

- ✓ Lack of social amenities, e.g. entertainment, piped water, electric power, etc. A lot of teachers take to excessive beer drinking because of lack of entertainment.

- ✓ Poor sanitation and clean water.
- ✓ Absence of banking and other commercial facilities.
- ✓ Long distance to shopping centres, coupled with bad roads and few or no buses.
- ✓ Difficulty for single teachers to find marriage partners.

Obligations of the teacher

- To draw from the experience of already serving teachers.
- Take charge of pupils, consider them valuable, assist them to appreciate and understand how knowledge and creative thought could be applied in making wise choices or judgements so that their educational experience should also have relevance to the practicalities of real life.
- To accomplish this, the teacher needs to be disciplined. Discipline will be as important as the knowledge of geography.
- To ensure the discipline of the pupils, not leaving it to the headteacher and his/her deputy.
- To cooperate with the authorities in running the school affairs.
- To be self-conscious about dress, peculiar habits and mannerisms.
- To act as a good role model for the pupils.

Professional Skills of a Good Teacher of Geography

A good teacher of geography must:

(a) Establish a productive classroom atmosphere from the start by means of good organization and carefully planned teaching-learning structures.

(b) Create specific kinds of climate settings for different lessons, e.g. a serious and business-like or relaxed and enjoyable lesson.

(c) Have friendly humour and create excellent teacher-pupil rapport.

(d) Use pupils' ideas as much as possible.

(e) Give praise generously to pupils.

(f) Teach in a relaxed manner, no sign of nervous strain.

(g) Exercise good class control and discipline.

(h) Explain things clearly. He/she must have enthusiasm and ability to convey this to the pupils. He/she should be able to present the subject in such a vivid way that the class will enjoy, understand and be eager for more.

(i) Include a variety of pupils' activities in his/her lesson.

(j) Use efficient system for dealing with routine administrative matters, namely registration, issuing of textbooks, etc. The teacher should not show any favouritism.

(k) Not overreact to pupils' misbehaviour but use appropriate punishment.

(l) Structure his/her teaching so that he/she is sensitive to the abilities, interests and needs of his/her pupils. The teacher must relate the ideas and knowledge he/she presents and the methods he/she uses to the learning abilities of his/her pupils.

(m) Be thoroughly familiar with what he/she is to teach (the curriculum and the syllabus).

(n) Plan his/her teaching methods and strategies so that he/she builds on what the pupils already know.

(o) Encourage pupils to learn by doing (practical work), encourage learning to grow out of useful experiences and experimentation.

(p) Use teaching-learning aids effectively.

Summary of good and bad teacher characteristics

	Helpful characteristics	***Unhelpful characteristics***
1	Be firm but friendly	Being too authoritative
2	Relaxed but distinctive teacher-pupil rapport	Overemphasis on dignity
3	Have genuine concern for the welfare of pupils	Lack of interest in individual pupils
4	Have minimal bureaucracy	Too many rules and red tape
5	Demand for courtesy and civilised behaviour	Too lax discipline
6	Be approachable	Difficult to approach
7	Have good communication skills	Poor communication skills
8	Pursue a policy based on philosophy	Everyone is a law unto themselves – anarchy

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UNIT V

Learning objectives:

Having gone through this unit, Students should be able to

- Discuss the benefits of micro teaching.
- Explain what Records of Work are.
- State the importance Peer teaching.

MICROTEACHING

Microteaching is an organized practice teaching. The goal is to give instructors confidence, support and feedback by letting them try out among friends and colleagues a short slice of what they plan to do with their students. Ideally, microteaching sessions take place before the first day of class, and are videotaped for review individually with an experienced teaching consultant. Microteaching is a quick, efficient, proven, and fun way to help teachers get off to a strong start.

As many as six teachers from the same or similar courses can participate in a single microteaching session. Course heads, a few experienced instructors, and other members of staff are usually invited to serve as facilitators. While one person takes his or her turn as teacher, everyone else plays the roles of students. It is the job of these pretend pupils to ask and answer questions realistically. It is the job of the pretend teacher to involve his or her "class" actively in this way.

Such a scenario typically runs for five to ten minutes. When finished, the person conducting the class has a moment or two to react to his or her own teaching. Then everyone else joins in to discuss what they saw that they especially liked. Finally, the group may mention just a few things that the practice teacher might try doing differently in the future.

Videos of these sessions are for the benefit of those taped and will not be seen by anyone else without the explicit permission of the practice teacher. Session tapes can even be erased immediately if the practice teacher wishes. Nearly everyone, however, finds it extremely helpful to make an appointment to view and discuss their tape together with supervisors.

Most course heads provide micro teachers with scenarios to prepare in advance. If not, think of a few minutes of material that you especially would like to make sure your students understand by the end of your next class. As always, you should not only plan out how to treat the subject matter, but also give some thought to how you are going to present yourself, manage the class, and involve the students. There are, of course, many different ways of teaching a given lesson well. That is why participants find that, along with what they learn from their own experience practice teaching, they can also pick up many helpful ideas from observing fellow micro teachers.

PEER TEACHING AND PEER LEARNING

Peer learning is not a single, undifferentiated educational strategy. It encompasses a broad sweep of activities. These ranged from the traditional proctor model, in which senior students tutor junior students, to the more innovative learning cells, in which students in the same year form partnerships to assist each other with both course content and personal concerns. Other models involved discussion seminars, private study groups, parrainage (a buddy system) or counseling, peer-assessment schemes, collaborative project or laboratory work, projects in different sized (cascading) groups, workplace mentoring and community activities.

The term 'peer learning', however, remains abstract. The sense in which we use it here suggests a two-way, reciprocal learning activity. Peer learning should be mutually beneficial and involve the sharing of knowledge, ideas and experience between the participants. It can be described as a way of moving beyond independent to interdependent or mutual learning.

Students learn a great deal by explaining their ideas to others and by participating in activities in which they can learn from their peers. They develop skills in organizing and planning learning activities, working collaboratively with others, giving and receiving feedback and evaluating their own learning. Peer learning is becoming an increasingly important

part of many courses, and it is being used in a variety of contexts and disciplines in many countries.

The potential of peer learning is starting to be realized, but examination of the ways in which it is used in existing courses suggests that practices are often introduced in an ad hoc way, without consideration of their implications. When such practices are used unsystematically, students unfamiliar with this approach become confused about what they are supposed to be doing; they miss opportunities for learning altogether, and fail to develop the skills expected of them. Much peer learning occurs informally without staff involvement, and students who are already effective learners tend to benefit disproportionately when it is left to chance.

Formalized peer learning can help students learn effectively. At a time when university resources are stretched and demands upon staff are increasing, it offers students the opportunity to learn from each other. It gives them considerably more practice than traditional teaching and learning methods in taking responsibility for their own learning and, more generally, learning how to learn. It is not a substitute for teaching and activities designed and conducted by staff members, but an important addition to the repertoire of teaching and learning activities that can enhance the quality of education.

It is important to consider who the ‘peers’ in peer learning are. Generally, peers are other people in a similar

situation to each other who do not have a role in that situation as teacher or expert practitioner. They may have considerable experience and expertise or they may have relatively little. They share the status as fellow learners and they are accepted as such. Most importantly, they do not have power over each other by virtue of their position or responsibilities. Throughout the book we will be discussing the role of students who are in the same classes as those from whom they are learning.

Peer teaching, or peer tutoring, is a far more instrumental strategy in which advanced students, or those in later years, take on a limited instructional role. It often requires some form of credit or payment for the person acting as the teacher. Peer teaching is a well-established practice in many universities, whereas reciprocal peer learning is often considered to be incidental-a component of other more familiar strategies, such as the discussion group. As a consequence, until recently, reciprocal peer learning has not been identified as a phenomenon in its own right that might be used to students' advantage.

Reciprocal peer learning typically involves students within a given class or cohort. This makes peer learning relatively easy to organize because there are fewer timetabling problems. There is also no need to pay or reward with credit the more experienced students responsible for peer teaching. Students in reciprocal peer learning are by definition peers, and so there is less confusion about roles compared with

situations in which one of the 'peers' is a senior student, or is in an advanced class, or has special expertise.

Reciprocal peer learning emphasizes students simultaneously learning and contributing to other students' learning. Such communication is based on mutual experience and so they are better able to make equal contributions. It more closely approximates to Habermas' notion of an 'ideal speech act' in which issues of power and domination are less prominent than when one party has a designated 'teaching' role and thus takes on a particular kind of authority for the duration of the activity.

We define peer learning in its broadest sense, then, as 'students learning from and with each other in both formal and informal ways'. The emphasis is on the learning process, including the emotional support that learners offer each other, as much as the learning task itself. In peer teaching the roles of teacher and learner are fixed, whereas in peer learning they are either undefined or may shift during the course of the learning experience. Staff may be actively involved as group facilitators or they may simply initiate student-directed activities such as workshops or learning partnerships.

As mentioned earlier, it is important to recognize that peer learning is not a single practice. It covers a wide range of different activities each of which can be combined with others in different ways to suit the needs of a particular course. It is

like peer assessment in this regard and it is unfortunately similarly misunderstood as referring to a particular practice.

EVALUATION IN GEOGRAPHY

Evaluation is a process by which it is determined whether the education system is achieving its objectives or not. It involves the process of gathering, interpreting, recording and using information about pupils' responses to educational tasks. It requires teachers to make judgements about pupils' responses measured against some standard of expectation. This standard can either be *norm-referenced* (i.e. set by the expected average performance of the age group) or *criterion-referenced* (set by what the objectives of learning are, i.e. what skills, knowledge, attitudes and understanding are to be achieved).

A teacher should have a thorough knowledge of the teaching methodologies, content and evaluation. Evaluation helps to determine the readiness of the pupils, recognize the difficulties the pupils may be facing and remedy them and assess the teacher's own rate of progress and the effectiveness of his/her methods. The insights gained from evaluation will help the teacher to sustain (maintain), develop or improve the teaching (hence the learning), not just for the present pupils but for future ones as well. Teachers often assume that assessment is there to assess the level of learning and understanding of the learners. However, assessment is two-fold:

(a) **Teacher assessing own performance**

The teacher can evaluate how effective his/her own teaching is by considering the following aspects:

- *Preparation* Did you assess your pupils' previous knowledge correctly? Were your resources adequate? Could you explain difficult new concepts easily, e.g. relating them with concrete examples that the learners could identify?
- *Presentation* Was your lesson lively enough to get and keep the learners' attention? Were you able to ask questions and involve the learners in the learning process? Were you able to observe those learners who could not keep up with the rest of the class?
- *Conclusion* Did you conclude your lesson by drawing attention to the importance of the learning material? Did you give time for questions and independent study? Were you available to assist learners during independent study?

(b) **Assessing learners' performance**

The kind of information we need to assess learners' learning and development:

- *The knowledge and understanding of the learners*
- *The learners' skills*, e.g. can they apply skills like observation, communication, application, synthesis, etc. It is difficult to score how well a learner has mastered these skills.

- *The process of learning* – is the learner able to take information and utilise it in life experiences where they live and work?

Evaluation can take either of two forms: (1) the *more formal* contexts and procedures, including written, timed *tests* and *examinations*, marked under strict conditions. (2) The *less formal* settings, including reading pupils' work and listening to what they have to say (their opinion) or unobtrusively observing the pupils' actions and noting whether certain personal traits or abilities appear to have changed over time.

Functions of evaluation

According to Lambert (1996), the generally agreed roles of evaluation in education are:

a) Providing feedback to teachers and pupils about progress in order to support future learning. This is the *formative role* of evaluation.
b) Providing information about the level of pupils' achievement at points during and at the end of their school career. This is the *summative role* of evaluation.
c) Providing the means for selection by qualification. This is the *certification role* of evaluation.
d) Contributing to the information on which judgements are made concerning the effectiveness or quality of individuals and institutions in the system as a whole. This is the *evaluative role* of evaluation.

Types of evaluation

Micro-evaluation

This involves the myriad evaluative decisions which the teacher makes as he/she interacts with the pupils during the lesson; the continuous use of feedback to enhance learning, e.g. 'Good attempt, Chanda', 'That's a bright idea, Mwaba', 'You can do better, Gerald', etc. Micro-evaluation has the primary purpose of sustaining and developing the teaching for the benefit of the present pupils.

Macro-evaluation

This is the evaluation that the teacher will make when the series of lessons is completed. An impression of the *overall* effectiveness of a larger sequence of teaching and how it might be improved before it can be used with another set of pupils is obtained. Macro-evaluation aims to benefit pupils in some future learning situation, either the present pupils on a subsequent course or other pupils learning from improved version of the present course.

Examinations versus continuous assessment

Examinations entail assessing pupils on their performance at the end of the course. It is a form of macro-evaluation.

Disadvantages of examinations

- Passing examinations has become the most important thing. All the educational effort by both teachers and pupils is now directed towards passing the examination,

ignoring the other educational objectives. Revising past examination papers and conducting private tuition have become the main preoccupations of both teachers and pupils. These do not prepare the children for life. This has relegated education to a position lesser than that of examinations. This unfortunate situation has been termed *the backwash effect of examinations* – the 'examination tail wagging the education dog'.

- Most examinations tend to pay more attention to what pupils can remember (the lower cognitive aspects), not how they can think (the higher cognitive aspects), and what they can do and feel (psychomotor and affective aspects).
- 'Grading' seems to assume that the teaching is beyond reproach and the pupils are to be rewarded according to how well they discharged their responsibility to learn from it. Yet, many times the teaching may be defective and ineffectual and should share in the outcome of an examination.
- Fundamental decisions are based on the results of a single examination – decisions to affect the individual's future, and yet, examinations are usually held in an atmosphere of tension, which may affect the very psychology of the pupils (e.g. what is called 'exam fever'). It is in this vein

that some educationists have advocated for continuous assessment as an alternative to examinations.

Continuous Assessment

Continuous assessment is assessing pupils by concentrating on their performance during the course. It is a form of formative evaluation. Pupils are given a succession of grades, according to the assessments made at various stages. These grades should count towards the overall certificate grade.

Continuous assessment is a form of internal and continuous monitoring of an individual pupil's progress throughout the course of study. Its strongest point is that it takes place under 'normal' conditions and so it is not liable to distortion. It is, therefore, thought to be more reliable. However, the method has a lot of disadvantages:

- The public may not have confidence in the expertise and impartiality of the teachers.
- There may not be a common standard of assessment employed by all schools.
- Continuous assessment may lack objectivity.

Types of Testing

Standardised Tests

This is a popular way of testing in many countries, including Zambia (The examinations set by the Examinations Council of Zambia fall in this category). This is because it is more rigorous and provides a greater accountability for the

learners' learning. The tests are called standardised because they are administered and scored (marked) in consistent and uniform ways. The main criticism against this type of testing is that it assumes that the learners had the same opportunity to learn the content on which the test is based. In addition, *coaching* can improve pupils' performance in these tests. Coaching enhances *test-taking skills* such as reading, analysing questions, and how to answer different types of questions.

Teacher-made tests

A teacher can prepare a test for a specific group of learners based on specific knowledge or skills. The advantage of teacher-made tests is that they are based on the teacher's sound knowledge of the pupils, both as individuals and as a group. The teacher can also target the test to assess specific learning areas in contrast to a standardised test, which assesses more general learning areas. The disadvantage is that teacher-made tests are often poorly constructed and sometimes provide inaccurate information.

Types of tests

Achievement tests fall into two broad categories, namely *objective* and *subjective tests.*

Objective tests

These are highly structured types of tests. They require the pupil to *supply* a word or to *select* the correct answer from among a limited number of options. On this basis, objective

tests can be divided into two main categories: the *supply type* and the *selection type*.

The supply type

This requires the pupil to supply the answer. They include *short answer type* and *completion type.*

Short answer questions require answers of a single word or phrase, e.g.

Question: What name is given to the process responsible for the general wearing down of landforms on the earth's surface?

Answer: Denudation

Completion questions consist of sentences with one or more blanks to be filled in, e.g.

Question: The …… is the main mountain range bordering the western side of the Luangwa valley.

Answer: Muchinga Escarpment

When constructing these items, the following procedure should be followed:

- Use only one or utmost two blank spaces.
- Make sure only one term will sensibly complete the statement or answer the question.
- Leave only important terms blank.

The selection type

This type requires the pupil to select the answer from among a given number of options or responses. They include *true or false response, matching* and *multiple choice.* These basic

types can be modified and combined to test particular objectives or to suit specific subject matter.

The *Chitemene system* of agriculture is practised among the Tonga people of Southern Province *True/False*

Contour lines form V's that point downstream *True/False*

True or false items According to Wood (1968), these test items consist of a declarative statement that pupils are asked to mark true or false. Such items can be used to measure ability to identify the correctness of statement of fact and definitions of terms, e.g.

When constructing such items, it is important to:

- Avoid broad general statements if they are to be judged true or false. Use of words like usually, all, sometimes, etc. should be avoided.
- Avoid use of negative statements as this contributes to the ambiguity of the statement.
- Sentences should be simple and short only meant to measure achievement and not comprehension.
- Avoid putting two ideas in one statement.
- The true/false statements should be of equal length.
- Numbers of false and true statements should be the same length.
- Do not lift ideas directly from the textbook.

Matching items

This consists of two parallel columns, each with items and the pupil is expected to scan the alternatives at the right hand side

and select one to go with each item at the left hand side. The items in the column for which the match is sought are called *premises* and those in the column for which selection is made are called *responses*, e.g.

Match the items in (A) with the responses in (B). Use each response once only.

A. Premise	**B. Response**
1. Small particles of broken rock.	(i) Classic
2. Deposits formed from plants.	(ii) Sediments
3. Sedimentary rocks formed by precipitation.	(iii) Coal
4. Sedimentary rocks formed by compaction and cementation of rock particles.	(iv) Organic
	(v) Evaporates
	(vi) Mica
	(vii) Fossils

To construct matching items, the following points should be considered:

- Include an unequal number of responses and premises. At least three extra responses must be included to reduce possibility of guessing.
- Give straightforward instructions as to how many times each response may be used.
- Keep the list of items to be matched brief and place the shorter responses to the right.

- Arrange the list of responses in logical order, i.e. if it is words in alphabetical order and numbers in a sequence.
- Place all the items for one matching exercise on the same page.

Matching items can be used to measure a large amount of related factual material in relatively a short time.

Multiple Choice Items

The multiple choice items consist of a problem called the *stem* and a list of alternatives or *options*. The pupil responds by selecting the option that provides the correct response, which is the *key*. The incorrect alternatives are called *distracters*. The question as a complete unit is referred to as an *item*. The stem is the introductory statement that tells the pupil what his/her task is. It can either be in question form or completion form. It should include as many as possible of words common to all the responses.

When constructing these items, the following should be taken into consideration:

- The stem should clearly spell out the theme of the correct alternative or key.
- Incorrect alternatives should be plausibly related to the stem.
- Correct responses should not be conspicuously different in appearance or length from the distracters.
- Options should be randomly ordered for each item.

- Do not employ options, which say none of or all the above, etc.
- Avoid grammatical cues and sentence structures that give away the key.
- At least 4 or 5 options must be included to reduce chances of guessing.
- Scatter the correct responses.
- When a negative response is desired, be sure to make it clear, e.g. by underlining it or making it bold.
- When options include a series of figures put them in order.
- Illustrations can help in presenting the stem and making it clearer.

Multiple choice items can be used to measure effectively the pupils' ability to interpret, discriminate, select and make applications on things learnt.

Types of multiple choice questions

a) *Single Correct Answer Type*

This has a single correct answer. It usually requires the pupil to merely recall facts. Typical terms used are name, label, state, define or recognise something (identify), e.g.

Which river has the Victoria Falls as its main tourist attraction?

(a) LuapulaRiver (b) LuangwaRiver (c) KafueRiver (d) ZambeziRiver

b) *Best Answer Type*

This has options that are versions of a 'fact' or 'idea' being proposed. The pupil must choose the best response from among these options that seem to be correct or true, e.g.

What is the major reason for economic stagnation in Zambia?

(a) High birth rate and overpopulation in towns

(b) Lack of skills to develop industries

(c) Lack of capital to develop industries

(d) Liberalisation of trade and industry

c) *Incomplete Stem Type*

This requires the pupil to complete the stem with the correct answer from the options given, e.g.

The longest line of latitude is ……..

(a) 0^{o} (b) $23½^{o}$ (c) 30^{o} (d) $66½^{o}$

d) *Multiple Response Type*

In this type, there is more than one correct answer to the question. It enables the teacher to discriminate between the able, average and less able among the pupils. There are two varieties of this type:

1. The pupil is asked to pick one or more of the options that correctly answer the question, e.g.

Which of the factors listed below are responsible for soil erosion in the Southern Province of Zambia?

(i) Overgrazing of farmlands (ii) Indiscriminate cutting of trees (iii) Uncontrolled burning of grasslands (iv) Presence of large sugar plantations

(a) 1, 2, 3 (b) 2, 3, 4 (c) 1, 3, 4 (d) 1, 2, 4

- ❖ Negative version of the multiple response type. The pupil has to choose the option which does not correctly answer the question, e.g.

Which of these statements is not true concerning copper mining in Zambia?

(a) The largest open pit mine is at Kalengwa

(b) Most of the copper is mined on the Copper belt

(c) Most of the mining is done by shaft mining

(d) The wettest mine is at Konkola-Chililabombwe

e) *Incomplete alternative type*

The pupil is expected to be a little more active in determining the correct option despite the fact that there is only one, usually simple answer. The pupil has to calculate or reason accurately before choosing the correct answer, e.g.

What is the average gradient of the road between the University of Zambia and Manda Hill?

(a) 1:18 (b) 1:80 (c) 1: 180 (d) 1:800

Merits of objective tests

- One of the advantages of objective tests is *their objectivity*. This means that these items exclude as far as possible personal opinions, biases, and temperaments of the teacher or marker. These items remove subjective scoring prevalent in essay tests where each examiner will be impressed by different things. In other words, objective

tests are very reliable and they try to eradicate the marker's inconsistencies from one occasion to another and the disagreement that may occur among different scorers, if the scoring must depend upon their variable judgements.

- *Scoring economy* – Scoring of objective tests if well planned can be done more rapidly than essay tests of the same length. Therefore, the results can quickly be made available to the pupils, something that has a lot of motivational implications. Objective tests can also be scored by anyone, provided a marking key is supplied.
- *Sampling content*: Objective tests provide an extensive sampling of course content due to large numbers of questions that can be included in a test in a limited amount of time. These tests are also highly efficient for measuring knowledge of facts, understanding, thinking skills, etc.
- *Emphasis is placed on knowledge and understanding*, not on the pupil's ability and skill in writing and use of language (Ingenkamp, 1969).

Demerits of objective tests

- They are difficult and time consuming to construct.
- The teacher has to be skillful and experienced to construct them.
- Structuring makes the objective tests inappropriate for measuring the ability to select, organise thoughts, write logically and integrate ideas.

Subjective tests

Subjective tests are mostly *essay type*, where answers are written in prose. They allow the pupil to select, organize and present his/her answer logically and integrate ideas. The essay is pre-esminent in measuring originality, divergent thinking and the pupils' ability to organize their thoughts in their own way. Essays are important because they enable discussion of principles and points of view, interpretation of ideas, organization of evidence (examples and illustrations), and presentation of a written statement clearly, convincingly and with appropriate style.

Types of essay type questions

The classification of essay type of tests depends on the amount of freedom of response the items allow to the pupils. They can either be *extended response type* or *restricted response type.*

The extended response type

In this type, the pupil is given almost complete freedom in making his/her response. It permits the pupil to decide which facts he/she thinks are important, to select his/her own method of organisation and to write as much as he/she deems necessary to provide a comprehensive answer, e.g.

Explain the advantages and disadvantages of Zambia's location in the interior of southern Africa.

This question does not restrict the pupil in any way.

Advantages

The pupil is allowed to show his/her proficiency and ability to select relevant facts, organise them and present them in a logical manner. The extended response type is, therefore, flexible.

Disadvantages

The flexibility makes the question too open and difficult to score.

The restricted response type

In the restricted response type, the pupil is given instructions on the nature, length, and organisation of the response, e.g.

In not more than two pages and giving at least four examples, explain the influence of relief on Zambia's climate.

Advantages

Restriction makes it easier to score.

Disadvantages

A highly structured essay question also makes it difficult to measure the ability to select, organize and integrate ideas.

Points to Consider When Constructing Essay Type Questions

1. Set the questions carefully:
    a) Consider the objectives of the essay. Are you testing the lower levels or higher levels of the cognitive domain?
    b) What the pupils are required to do should be made clear to them.
    c) Pupils should understand such *directive terms* as:

- Discuss with reference to
- Describe and account for
- What is the significance
- Critically examine
- Compare and contrast
- What are the geographical factors
- With illustrations
- Evaluate the contribution of

d) Pupils should be aware of the weighting of each question (marks allocated to it) so that they know how much time to allocate to it.

e) Do not give a very wide choice of questions to select from. Excessive choice contributes to unreliability.

f) To assess time required to answer the question, attempt to write a model answer in less time than given to pupils.

g) Allow fellow geography teachers to criticise your questions.

h) Use an appropriate analytical marking scheme, e.g.

- Definitions (2 Marks)
- Use/need (2 Marks)
- Main categories (10 Marks)
- Suitability of constructed questions (6 Marks)
- References (5 Marks)

i) Provide favourable conditions for the pupils to do their best writing.

Peer Assessment:

Peer assessment is a process through which students and instructors share in the evaluation of student work. It can have many different forms. Researchers find that peer assessment deepens students' understanding of their own learning and empowers students to become more actively engaged and self-directed in their learning processes.

HOW TO IMPLEMENT PEER ASSESSMENT

Identify learning activities for which peer feedback would be helpful to students. Consider the degree to which you want students to be involved. The advantage of having students actively involved in developing scoring guidelines is increased accuracy when students implement the guidelines during peer assessment. The disadvantage is that students are not yet experts in the content area.

In the lowest level of student involvement:

- An instructor prepares model answers and guidelines for feedback, which students use to assess the work of peers.
- Peer assessment grades are recommendations only, and the instructor makes final grading decisions.

- Students are required to participate and any student unhappy with a peer assessment grade could seek an independent assessment by the instructor.

In the highest level of student involvement:

- Students and instructors work together to prepare model answers and scoring guidelines.
- Students then use the negotiated guidelines to assess the work of peers.
- Students are then responsible for providing feedback to the other students.

RECORDS OF WORK

A record of work is a list of topics that have been covered by a teacher in his/her classes. Such reports are important because:

(i) They remind the teacher about how he/she covered the topics, the problems encountered and what was done to remedy the situation.

(ii) They help a teacher who is taking over from another teacher to know what has been done, to what depth and what remains to be done.

(iii) They could be used as a basis for modifying, omitting or adding topics to the scheme of work as experience dictates. In this way, records of work

serve as a basis for improving the schemes of work from year to year.

A record of work is prepared by a teacher on a weekly basis but submitted to the HOD on a regular basis, such as fortnightly or monthly, according to the school policy.

Weaknesses of a record of work

The records of work present a lot weaknesses. Some of these are:

- Cheating on the part of the teacher who includes work not covered or taught.
- Comments on self-evaluation which do not depict the true picture of the teacher's performance.
- The HOD, the deputy head teacher or head teacher simply endorsing the work as a correct record without verifying with individual classes.
- The records not being written immediately after the lesson but waiting until the due date. This is a weakness because the teacher cannot remember the actual flaws in his/her teaching which was done two or three weeks earlier.

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